

Well Name: **Walters 21QDU**

Surface Location: Walters/Wedco/Ryland Pad Sec.21-T4N-R67W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

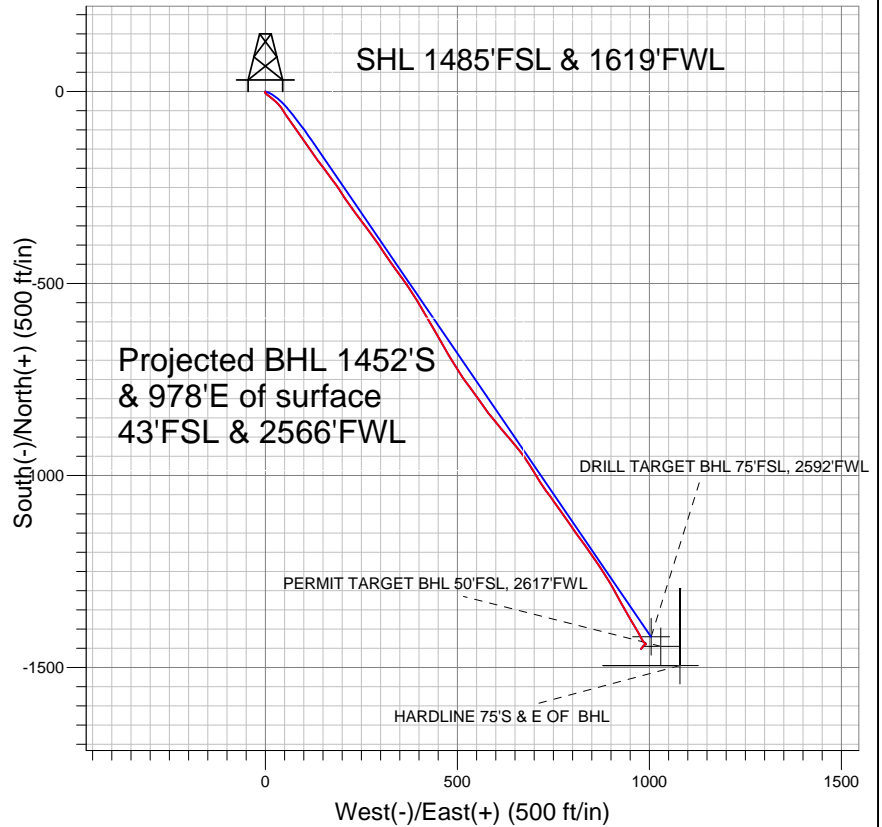
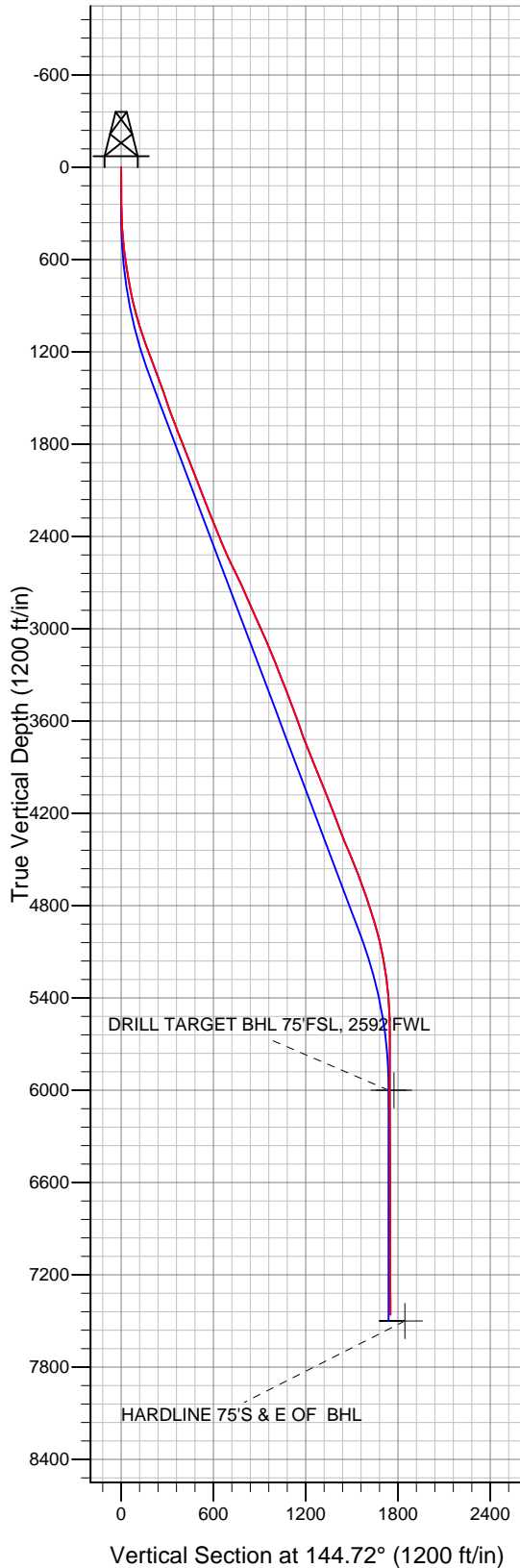
Ground Elevation: 4940.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1350956.61	3167455.26	40.295220	-104.899670

Original Well Elev WELL @ 4953.0ft (Original Well Elev)

Slot

PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- △ Walters 21QDU, Wellbore #1, Plan #1 (6-4-10) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7773'MD & 7459'TVD @ 1750'VS
 0.6 deg Inc 209.2 deg AZ

Project: SEC.21-T4N-R67W
 Site: Walters/Wedco/Ryland Pad Sec.21-T4N-R67W
 Well: Walters 21QDU
 Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.21-T4N-R67W

Walters/Wedco/Ryland Pad Sec.21-T4N-R67W

Walters 21QDU

Wellbore #1

Survey: Survey #1

Standard Survey Report

23 May, 2011

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Walters 21QDU
Project:	SEC.21-T4N-R67W	TVD Reference:	WELL @ 4953.0ft (Original Well Elev)
Site:	Walters/Wedco/Ryland Pad Sec.21-T4N-R67W	MD Reference:	WELL @ 4953.0ft (Original Well Elev)
Well:	Walters 21QDU	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		Walters/Wedco/Ryland Pad Sec.21-T4N-R67W			
Site Position:		Northing:	1,351,058.86ft	Latitude:	40.295500
From:	Lat/Long	Easting:	3,167,490.83ft	Longitude:	-104.899540
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.39 °

Well	Walters 21QDU					
Well Position	+N-S	0.0 ft	Northing:	1,350,956.61 ft	Latitude:	40.295220
	+E-W	0.0 ft	Easting:	3,167,455.26 ft	Longitude:	-104.899670
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,940.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/14/2010	9.06	66.98	53,166

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	144.72	

Survey Program	Date 5/23/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
148.0	7,773.0	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
148.0	0.70	205.40	148.0	-0.8	-0.4	0.4	0.47	0.47	0.00
239.0	0.90	201.20	239.0	-2.0	-0.9	1.1	0.23	0.22	-4.62
331.0	1.90	141.60	331.0	-3.9	-0.2	3.0	1.78	1.09	-64.78
424.0	4.40	130.60	423.8	-7.4	3.5	8.0	2.75	2.69	-11.83
516.0	6.50	126.70	515.4	-12.8	10.3	16.4	2.32	2.28	-4.24
609.0	8.50	129.10	607.6	-20.3	19.9	28.0	2.18	2.15	2.58
704.0	10.00	134.80	701.4	-30.5	31.2	42.9	1.85	1.58	6.00
797.0	10.80	146.00	792.8	-43.4	41.8	59.6	2.33	0.86	12.04
891.0	13.30	146.60	884.8	-59.8	52.7	79.2	2.66	2.66	0.64
984.0	15.50	144.40	974.8	-78.8	65.8	102.3	2.44	2.37	-2.37
1,077.0	18.20	144.50	1,063.8	-100.7	81.5	129.3	2.90	2.90	0.11

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Walters 21QDU
Project:	SEC.21-T4N-R67W	TVD Reference:	WELL @ 4953.0ft (Original Well Elev)
Site:	Walters/Wedco/Ryland Pad Sec.21-T4N-R67W	MD Reference:	WELL @ 4953.0ft (Original Well Elev)
Well:	Walters 21QDU	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)
1,170.0	20.40	146.00	1,151.6	-126.0	99.0	160.0	2.42	2.37	1.61
1,264.0	20.60	145.70	1,239.6	-153.2	117.4	192.9	0.24	0.21	-0.32
1,357.0	20.50	142.20	1,326.7	-179.6	136.6	225.6	1.33	-0.11	-3.76
1,451.0	19.00	142.90	1,415.2	-204.8	156.0	257.3	1.62	-1.60	0.74
1,544.0	19.30	143.70	1,503.1	-229.3	174.2	287.8	0.43	0.32	0.86
1,637.0	20.60	146.40	1,590.5	-255.3	192.3	319.5	1.71	1.40	2.90
1,730.0	20.40	146.50	1,677.6	-282.5	210.3	352.1	0.22	-0.22	0.11
1,824.0	21.60	144.60	1,765.3	-310.2	229.4	385.7	1.47	1.28	-2.02
1,917.0	21.80	141.60	1,851.8	-337.7	250.1	420.1	1.21	0.22	-3.23
2,009.0	20.80	143.30	1,937.5	-364.2	270.4	453.5	1.28	-1.09	1.85
2,103.0	21.90	145.80	2,025.0	-392.1	290.3	487.7	1.52	1.17	2.66
2,196.0	21.90	145.80	2,111.3	-420.8	309.8	522.4	0.00	0.00	0.00
2,289.0	21.10	144.40	2,197.8	-448.7	329.2	556.5	1.02	-0.86	-1.51
2,382.0	21.20	144.90	2,284.6	-476.1	348.7	590.0	0.22	0.11	0.54
2,475.0	22.30	144.00	2,371.0	-504.1	368.7	624.5	1.24	1.18	-0.97
2,568.0	22.70	149.50	2,456.9	-533.9	388.2	660.0	2.30	0.43	5.91
2,660.0	25.60	149.40	2,540.8	-566.3	407.3	697.5	3.15	3.15	-0.11
2,753.0	26.00	149.60	2,624.5	-601.1	427.9	737.9	0.44	0.43	0.22
2,846.0	25.40	149.50	2,708.3	-635.9	448.3	778.0	0.65	-0.65	-0.11
2,940.0	22.90	150.60	2,794.1	-669.2	467.5	816.3	2.70	-2.66	1.17
3,033.0	24.30	148.40	2,879.3	-701.3	486.4	853.4	1.78	1.51	-2.37
3,126.0	25.00	147.70	2,963.9	-734.2	506.9	892.2	0.82	0.75	-0.75
3,219.0	23.70	142.50	3,048.6	-765.6	528.8	930.5	2.69	-1.40	-5.59
3,313.0	21.80	145.10	3,135.3	-794.9	550.3	966.8	2.29	-2.02	2.77
3,406.0	22.10	144.40	3,221.5	-823.3	570.4	1,001.6	0.43	0.32	-0.75
3,499.0	21.30	140.40	3,308.0	-850.6	591.3	1,035.9	1.81	-0.86	-4.30
3,592.0	21.60	140.50	3,394.5	-876.8	613.0	1,069.8	0.32	0.32	0.11
3,686.0	20.60	139.10	3,482.2	-902.7	634.8	1,103.5	1.19	-1.06	-1.49
3,779.0	20.10	140.50	3,569.4	-927.4	655.7	1,135.7	0.75	-0.54	1.51
3,872.0	19.20	144.90	3,657.0	-952.2	674.7	1,167.0	1.86	-0.97	4.73
3,965.0	22.10	149.00	3,744.0	-979.7	692.5	1,199.7	3.48	3.12	4.41
4,059.0	21.20	149.00	3,831.4	-1,009.4	710.3	1,234.3	0.96	-0.96	0.00
4,152.0	23.30	142.60	3,917.5	-1,038.5	730.2	1,269.5	3.45	2.26	-6.88
4,245.0	21.70	145.20	4,003.4	-1,067.2	751.2	1,305.0	2.03	-1.72	2.80
4,339.0	20.50	144.30	4,091.1	-1,094.8	770.7	1,338.9	1.32	-1.28	-0.96
4,432.0	21.30	145.90	4,178.0	-1,122.1	789.6	1,372.1	1.06	0.86	1.72
4,525.0	21.80	144.40	4,264.5	-1,150.1	809.2	1,406.2	0.80	0.54	-1.61
4,618.0	20.80	144.00	4,351.1	-1,177.5	828.9	1,440.0	1.09	-1.08	-0.43
4,711.0	23.20	145.20	4,437.3	-1,205.9	849.1	1,474.8	2.63	2.58	1.29
4,804.0	22.40	146.50	4,523.1	-1,235.7	869.3	1,510.9	1.02	-0.86	1.40
4,896.0	21.30	147.50	4,608.5	-1,264.4	888.0	1,545.1	1.26	-1.20	1.09
4,990.0	18.50	150.40	4,696.8	-1,291.8	904.5	1,577.0	3.16	-2.98	3.09
5,084.0	18.90	152.10	4,785.9	-1,318.2	919.0	1,606.9	0.72	0.43	1.81
5,177.0	17.60	150.00	4,874.2	-1,343.7	933.1	1,635.8	1.57	-1.40	-2.26
5,271.0	15.60	149.60	4,964.3	-1,366.9	946.6	1,662.6	2.13	-2.13	-0.43
5,365.0	12.70	150.10	5,055.4	-1,386.8	958.1	1,685.5	3.09	-3.09	0.53
5,458.0	10.50	150.90	5,146.5	-1,403.0	967.4	1,704.1	2.37	-2.37	0.86
5,552.0	8.50	150.50	5,239.2	-1,416.6	975.0	1,719.5	2.13	-2.13	-0.43
5,645.0	6.10	150.90	5,331.4	-1,426.9	980.7	1,731.3	2.58	-2.58	0.43
5,738.0	4.00	142.60	5,424.1	-1,433.8	985.1	1,739.4	2.39	-2.26	-8.92
5,832.0	2.20	128.90	5,517.9	-1,437.5	988.5	1,744.4	2.06	-1.91	-14.57
5,925.0	1.20	109.10	5,610.9	-1,438.9	990.8	1,746.9	1.23	-1.08	-21.29
6,019.0	0.80	251.10	5,704.9	-1,439.5	991.1	1,747.6	2.02	-0.43	151.06

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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)
6,113.0	0.90	243.10	5,798.9	-1,440.0	989.8	1,747.3	0.16	0.11	-8.51
6,205.0	0.90	237.50	5,890.9	-1,440.7	988.6	1,747.1	0.10	0.00	-6.09
6,298.0	1.10	239.90	5,983.9	-1,441.6	987.2	1,747.0	0.22	0.22	2.58
6,313.6	1.03	239.70	5,999.5	-1,441.7	987.0	1,747.0	0.44	-0.44	-1.25
PERMIT TARGET BHL 50'FSL, 2617'FWL									
6,313.7	1.03	239.70	5,999.6	-1,441.7	987.0	1,747.0	0.00	0.00	0.00
DRILL TARGET BHL 75'FSL, 2592'FWL									
6,390.0	0.70	238.20	6,075.8	-1,442.3	986.0	1,746.9	0.44	-0.44	-1.97
6,483.0	0.50	225.80	6,168.8	-1,442.9	985.2	1,746.9	0.26	-0.22	-13.33
6,576.0	0.70	221.90	6,261.8	-1,443.6	984.5	1,747.1	0.22	0.22	-4.19
6,669.0	0.50	202.90	6,354.8	-1,444.4	984.0	1,747.5	0.30	-0.22	-20.43
6,763.0	0.40	206.20	6,448.8	-1,445.1	983.7	1,747.8	0.11	-0.11	3.51
6,856.0	0.40	206.20	6,541.8	-1,445.7	983.4	1,748.1	0.00	0.00	0.00
6,949.0	0.60	221.90	6,634.8	-1,446.3	982.9	1,748.4	0.26	0.22	16.88
7,042.0	0.60	221.90	6,727.8	-1,447.0	982.3	1,748.6	0.00	0.00	0.00
7,136.0	0.70	210.50	6,821.8	-1,447.9	981.7	1,749.0	0.17	0.11	-12.13
7,229.0	0.70	247.80	6,914.8	-1,448.6	980.8	1,749.1	0.48	0.00	40.11
7,322.0	0.60	214.50	7,007.8	-1,449.2	980.0	1,749.1	0.41	-0.11	-35.81
7,415.0	0.30	238.70	7,100.8	-1,449.7	979.6	1,749.3	0.38	-0.32	26.02
7,508.0	0.30	178.50	7,193.8	-1,450.1	979.4	1,749.4	0.32	0.00	-64.73
7,602.0	0.40	211.10	7,287.8	-1,450.6	979.2	1,749.8	0.23	0.11	34.68
7,695.0	0.60	209.20	7,380.8	-1,451.3	978.8	1,750.1	0.22	0.22	-2.04
7,773.0	0.60	209.20	7,458.8	-1,452.1	978.4	1,750.5	0.00	0.00	0.00
HARDLINE 75'S & E OF BHL									

Checked By: _____ Approved By: _____ Date: _____