

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Simonsen 12E-223**

Surface Location: Simonsen NWNW-12 Pad Sec.12-T6N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

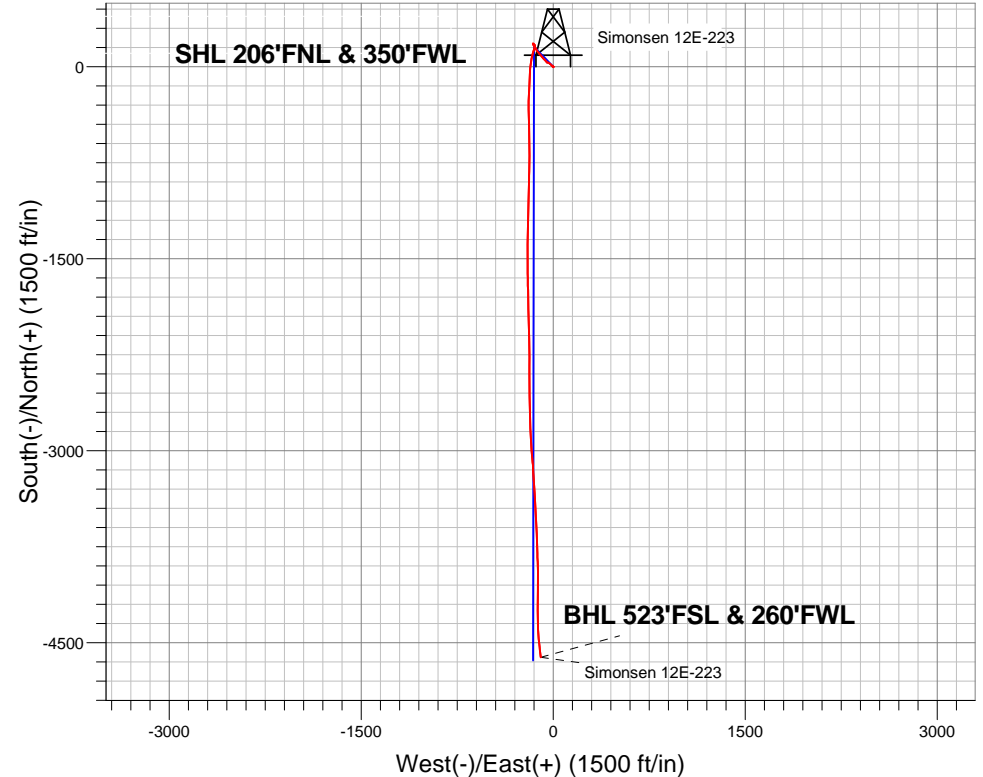
Ground Elevation: 4848.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1428709.54	3180754.57	40.508390	-104.849950	

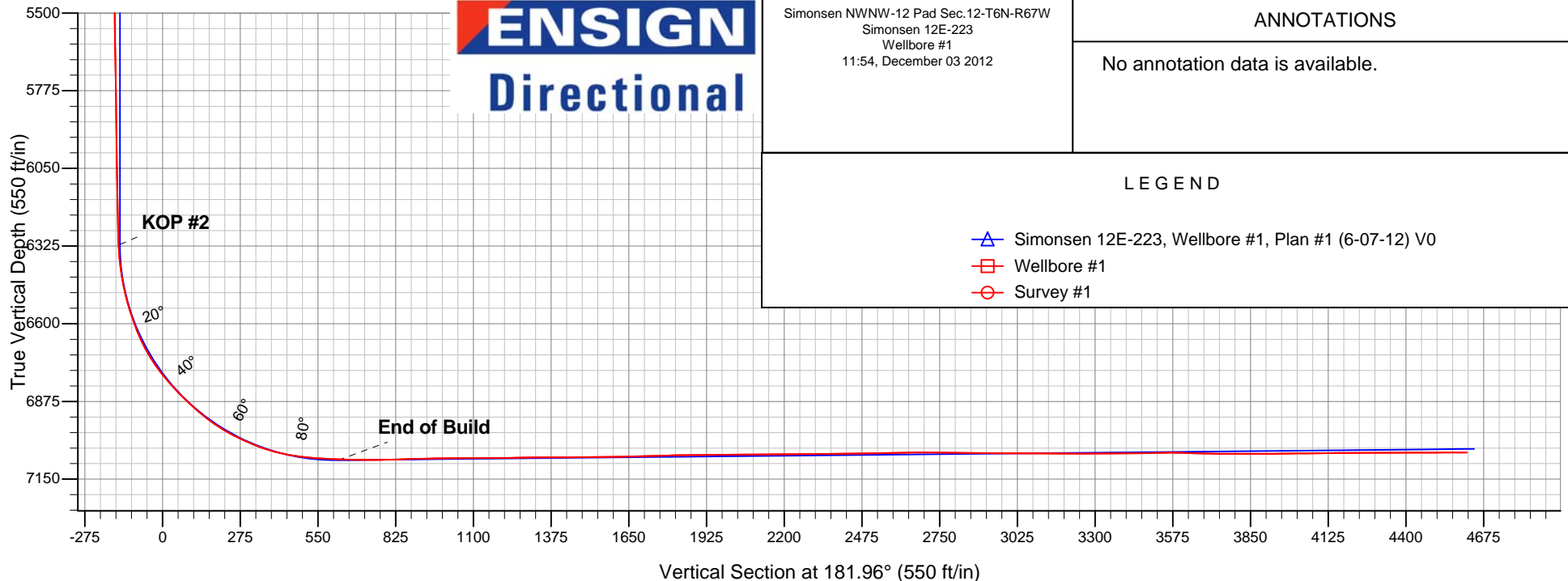
Original Well Elev WELL @ 4863.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
11548'MD 7055'TVD 4615'S & 99'W of SHL
90.2 degree Incl @ 174.0 degree AZM



ENSIGN
Directional



Simonsen NWNW-12 Pad Sec.12-T6N-R67W
Simonsen 12E-223
Wellbore #1
11:54, December 03 2012

ANNOTATIONS

No annotation data is available.

LEGEND

- Simonsen 12E-223, Wellbore #1, Plan #1 (6-07-12) V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

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

Simonsen 12E-223

Wellbore #1

Survey: Survey #1

Standard Survey Report

03 December, 2012

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 12E-223
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (Original Well Elev)
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (Original Well Elev)
Well:	Simonsen 12E-223	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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 12E-223					
Well Position	+N-S	0.0 ft	Northing:	1,428,709.54 ft	Latitude:	40.508390
	+E-W	0.0 ft	Easting:	3,180,754.57 ft	Longitude:	-104.849950
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	11/18/2012	8.73	67.08	53,028

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	181.96	

Survey Program	Date	12/3/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
113.0	11,548.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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
HARDLINE BHL 460'FSL (4) - HARDLINE SHL 460'FNL (4)									
0.6	0.00	51.00	0.6	0.0	0.0	0.0	0.27	0.27	0.00
SECTION LINE 206°N & 350°W OF SHL (4)									
113.0	0.30	51.00	113.0	0.2	0.2	-0.2	0.27	0.27	0.00
205.0	0.10	35.30	205.0	0.4	0.5	-0.4	0.22	-0.22	-17.07
297.0	0.30	201.40	297.0	0.2	0.4	-0.3	0.43	0.22	180.54
389.0	0.60	270.80	389.0	0.0	-0.1	0.0	0.62	0.33	75.43
481.0	0.70	275.60	481.0	0.1	-1.2	0.0	0.12	0.11	5.22
573.0	0.80	271.70	573.0	0.2	-2.4	-0.1	0.12	0.11	-4.24
665.0	0.90	246.10	665.0	-0.1	-3.7	0.2	0.42	0.11	-27.83
757.0	1.00	342.80	757.0	0.4	-4.6	-0.2	1.54	0.11	105.11

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Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (Original Well Elev)
Well:	Simonsen 12E-223	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
849.0	0.90	85.90	849.0	1.2	-4.1	-1.0	1.62	-0.11	112.07
946.0	2.30	123.60	945.9	0.2	-1.7	-0.1	1.73	1.44	38.87
1,038.0	1.50	134.00	1,037.9	-1.7	0.7	1.7	0.94	-0.87	11.30
1,130.0	0.40	164.80	1,129.9	-2.8	1.6	2.8	1.28	-1.20	33.48
1,222.0	0.70	304.00	1,221.9	-2.8	1.2	2.8	1.13	0.33	151.30
1,318.0	2.20	309.40	1,317.8	-1.3	-0.7	1.4	1.57	1.56	5.63
1,413.0	2.40	312.50	1,412.7	1.2	-3.5	-1.0	0.25	0.21	3.26
1,509.0	2.50	313.40	1,508.7	4.0	-6.5	-3.7	0.11	0.10	0.94
1,604.0	2.70	312.40	1,603.6	6.9	-9.7	-6.6	0.22	0.21	-1.05
1,700.0	2.70	315.90	1,699.5	10.0	-12.9	-9.6	0.17	0.00	3.65
1,795.0	2.90	315.90	1,794.3	13.4	-16.2	-12.8	0.21	0.21	0.00
1,890.0	2.90	310.70	1,889.2	16.7	-19.7	-16.0	0.28	0.00	-5.47
1,985.0	2.50	314.10	1,984.1	19.7	-23.0	-18.9	0.45	-0.42	3.58
2,080.0	2.20	311.30	2,079.0	22.3	-25.8	-21.4	0.34	-0.32	-2.95
2,175.0	1.70	311.00	2,174.0	24.4	-28.3	-23.5	0.53	-0.53	-0.32
2,270.0	1.70	305.50	2,268.9	26.2	-30.5	-25.1	0.17	0.00	-5.79
2,365.0	1.40	293.30	2,363.9	27.5	-32.7	-26.3	0.47	-0.32	-12.84
2,459.0	1.30	291.20	2,457.9	28.3	-34.7	-27.1	0.12	-0.11	-2.23
2,554.0	1.60	291.30	2,552.8	29.2	-37.0	-27.9	0.32	0.32	0.11
2,649.0	1.80	285.90	2,647.8	30.1	-39.7	-28.7	0.27	0.21	-5.68
2,744.0	1.70	284.70	2,742.8	30.8	-42.4	-29.4	0.11	-0.11	-1.26
2,840.0	1.80	278.30	2,838.7	31.4	-45.3	-29.8	0.23	0.10	-6.67
2,934.0	2.60	303.70	2,932.6	32.8	-48.6	-31.1	1.32	0.85	27.02
3,028.0	3.70	324.10	3,026.5	36.4	-52.1	-34.6	1.65	1.17	21.70
3,123.0	3.60	321.50	3,121.3	41.3	-55.8	-39.3	0.20	-0.11	-2.74
3,218.0	4.40	317.50	3,216.1	46.3	-60.1	-44.2	0.89	0.84	-4.21
3,313.0	5.30	317.20	3,310.7	52.2	-65.5	-49.9	0.95	0.95	-0.32
3,409.0	5.20	311.90	3,406.3	58.3	-71.8	-55.9	0.52	-0.10	-5.52
3,505.0	6.00	318.50	3,501.9	65.0	-78.3	-62.3	1.07	0.83	6.88
3,600.0	6.20	319.30	3,596.3	72.6	-85.0	-69.7	0.23	0.21	0.84
3,695.0	7.20	319.90	3,690.7	81.1	-92.2	-77.9	1.06	1.05	0.63
3,790.0	8.40	321.40	3,784.8	91.0	-100.3	-87.6	1.28	1.26	1.58
3,885.0	9.60	320.30	3,878.6	102.6	-109.7	-98.8	1.28	1.26	-1.16
3,980.0	10.00	321.00	3,972.2	115.1	-120.0	-110.9	0.44	0.42	0.74
4,075.0	8.70	327.30	4,066.0	127.5	-129.0	-123.0	1.74	-1.37	6.63
4,171.0	7.90	332.50	4,161.0	139.5	-136.0	-134.8	1.14	-0.83	5.42
4,266.0	7.00	329.60	4,255.2	150.3	-141.9	-145.3	1.03	-0.95	-3.05
4,361.0	6.10	324.90	4,349.6	159.4	-147.8	-154.2	1.10	-0.95	-4.95
4,457.0	5.20	325.80	4,445.1	167.2	-153.2	-161.8	0.94	-0.94	0.94
4,552.0	4.30	332.30	4,539.8	173.9	-157.2	-168.4	1.10	-0.95	6.84
4,647.0	2.20	347.70	4,634.6	178.8	-159.3	-173.3	2.37	-2.21	16.21
4,742.0	0.60	93.50	4,729.6	180.6	-159.2	-175.0	2.56	-1.68	111.37
4,838.0	0.80	108.10	4,825.6	180.3	-158.0	-174.8	0.28	0.21	15.21
4,933.0	0.60	116.40	4,920.6	179.9	-156.9	-174.4	0.24	-0.21	8.74
5,028.0	0.90	130.00	5,015.6	179.2	-155.9	-173.8	0.37	0.32	14.32
5,123.0	1.00	132.90	5,110.6	178.2	-154.8	-172.8	0.12	0.11	3.05
5,218.0	0.70	146.20	5,205.5	177.1	-153.8	-171.7	0.38	-0.32	14.00
5,314.0	0.70	147.70	5,301.5	176.1	-153.2	-170.8	0.02	0.00	1.56
5,409.0	0.70	134.00	5,396.5	175.2	-152.5	-169.9	0.18	0.00	-14.42
5,504.0	0.70	88.20	5,491.5	174.8	-151.5	-169.6	0.57	0.00	-48.21
5,599.0	1.60	141.40	5,586.5	173.8	-150.1	-168.6	1.38	0.95	56.00
5,695.0	1.80	134.20	5,682.5	171.7	-148.1	-166.6	0.30	0.21	-7.50
5,790.0	1.50	122.50	5,777.4	170.0	-146.0	-164.9	0.47	-0.32	-12.32
5,885.0	0.70	133.60	5,872.4	169.0	-144.5	-163.9	0.87	-0.84	11.68

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Well:	Simonsen 12E-223	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
5,981.0	1.00	152.40	5,968.4	167.8	-143.7	-162.8	0.42	0.31	19.58
6,076.0	1.00	178.40	6,063.4	166.2	-143.3	-161.2	0.47	0.00	27.37
6,171.0	1.20	181.20	6,158.4	164.4	-143.3	-159.4	0.22	0.21	2.95
6,266.0	1.00	161.60	6,253.3	162.6	-143.1	-157.7	0.45	-0.21	-20.63
6,298.0	1.30	182.60	6,285.3	162.0	-143.0	-157.0	1.60	0.94	65.63
6,329.0	2.50	195.60	6,316.3	161.0	-143.2	-156.0	4.09	3.87	41.94
6,361.0	4.30	195.60	6,348.3	159.2	-143.7	-154.2	5.63	5.63	0.00
6,393.0	6.20	192.60	6,380.1	156.3	-144.4	-151.3	6.00	5.94	-9.38
6,425.0	8.00	194.40	6,411.9	152.5	-145.3	-147.4	5.67	5.63	5.63
6,456.0	10.10	194.40	6,442.5	147.8	-146.6	-142.7	6.77	6.77	0.00
6,488.0	12.30	194.20	6,473.9	141.7	-148.1	-136.6	6.88	6.88	-0.63
6,520.0	14.30	193.70	6,505.0	134.6	-149.9	-129.4	6.26	6.25	-1.56
6,551.0	16.60	194.70	6,534.9	126.6	-151.9	-121.3	7.47	7.42	3.23
6,583.0	18.70	195.80	6,565.4	117.2	-154.5	-111.9	6.64	6.56	3.44
6,615.0	20.70	196.60	6,595.5	106.9	-157.5	-101.4	6.31	6.25	2.50
6,647.0	22.70	197.30	6,625.2	95.6	-160.9	-90.0	6.30	6.25	2.19
6,680.0	24.60	196.50	6,655.5	82.9	-164.8	-77.2	5.84	5.76	-2.42
6,711.0	27.80	192.30	6,683.3	69.6	-168.1	-63.9	11.92	10.32	-13.55
6,743.0	31.40	191.20	6,711.1	54.2	-171.3	-48.3	11.38	11.25	-3.44
6,775.0	34.50	189.10	6,738.0	37.0	-174.4	-31.1	10.32	9.69	-6.56
6,807.0	37.20	186.90	6,763.9	18.5	-177.0	-12.4	9.35	8.44	-6.88
6,839.0	39.30	186.50	6,789.0	-1.2	-179.3	7.3	6.61	6.56	-1.25
6,870.0	41.30	184.20	6,812.7	-21.1	-181.2	27.3	8.04	6.45	-7.42
6,902.0	43.60	182.70	6,836.3	-42.7	-182.5	48.9	7.85	7.19	-4.69
6,934.0	45.50	181.40	6,859.1	-65.1	-183.3	71.4	6.59	5.94	-4.06
6,966.0	47.20	181.00	6,881.2	-88.3	-183.7	94.5	5.39	5.31	-1.25
6,997.0	48.00	183.00	6,902.1	-111.2	-184.5	117.4	5.42	2.58	6.45
7,029.0	50.10	184.30	6,923.0	-135.3	-186.1	141.6	7.24	6.56	4.06
7,061.0	53.20	183.80	6,942.9	-160.3	-187.9	166.6	9.76	9.69	-1.56
7,092.0	56.80	183.30	6,960.7	-185.7	-189.4	192.0	11.69	11.61	-1.61
7,124.0	59.90	182.40	6,977.5	-212.9	-190.8	219.2	9.98	9.69	-2.81
7,156.0	62.20	181.40	6,993.0	-240.8	-191.7	247.2	7.69	7.19	-3.13
7,188.0	64.60	180.80	7,007.3	-269.4	-192.3	275.9	7.69	7.50	-1.88
7,219.0	66.60	180.80	7,020.1	-297.7	-192.6	304.1	6.45	6.45	0.00
7,251.0	68.40	180.30	7,032.3	-327.2	-192.9	333.6	5.81	5.63	-1.56
7,283.0	71.60	178.70	7,043.3	-357.3	-192.7	363.7	11.05	10.00	-5.00
7,314.0	75.10	178.10	7,052.2	-387.0	-191.8	393.3	11.44	11.29	-1.94
7,346.0	78.10	177.40	7,059.6	-418.1	-190.6	424.3	9.61	9.38	-2.19
7,378.0	80.30	177.30	7,065.6	-449.5	-189.2	455.7	6.88	6.88	-0.31
7,409.0	82.70	179.00	7,070.1	-480.1	-188.2	486.3	9.45	7.74	5.48
7,441.0	84.80	179.30	7,073.6	-511.9	-187.7	518.0	6.63	6.56	0.94
7,466.0	86.40	179.40	7,075.6	-536.8	-187.4	542.9	6.41	6.40	0.40
7,515.0	87.20	179.40	7,078.3	-585.8	-186.9	591.8	1.63	1.63	0.00
7,527.0	87.40	179.50	7,078.9	-597.8	-186.8	603.8	1.86	1.67	0.83
7,558.0	87.70	179.20	7,080.2	-628.7	-186.4	634.7	1.37	0.97	-0.97
7,590.0	88.40	179.20	7,081.3	-660.7	-186.0	666.7	2.19	2.19	0.00
7,622.0	89.30	179.90	7,081.9	-692.7	-185.7	698.6	3.56	2.81	2.19
7,654.0	90.20	180.50	7,082.0	-724.7	-185.8	730.6	3.38	2.81	1.88
7,685.0	90.70	180.70	7,081.8	-755.7	-186.2	761.6	1.74	1.61	0.65
7,717.0	91.50	181.40	7,081.2	-787.7	-186.8	793.6	3.32	2.50	2.19
7,749.0	92.00	182.10	7,080.2	-819.6	-187.7	825.6	2.69	1.56	2.19
7,781.0	91.40	181.20	7,079.3	-851.6	-188.7	857.6	3.38	-1.88	-2.81
7,812.0	91.90	181.60	7,078.4	-882.6	-189.4	888.6	2.07	1.61	1.29

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7,844.0	91.10	181.20	7,077.5	-914.6	-190.2	920.5	2.79	-2.50	-1.25
7,876.0	91.20	180.80	7,076.9	-946.6	-190.8	952.5	1.29	0.31	-1.25
7,907.0	90.90	181.30	7,076.3	-977.6	-191.3	983.5	1.88	-0.97	1.61
7,939.0	91.10	181.30	7,075.8	-1,009.5	-192.0	1,015.5	0.63	0.63	0.00
7,971.0	90.40	181.00	7,075.3	-1,041.5	-192.7	1,047.5	2.38	-2.19	-0.94
8,002.0	89.50	181.80	7,075.4	-1,072.5	-193.4	1,078.5	3.88	-2.90	2.58
8,039.0	89.80	181.40	7,075.6	-1,109.5	-194.5	1,115.5	1.35	0.81	-1.08
8,071.0	90.30	181.20	7,075.6	-1,141.5	-195.2	1,147.5	1.68	1.56	-0.63
8,103.0	90.60	181.70	7,075.3	-1,173.5	-196.0	1,179.5	1.82	0.94	1.56
8,134.0	91.20	181.30	7,074.8	-1,204.5	-196.8	1,210.5	2.33	1.94	-1.29
8,166.0	90.90	181.70	7,074.2	-1,236.5	-197.7	1,242.5	1.56	-0.94	1.25
8,198.0	91.40	181.30	7,073.6	-1,268.4	-198.5	1,274.5	2.00	1.56	-1.25
8,229.0	90.60	181.30	7,073.1	-1,299.4	-199.2	1,305.5	2.58	-2.58	0.00
8,261.0	90.10	180.70	7,072.9	-1,331.4	-199.8	1,337.5	2.44	-1.56	-1.88
8,293.0	89.90	180.40	7,072.9	-1,363.4	-200.1	1,369.5	1.13	-0.63	-0.94
8,324.0	90.00	180.40	7,072.9	-1,394.4	-200.3	1,400.4	0.32	0.32	0.00
8,356.0	90.40	180.00	7,072.8	-1,426.4	-200.4	1,432.4	1.77	1.25	-1.25
8,388.0	90.60	180.10	7,072.5	-1,458.4	-200.4	1,464.4	0.70	0.63	0.31
8,420.0	90.50	179.80	7,072.2	-1,490.4	-200.4	1,496.4	0.99	-0.31	-0.94
8,451.0	90.50	179.60	7,071.9	-1,521.4	-200.2	1,527.4	0.65	0.00	-0.65
8,483.0	90.60	179.60	7,071.6	-1,553.4	-200.0	1,559.3	0.31	0.31	0.00
8,515.0	90.70	179.10	7,071.3	-1,585.4	-199.7	1,591.3	1.59	0.31	-1.56
8,546.0	91.20	179.60	7,070.7	-1,616.4	-199.3	1,622.3	2.28	1.61	1.61
8,578.0	91.50	179.00	7,070.0	-1,648.4	-198.9	1,654.2	2.10	0.94	-1.88
8,610.0	91.20	179.20	7,069.2	-1,680.4	-198.4	1,686.2	1.13	-0.94	0.63
8,642.0	91.40	179.10	7,068.5	-1,712.4	-197.9	1,718.1	0.70	0.63	-0.31
8,673.0	92.00	179.00	7,067.6	-1,743.3	-197.4	1,749.1	1.96	1.94	-0.32
8,704.0	91.30	178.50	7,066.7	-1,774.3	-196.7	1,780.0	2.77	-2.26	-1.61
8,736.0	91.80	178.80	7,065.8	-1,806.3	-196.0	1,811.9	1.82	1.56	0.94
8,767.0	91.50	179.10	7,064.9	-1,837.3	-195.4	1,842.9	1.37	-0.97	0.97
8,799.0	90.10	178.70	7,064.5	-1,869.3	-194.8	1,874.8	4.55	-4.38	-1.25
8,830.0	89.60	178.50	7,064.6	-1,900.3	-194.0	1,905.8	1.74	-1.61	-0.65
8,862.0	90.60	178.70	7,064.5	-1,932.3	-193.3	1,937.7	3.19	3.13	0.63
8,894.0	90.90	178.30	7,064.1	-1,964.2	-192.4	1,969.7	1.56	0.94	-1.25
8,925.0	91.50	178.70	7,063.4	-1,995.2	-191.6	2,000.6	2.33	1.94	1.29
8,957.0	90.50	178.70	7,062.9	-2,027.2	-190.9	2,032.5	3.13	-3.13	0.00
8,989.0	89.50	178.60	7,062.9	-2,059.2	-190.1	2,064.5	3.14	-3.13	-0.31
9,021.0	89.40	178.20	7,063.2	-2,091.2	-189.2	2,096.4	1.29	-0.31	-1.25
9,052.0	90.30	179.00	7,063.3	-2,122.2	-188.5	2,127.4	3.88	2.90	2.58
9,083.0	90.90	178.40	7,063.0	-2,153.2	-187.8	2,158.3	2.74	1.94	-1.94
9,115.0	91.20	178.60	7,062.4	-2,185.2	-186.9	2,190.3	1.13	0.94	0.63
9,147.0	91.10	179.80	7,061.7	-2,217.1	-186.5	2,222.2	3.76	-0.31	3.75
9,179.0	90.60	179.30	7,061.2	-2,249.1	-186.2	2,254.2	2.21	-1.56	-1.56
9,210.0	90.10	180.10	7,061.1	-2,280.1	-186.1	2,285.2	3.04	-1.61	2.58
9,242.0	90.20	180.50	7,061.0	-2,312.1	-186.3	2,317.1	1.29	0.31	1.25
9,274.0	90.40	180.10	7,060.8	-2,344.1	-186.4	2,349.1	1.40	0.63	-1.25
9,305.0	90.50	180.00	7,060.6	-2,375.1	-186.4	2,380.1	0.46	0.32	-0.32
9,337.0	90.90	179.40	7,060.2	-2,407.1	-186.3	2,412.1	2.25	1.25	-1.88
9,368.0	91.20	179.80	7,059.6	-2,438.1	-186.1	2,443.1	1.61	0.97	1.29
9,400.0	90.70	179.40	7,059.1	-2,470.1	-185.8	2,475.0	2.00	-1.56	-1.25
9,432.0	90.50	179.30	7,058.7	-2,502.1	-185.5	2,507.0	0.70	-0.63	-0.31
9,463.0	90.90	179.30	7,058.4	-2,533.1	-185.1	2,538.0	1.29	1.29	0.00
9,494.0	91.10	179.10	7,057.8	-2,564.1	-184.7	2,568.9	0.91	0.65	-0.65

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 12E-223
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (Original Well Elev)
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (Original Well Elev)
Well:	Simonsen 12E-223	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
9,527.0	91.90	179.40	7,057.0	-2,597.1	-184.2	2,601.9	2.59	2.42	0.91
9,558.0	91.20	179.10	7,056.1	-2,628.1	-183.8	2,632.8	2.46	-2.26	-0.97
9,590.0	90.10	179.20	7,055.8	-2,660.1	-183.4	2,664.8	3.45	-3.44	0.31
9,622.0	90.00	178.70	7,055.7	-2,692.1	-182.8	2,696.7	1.59	-0.31	-1.56
9,653.0	89.30	178.40	7,055.9	-2,723.1	-182.0	2,727.7	2.46	-2.26	-0.97
9,684.0	89.70	178.50	7,056.2	-2,754.0	-181.1	2,758.6	1.33	1.29	0.32
9,721.0	89.80	178.40	7,056.3	-2,791.0	-180.1	2,795.6	0.38	0.27	-0.27
9,753.0	89.20	178.00	7,056.6	-2,823.0	-179.1	2,827.5	2.25	-1.88	-1.25
9,785.0	89.00	177.60	7,057.1	-2,855.0	-177.9	2,859.4	1.40	-0.63	-1.25
9,817.0	89.40	177.30	7,057.6	-2,886.9	-176.5	2,891.3	1.56	1.25	-0.94
9,848.0	89.60	176.90	7,057.8	-2,917.9	-174.9	2,922.2	1.44	0.65	-1.29
9,880.0	89.60	176.30	7,058.1	-2,949.8	-173.0	2,954.0	1.87	0.00	-1.88
9,912.0	89.30	175.50	7,058.4	-2,981.8	-170.7	2,985.9	2.67	-0.94	-2.50
9,943.0	88.80	174.80	7,058.9	-3,012.6	-168.1	3,016.6	2.77	-1.61	-2.26
9,975.0	88.70	174.00	7,059.6	-3,044.5	-165.0	3,048.3	2.52	-0.31	-2.50
10,007.0	89.40	174.80	7,060.1	-3,076.3	-161.9	3,080.1	3.32	2.19	2.50
10,039.0	90.10	176.60	7,060.3	-3,108.2	-159.5	3,111.9	6.04	2.19	5.63
10,070.0	90.20	177.00	7,060.2	-3,139.2	-157.7	3,142.7	1.33	0.32	1.29
10,102.0	89.90	176.20	7,060.2	-3,171.1	-155.8	3,174.6	2.67	-0.94	-2.50
10,133.0	90.00	175.60	7,060.2	-3,202.1	-153.6	3,205.4	1.96	0.32	-1.94
10,165.0	90.30	176.50	7,060.1	-3,234.0	-151.4	3,237.3	2.96	0.94	2.81
10,197.0	90.20	177.10	7,060.0	-3,265.9	-149.6	3,269.1	1.90	-0.31	1.88
10,228.0	90.20	177.00	7,059.8	-3,296.9	-148.0	3,300.0	0.32	0.00	-0.32
10,260.0	90.50	176.60	7,059.7	-3,328.8	-146.3	3,331.9	1.56	0.94	-1.25
10,292.0	90.80	176.40	7,059.3	-3,360.8	-144.3	3,363.7	1.13	0.94	-0.63
10,323.0	91.20	176.20	7,058.7	-3,391.7	-142.3	3,394.6	1.44	1.29	-0.65
10,355.0	90.80	176.90	7,058.2	-3,423.6	-140.4	3,426.4	2.52	-1.25	2.19
10,386.0	90.70	177.40	7,057.8	-3,454.6	-138.8	3,457.3	1.64	-0.32	1.61
10,418.0	91.10	176.60	7,057.3	-3,486.6	-137.2	3,489.2	2.79	1.25	-2.50
10,450.0	91.20	176.60	7,056.6	-3,518.5	-135.3	3,521.1	0.31	0.31	0.00
10,481.0	90.10	176.60	7,056.3	-3,549.4	-133.4	3,551.9	3.55	-3.55	0.00
10,513.0	88.80	177.20	7,056.6	-3,581.4	-131.7	3,583.8	4.47	-4.06	1.88
10,545.0	88.40	177.50	7,057.4	-3,613.3	-130.2	3,615.7	1.56	-1.25	0.94
10,577.0	88.70	177.70	7,058.2	-3,645.3	-128.9	3,647.6	1.13	0.94	0.63
10,609.0	88.70	177.50	7,058.9	-3,677.3	-127.5	3,679.5	0.62	0.00	-0.63
10,640.0	89.10	177.50	7,059.5	-3,708.2	-126.2	3,710.4	1.29	1.29	0.00
10,672.0	88.90	178.40	7,060.1	-3,740.2	-125.0	3,742.3	2.88	-0.63	2.81
10,704.0	89.30	179.10	7,060.6	-3,772.2	-124.3	3,774.2	2.52	1.25	2.19
10,735.0	89.80	178.90	7,060.8	-3,803.2	-123.8	3,805.2	1.74	1.61	-0.65
10,767.0	89.80	178.40	7,060.9	-3,835.2	-123.0	3,837.1	1.56	0.00	-1.56
10,799.0	90.40	178.90	7,060.9	-3,867.2	-122.3	3,869.1	2.44	1.88	1.56
10,831.0	90.90	179.00	7,060.5	-3,899.2	-121.7	3,901.0	1.59	1.56	0.31
10,863.0	90.90	178.30	7,060.0	-3,931.1	-121.0	3,933.0	2.19	0.00	-2.19
10,894.0	91.00	179.20	7,059.5	-3,962.1	-120.3	3,963.9	2.92	0.32	2.90
10,926.0	90.90	179.50	7,059.0	-3,994.1	-119.9	3,995.9	0.99	-0.31	0.94
10,958.0	89.80	179.40	7,058.8	-4,026.1	-119.6	4,027.9	3.45	-3.44	-0.31
10,990.0	90.20	180.30	7,058.8	-4,058.1	-119.5	4,059.8	3.08	1.25	2.81
11,022.0	91.00	180.40	7,058.4	-4,090.1	-119.7	4,091.8	2.52	2.50	0.31
11,054.0	90.60	181.00	7,058.0	-4,122.1	-120.1	4,123.8	2.25	-1.25	1.88
11,085.0	90.60	181.30	7,057.7	-4,153.1	-120.7	4,154.8	0.97	0.00	0.97
11,117.0	90.60	181.40	7,057.3	-4,185.1	-121.5	4,186.8	0.31	0.00	0.31
11,149.0	90.00	180.60	7,057.2	-4,217.1	-122.0	4,218.8	3.12	-1.88	-2.50
11,181.0	90.30	180.20	7,057.1	-4,249.1	-122.3	4,250.8	1.56	0.94	-1.25
11,213.0	90.10	179.30	7,057.0	-4,281.1	-122.1	4,282.8	2.88	-0.63	-2.81

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 12E-223
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (Original Well Elev)
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (Original Well Elev)
Well:	Simonsen 12E-223	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
11,244.0	90.30	179.10	7,056.8	-4,312.1	-121.7	4,313.7	0.91	0.65	-0.65
11,276.0	90.40	178.40	7,056.7	-4,344.1	-121.0	4,345.7	2.21	0.31	-2.19
11,308.0	90.20	177.20	7,056.5	-4,376.1	-119.8	4,377.6	3.80	-0.63	-3.75
11,339.0	90.20	176.80	7,056.4	-4,407.0	-118.1	4,408.5	1.29	0.00	-1.29
11,371.0	90.10	176.10	7,056.3	-4,438.9	-116.2	4,440.3	2.21	-0.31	-2.19
11,403.0	90.20	174.90	7,056.2	-4,470.9	-113.7	4,472.1	3.76	0.31	-3.75
11,435.0	90.30	174.30	7,056.1	-4,502.7	-110.6	4,503.9	1.90	0.31	-1.88
11,466.0	90.60	173.50	7,055.8	-4,533.5	-107.3	4,534.6	2.76	0.97	-2.58
11,497.0	90.20	174.00	7,055.6	-4,564.3	-104.0	4,565.2	2.07	-1.29	1.61
11,548.0	90.20	174.00	7,055.4	-4,615.1	-98.6	4,615.7	0.00	0.00	0.00
BHL 500'FSL, 200'FWL									

Checked By: _____	Approved By: _____	Date: _____
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