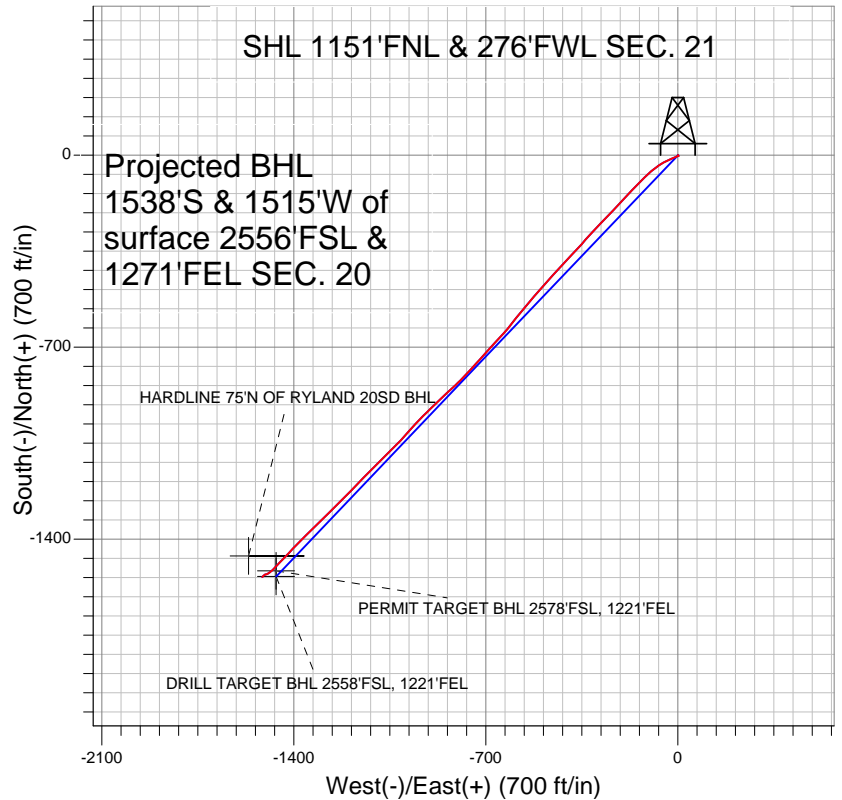


PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- △ Ryland 20SD, Wellbore #1, Plan #1 (3-18-10) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7893'MD & 7456'TVD @ 2158' VS
1.2 deg Inc 216.5 deg AZ

Project: SEC.21-T4N-R67W
Site: EEE/Ryland 20SD Pad Sec.21-T4N-R67W
Well: Ryland 20SD
Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.21-T4N-R67W

EEE/Ryland 20SD Pad Sec.21-T4N-R67W

Ryland 20SD

Wellbore #1

Survey: Survey #1

Standard Survey Report

11 October, 2010





| | | | |
|------------------|---|-------------------------------------|--------------------------------------|
| Company: | PETROLEUM DEVELOPMENT CORP Weld County CO | Local Co-ordinate Reference: | Well Ryland 20SD |
| Project: | SEC.21-T4N-R67W | TVD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Site: | EEE/Ryland 20SD Pad Sec.21-T4N-R67W | MD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Well: | Ryland 20SD | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | Landmark |

| | | | |
|--------------------|--|----------------------|-----------------------------|
| Project | SEC.21-T4N-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 | EEE/Ryland 20SD Pad Sec.21-T4N-R67W | | |
| Site Position: | | Northing: | 1,353,584.71 ft |
| From: | Lat/Long | Easting: | 3,166,056.83 ft |
| Position Uncertainty: | 0.0 ft | Slot Radius: | " |
| | | Latitude: | 40° 18' 8.856 N |
| | | Longitude: | 104° 54' 16.632 W |
| | | Grid Convergence: | 0.38 ° |

| | | | |
|-----------------------------|--------------|----------------------------|----------------------------------|
| Well | Ryland 20SD | | |
| Well Position | +N/-S | 0.0 ft | Northing: 1,353,584.70 ft |
| | +E/-W | 0.0 ft | Easting: 3,166,056.83 ft |
| Position Uncertainty | 0.0 ft | Wellhead Elevation: | ft |
| | | Latitude: | 40° 18' 8.856 N |
| | | Longitude: | 104° 54' 16.632 W |
| | | Ground Level: | 4,922.0 ft |

| | | | |
|------------------|-------------------|--------------------|----------------------------|
| Wellbore | Wellbore #1 | | |
| Magnetics | Model Name | Sample Date | Declination (°) |
| | IGRF200510 | 12/31/2009 | 9.09 |
| | | | Dip Angle (°) |
| | | | 67.01 |
| | | | Field Strength (nT) |
| | | | 53,237 |

| | | | |
|--------------------------|------------------------------|----------------------|----------------------|
| 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) |
| | 0.0 | 0.0 | 0.0 |
| | | | Direction (°) |
| | | | 224.57 |

| | | | |
|-----------------------|------------------------|--------------------------|--------------------|
| Survey Program | Date 10/11/2010 | | |
| From (ft) | To (ft) | Survey (Wellbore) | Tool Name |
| 155.0 | 7,893.0 | Survey #1 (Wellbore #1) | MWD |
| | | | Description |
| | | | 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 |
| 155.0 | 1.20 | 121.70 | 155.0 | -0.9 | 1.4 | -0.4 | 0.77 | 0.77 | 0.00 |
| 244.0 | 0.40 | 167.80 | 244.0 | -1.6 | 2.2 | -0.4 | 1.09 | -0.90 | 51.80 |
| 336.0 | 2.40 | 241.20 | 336.0 | -2.9 | 0.6 | 1.6 | 2.52 | 2.17 | 79.78 |
| 427.0 | 4.50 | 250.10 | 426.8 | -5.0 | -4.4 | 6.7 | 2.37 | 2.31 | 9.78 |
| 519.0 | 6.30 | 249.80 | 518.4 | -8.0 | -12.5 | 14.5 | 1.96 | 1.96 | -0.33 |
| 609.0 | 7.60 | 244.40 | 607.7 | -12.3 | -22.5 | 24.6 | 1.62 | 1.44 | -6.00 |
| 704.0 | 7.90 | 244.80 | 701.8 | -17.8 | -34.1 | 36.6 | 0.32 | 0.32 | 0.42 |
| 798.0 | 9.50 | 244.60 | 794.8 | -23.8 | -47.0 | 49.9 | 1.70 | 1.70 | -0.21 |
| 891.0 | 11.70 | 236.90 | 886.2 | -32.3 | -61.8 | 66.4 | 2.81 | 2.37 | -8.28 |
| 984.0 | 13.80 | 233.20 | 976.9 | -44.1 | -78.6 | 86.6 | 2.42 | 2.26 | -3.98 |
| 1,078.0 | 15.60 | 231.00 | 1,067.8 | -58.8 | -97.4 | 110.2 | 2.00 | 1.91 | -2.34 |



| | | | |
|------------------|---|-------------------------------------|--------------------------------------|
| Company: | PETROLEUM DEVELOPMENT CORP Weld County CO | Local Co-ordinate Reference: | Well Ryland 20SD |
| Project: | SEC.21-T4N-R67W | TVD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Site: | EEE/Ryland 20SD Pad Sec.21-T4N-R67W | MD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Well: | Ryland 20SD | 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) |
| 1,172.0 | 17.70 | 226.00 | 1,157.8 | -76.6 | -117.5 | 137.0 | 2.70 | 2.23 | -5.32 |
| 1,265.0 | 19.20 | 224.60 | 1,246.1 | -97.3 | -138.4 | 166.5 | 1.68 | 1.61 | -1.51 |
| 1,359.0 | 19.40 | 222.40 | 1,334.8 | -119.9 | -159.8 | 197.5 | 0.80 | 0.21 | -2.34 |
| 1,452.0 | 20.50 | 223.30 | 1,422.2 | -143.1 | -181.4 | 229.3 | 1.23 | 1.18 | 0.97 |
| 1,546.0 | 22.20 | 223.90 | 1,509.7 | -167.9 | -205.0 | 263.5 | 1.82 | 1.81 | 0.64 |
| 1,639.0 | 23.20 | 223.10 | 1,595.5 | -194.0 | -229.7 | 299.3 | 1.13 | 1.08 | -0.86 |
| 1,733.0 | 24.00 | 223.90 | 1,681.7 | -221.2 | -255.6 | 337.0 | 0.92 | 0.85 | 0.85 |
| 1,826.0 | 25.60 | 223.90 | 1,766.1 | -249.4 | -282.6 | 376.0 | 1.72 | 1.72 | 0.00 |
| 1,920.0 | 25.40 | 223.20 | 1,850.9 | -278.7 | -310.5 | 416.4 | 0.38 | -0.21 | -0.74 |
| 2,014.0 | 25.60 | 220.20 | 1,935.8 | -308.9 | -337.4 | 456.8 | 1.39 | 0.21 | -3.19 |
| 2,108.0 | 26.10 | 222.80 | 2,020.4 | -339.6 | -364.6 | 497.8 | 1.32 | 0.53 | 2.77 |
| 2,201.0 | 25.60 | 222.70 | 2,104.1 | -369.3 | -392.1 | 538.3 | 0.54 | -0.54 | -0.11 |
| 2,295.0 | 25.00 | 223.80 | 2,189.1 | -398.6 | -419.6 | 578.4 | 0.81 | -0.64 | 1.17 |
| 2,388.0 | 25.40 | 223.00 | 2,273.2 | -427.4 | -446.8 | 618.0 | 0.56 | 0.43 | -0.86 |
| 2,482.0 | 26.00 | 222.80 | 2,357.9 | -457.2 | -474.6 | 658.8 | 0.64 | 0.64 | -0.21 |
| 2,575.0 | 26.10 | 221.00 | 2,441.5 | -487.6 | -501.8 | 699.6 | 0.86 | 0.11 | -1.94 |
| 2,669.0 | 27.30 | 220.10 | 2,525.4 | -519.7 | -529.3 | 741.7 | 1.35 | 1.28 | -0.96 |
| 2,762.0 | 27.30 | 218.70 | 2,608.1 | -552.7 | -556.4 | 784.2 | 0.69 | 0.00 | -1.51 |
| 2,856.0 | 26.40 | 217.90 | 2,692.0 | -586.0 | -582.7 | 826.4 | 1.03 | -0.96 | -0.85 |
| 2,950.0 | 26.00 | 219.70 | 2,776.3 | -618.4 | -608.7 | 867.7 | 0.95 | -0.43 | 1.91 |
| 3,043.0 | 26.90 | 222.20 | 2,859.6 | -649.6 | -635.8 | 909.0 | 1.54 | 0.97 | 2.69 |
| 3,137.0 | 28.10 | 222.50 | 2,942.9 | -681.7 | -665.1 | 952.4 | 1.29 | 1.28 | 0.32 |
| 3,230.0 | 27.50 | 222.40 | 3,025.2 | -713.7 | -694.4 | 995.7 | 0.65 | -0.65 | -0.11 |
| 3,324.0 | 27.80 | 220.90 | 3,108.5 | -746.3 | -723.3 | 1,039.3 | 0.81 | 0.32 | -1.60 |
| 3,417.0 | 27.80 | 224.30 | 3,190.7 | -778.2 | -752.7 | 1,082.6 | 1.70 | 0.00 | 3.66 |
| 3,511.0 | 27.50 | 222.60 | 3,274.0 | -809.9 | -782.7 | 1,126.2 | 0.90 | -0.32 | -1.81 |
| 3,604.0 | 26.60 | 227.20 | 3,356.8 | -839.8 | -812.5 | 1,168.5 | 2.45 | -0.97 | 4.95 |
| 3,698.0 | 25.80 | 227.70 | 3,441.2 | -867.9 | -843.1 | 1,209.9 | 0.88 | -0.85 | 0.53 |
| 3,791.0 | 26.10 | 225.40 | 3,524.8 | -895.9 | -872.6 | 1,250.6 | 1.13 | 0.32 | -2.47 |
| 3,885.0 | 24.50 | 226.90 | 3,609.8 | -923.7 | -901.6 | 1,290.8 | 1.83 | -1.70 | 1.60 |
| 3,978.0 | 24.40 | 224.10 | 3,694.5 | -950.7 | -929.0 | 1,329.2 | 1.25 | -0.11 | -3.01 |
| 4,072.0 | 25.40 | 223.50 | 3,779.7 | -979.3 | -956.4 | 1,368.8 | 1.10 | 1.06 | -0.64 |
| 4,166.0 | 25.90 | 221.60 | 3,864.5 | -1,009.2 | -983.9 | 1,409.5 | 1.02 | 0.53 | -2.02 |
| 4,259.0 | 25.50 | 221.10 | 3,948.3 | -1,039.5 | -1,010.6 | 1,449.7 | 0.49 | -0.43 | -0.54 |
| 4,353.0 | 24.20 | 226.50 | 4,033.6 | -1,068.0 | -1,037.8 | 1,489.2 | 2.78 | -1.38 | 5.74 |
| 4,446.0 | 23.30 | 226.90 | 4,118.7 | -1,093.7 | -1,065.1 | 1,526.6 | 0.98 | -0.97 | 0.43 |
| 4,539.0 | 25.30 | 223.30 | 4,203.4 | -1,120.7 | -1,092.2 | 1,564.9 | 2.68 | 2.15 | -3.87 |
| 4,633.0 | 24.60 | 224.60 | 4,288.7 | -1,149.3 | -1,119.7 | 1,604.5 | 0.95 | -0.74 | 1.38 |
| 4,727.0 | 25.90 | 224.80 | 4,373.7 | -1,177.8 | -1,147.9 | 1,644.6 | 1.39 | 1.38 | 0.21 |
| 4,821.0 | 26.00 | 223.10 | 4,458.2 | -1,207.4 | -1,176.4 | 1,685.7 | 0.80 | 0.11 | -1.81 |
| 4,915.0 | 24.30 | 225.30 | 4,543.3 | -1,236.1 | -1,204.2 | 1,725.7 | 2.06 | -1.81 | 2.34 |
| 5,008.0 | 24.60 | 223.90 | 4,628.0 | -1,263.5 | -1,231.3 | 1,764.2 | 0.70 | 0.32 | -1.51 |
| 5,102.0 | 24.00 | 227.00 | 4,713.6 | -1,290.6 | -1,258.8 | 1,802.8 | 1.50 | -0.64 | 3.30 |
| 5,196.0 | 25.90 | 225.90 | 4,798.9 | -1,317.9 | -1,287.5 | 1,842.5 | 2.08 | 2.02 | -1.17 |
| 5,289.0 | 24.00 | 225.10 | 4,883.2 | -1,345.4 | -1,315.5 | 1,881.7 | 2.07 | -2.04 | -0.86 |
| 5,383.0 | 20.80 | 224.50 | 4,970.1 | -1,370.8 | -1,340.8 | 1,917.5 | 3.41 | -3.40 | -0.64 |
| 5,476.0 | 19.10 | 225.70 | 5,057.5 | -1,393.2 | -1,363.2 | 1,949.2 | 1.88 | -1.83 | 1.29 |
| 5,570.0 | 17.80 | 224.50 | 5,146.7 | -1,414.2 | -1,384.3 | 1,979.0 | 1.44 | -1.38 | -1.28 |
| 5,663.0 | 15.70 | 222.50 | 5,235.7 | -1,433.6 | -1,402.8 | 2,005.8 | 2.34 | -2.26 | -2.15 |
| 5,757.0 | 13.80 | 223.20 | 5,326.6 | -1,451.2 | -1,419.1 | 2,029.7 | 2.03 | -2.02 | 0.74 |
| 5,851.0 | 11.30 | 225.30 | 5,418.4 | -1,465.8 | -1,433.3 | 2,050.1 | 2.70 | -2.66 | 2.23 |
| 5,944.0 | 8.60 | 224.30 | 5,509.9 | -1,477.2 | -1,444.6 | 2,066.2 | 2.91 | -2.90 | -1.08 |
| 6,038.0 | 7.10 | 222.70 | 5,603.1 | -1,486.5 | -1,453.5 | 2,079.0 | 1.61 | -1.60 | -1.70 |



| | | | |
|------------------|---|-------------------------------------|--------------------------------------|
| Company: | PETROLEUM DEVELOPMENT CORP Weld County CO | Local Co-ordinate Reference: | Well Ryland 20SD |
| Project: | SEC.21-T4N-R67W | TVD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Site: | EEE/Ryland 20SD Pad Sec.21-T4N-R67W | MD Reference: | WELL @ 4935.0ft (Original Well Elev) |
| Well: | Ryland 20SD | 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) |
| 6,131.0 | 5.70 | 223.60 | 5,695.5 | -1,494.1 | -1,460.5 | 2,089.4 | 1.51 | -1.51 | 0.97 |
| 6,224.0 | 4.30 | 221.10 | 5,788.1 | -1,500.1 | -1,466.0 | 2,097.5 | 1.52 | -1.51 | -2.69 |
| 6,318.0 | 3.50 | 225.70 | 5,881.9 | -1,504.7 | -1,470.4 | 2,103.9 | 0.91 | -0.85 | 4.89 |
| 6,412.0 | 2.70 | 222.60 | 5,975.8 | -1,508.4 | -1,473.9 | 2,108.9 | 0.87 | -0.85 | -3.30 |
| 6,505.0 | 2.20 | 227.50 | 6,068.7 | -1,511.2 | -1,476.7 | 2,112.9 | 0.58 | -0.54 | 5.27 |
| 6,598.0 | 2.10 | 228.80 | 6,161.6 | -1,513.5 | -1,479.3 | 2,116.4 | 0.12 | -0.11 | 1.40 |
| 6,636.0 | 1.98 | 229.32 | 6,199.6 | -1,514.4 | -1,480.4 | 2,117.7 | 0.32 | -0.32 | 1.35 |
| PERMIT TARGET BHL 2578'FSL, 1221'FEL | | | | | | | | | |
| 6,636.5 | 1.98 | 229.32 | 6,200.1 | -1,514.4 | -1,480.4 | 2,117.8 | 0.00 | 0.00 | 0.00 |
| DRILL TARGET BHL 2558'FSL, 1221'FEL | | | | | | | | | |
| 6,692.0 | 1.80 | 230.20 | 6,255.6 | -1,515.6 | -1,481.8 | 2,119.6 | 0.33 | -0.32 | 1.59 |
| 6,785.0 | 1.80 | 229.30 | 6,348.5 | -1,517.5 | -1,484.0 | 2,122.5 | 0.03 | 0.00 | -0.97 |
| 6,879.0 | 1.70 | 230.30 | 6,442.5 | -1,519.3 | -1,486.2 | 2,125.3 | 0.11 | -0.11 | 1.06 |
| 6,972.0 | 1.90 | 235.00 | 6,535.4 | -1,521.1 | -1,488.5 | 2,128.2 | 0.27 | 0.22 | 5.05 |
| 7,066.0 | 1.80 | 238.40 | 6,629.4 | -1,522.8 | -1,491.1 | 2,131.2 | 0.16 | -0.11 | 3.62 |
| 7,159.0 | 1.70 | 237.20 | 6,722.3 | -1,524.3 | -1,493.5 | 2,134.0 | 0.11 | -0.11 | -1.29 |
| 7,253.0 | 1.80 | 241.10 | 6,816.3 | -1,525.7 | -1,495.9 | 2,136.7 | 0.17 | 0.11 | 4.15 |
| 7,347.0 | 2.00 | 252.10 | 6,910.2 | -1,527.0 | -1,498.8 | 2,139.6 | 0.44 | 0.21 | 11.70 |
| 7,442.0 | 2.00 | 256.30 | 7,005.2 | -1,527.9 | -1,502.0 | 2,142.5 | 0.15 | 0.00 | 4.42 |
| 7,535.0 | 2.00 | 244.10 | 7,098.1 | -1,529.0 | -1,505.0 | 2,145.4 | 0.46 | 0.00 | -13.12 |
| 7,629.0 | 3.40 | 231.10 | 7,192.0 | -1,531.4 | -1,508.6 | 2,149.7 | 1.62 | 1.49 | -13.83 |
| 7,722.0 | 2.10 | 227.00 | 7,284.9 | -1,534.3 | -1,512.0 | 2,154.2 | 1.41 | -1.40 | -4.41 |
| 7,816.0 | 1.20 | 216.50 | 7,378.9 | -1,536.3 | -1,513.9 | 2,156.8 | 1.01 | -0.96 | -11.17 |
| 7,893.0 | 1.20 | 216.50 | 7,455.9 | -1,537.6 | -1,514.8 | 2,158.4 | 0.00 | 0.00 | 0.00 |
| HARDLINE 75'N OF RYLAND 20SD BHL | | | | | | | | | |

Checked By: _____ Approved By: _____ Date: _____