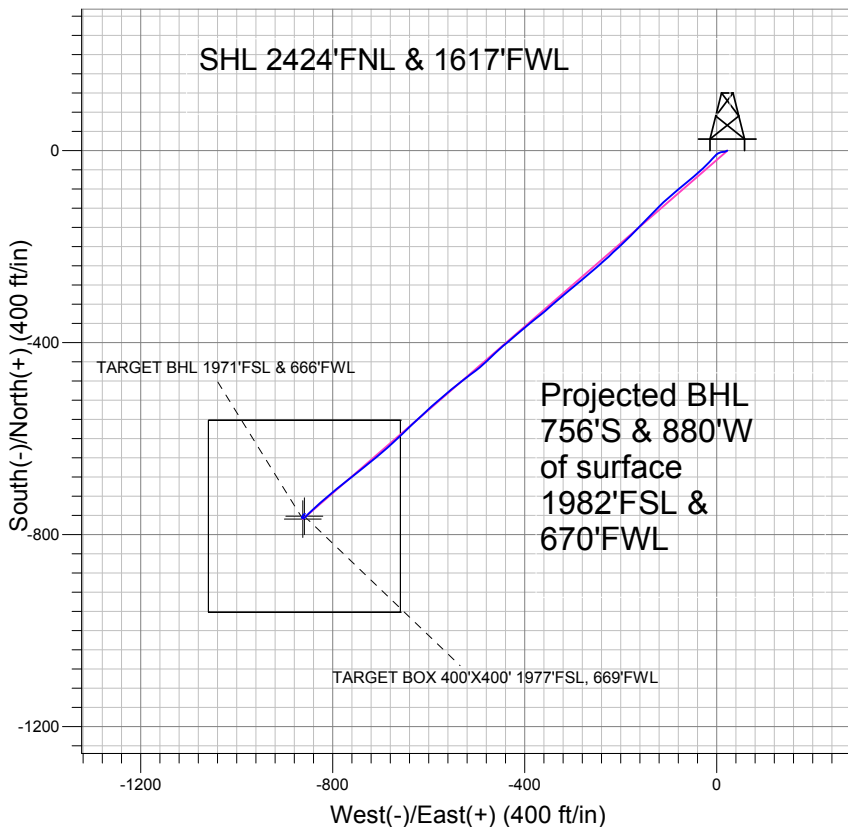
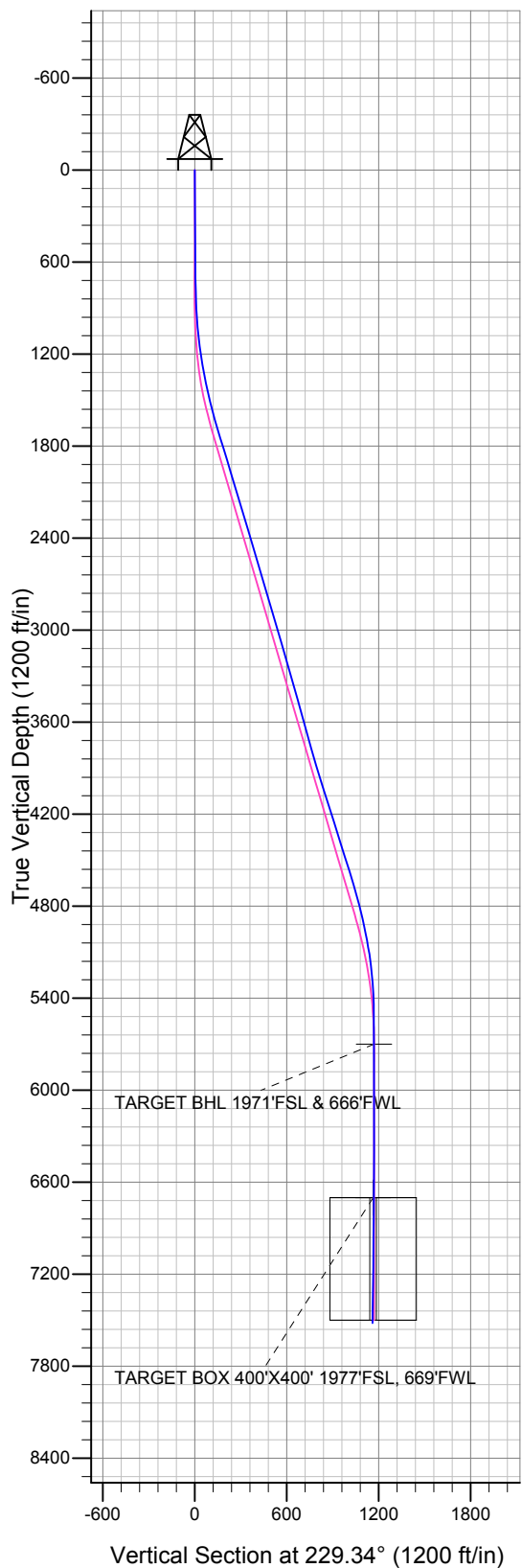


PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- Carlson 13-2D, Wellbore #1, Plan #2 (8-23-10) V0
- Wellbore #1

Final Survey Plot

Projected Final Survey -
7676'MD & 7518'TVD @ 1160' VS
1.1 deg Inc 53.5 deg AZ

Project: SEC.2-T6N-R66W
Site: Anderson 2GD Pad Sec.2-T6N-R66W
Well: Carlson 13-2D
Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T6N-R66W

Anderson 2GD Pad Sec.2-T6N-R66W

Carlson 13-2D

Wellbore #1

Survey: Survey #1

Standard Survey Report

30 December, 2010

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Site Anderson 2GD Pad Sec.2-T6N-R66W
Project:	SEC.2-T6N-R66W	TVD Reference:	WELL @ 4888.0ft (Original Well Elev)
Site:	Anderson 2GD Pad Sec.2-T6N-R66W	MD Reference:	WELL @ 4888.0ft (Original Well Elev)
Well:	Carlson 13-2D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.2-T6N-R66W, 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	Anderson 2GD Pad Sec.2-T6N-R66W				
Site Position:		Northing:	1,432,293.22 ft	Latitude:	40° 31' 3.432 N
From:	Lat/Long	Easting:	3,208,734.72 ft	Longitude:	104° 44' 57.192 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.49 °

Well	Carlson 13-2D					
Well Position	+N-S	0.0 ft	Northing:	1,432,293.40 ft	Latitude:	40° 31' 3.432 N
	+E-W	22.2 ft	Easting:	3,208,756.96 ft	Longitude:	104° 44' 56.904 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,875.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/23/2010	8.98	67.18	53,280

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	22.2	229.34	

Survey Program	Date	12/30/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
702.0	7,676.0	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	22.2	0.0	0.00	0.00	0.00	
702.0	1.00	249.40	702.0	-2.2	16.5	5.8	0.14	0.14	0.00	
795.0	1.30	273.90	794.9	-2.4	14.7	7.3	0.61	0.32	26.34	
888.0	3.00	262.90	887.9	-2.6	11.2	10.0	1.87	1.83	-11.83	
982.0	5.10	246.90	981.6	-4.5	4.9	16.1	2.52	2.23	-17.02	
1,075.0	5.80	223.90	1,074.2	-9.6	-2.1	24.7	2.45	0.75	-24.73	
1,168.0	7.60	224.10	1,166.6	-17.4	-9.7	35.5	1.94	1.94	0.22	
1,261.0	9.50	224.00	1,258.6	-27.3	-19.3	49.3	2.04	2.04	-0.11	
1,355.0	10.80	226.40	1,351.1	-39.0	-31.0	65.8	1.45	1.38	2.55	
1,448.0	12.40	230.10	1,442.2	-51.4	-45.0	84.5	1.90	1.72	3.98	
1,541.0	14.50	230.10	1,532.6	-65.2	-61.6	106.1	2.26	2.26	0.00	
1,634.0	16.40	230.20	1,622.3	-81.1	-80.6	130.9	2.04	2.04	0.11	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Site Anderson 2GD Pad Sec.2-T6N-R66W
Project:	SEC.2-T6N-R66W	TVD Reference:	WELL @ 4888.0ft (Original Well Elev)
Site:	Anderson 2GD Pad Sec.2-T6N-R66W	MD Reference:	WELL @ 4888.0ft (Original Well Elev)
Well:	Carlson 13-2D	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)
1,728.0	16.90	229.40	1,712.3	-98.5	-101.2	157.8	0.59	0.53	-0.85
1,821.0	16.70	224.40	1,801.4	-116.8	-120.8	184.6	1.57	-0.22	-5.38
1,914.0	16.80	223.60	1,890.4	-136.1	-139.4	211.3	0.27	0.11	-0.86
2,007.0	17.20	224.20	1,979.3	-155.7	-158.3	238.4	0.47	0.43	0.65
2,100.0	17.00	224.50	2,068.2	-175.3	-177.4	265.6	0.24	-0.22	0.32
2,193.0	16.40	227.30	2,157.3	-193.9	-196.6	292.3	1.08	-0.65	3.01
2,286.0	16.00	226.90	2,246.6	-211.5	-215.6	318.2	0.45	-0.43	-0.43
2,379.0	17.30	228.10	2,335.7	-229.5	-235.2	344.9	1.45	1.40	1.29
2,472.0	16.70	228.90	2,424.7	-247.5	-255.6	372.1	0.69	-0.65	0.86
2,565.0	16.10	229.70	2,513.9	-264.7	-275.5	398.3	0.69	-0.65	0.86
2,658.0	16.40	231.30	2,603.2	-281.2	-295.6	424.3	0.58	0.32	1.72
2,752.0	16.90	230.30	2,693.2	-298.2	-316.4	451.2	0.61	0.53	-1.06
2,845.0	16.40	227.80	2,782.3	-315.7	-336.6	477.9	0.94	-0.54	-2.69
2,938.0	16.20	229.70	2,871.6	-332.9	-356.2	504.0	0.61	-0.22	2.04
3,031.0	17.30	232.00	2,960.6	-349.8	-377.0	530.8	1.38	1.18	2.47
3,124.0	15.80	230.00	3,049.8	-366.5	-397.6	557.2	1.73	-1.61	-2.15
3,217.0	15.50	228.80	3,139.3	-382.8	-416.6	582.3	0.47	-0.32	-1.29
3,311.0	16.10	229.50	3,229.8	-399.5	-436.0	607.9	0.67	0.64	0.74
3,404.0	15.90	229.50	3,319.2	-416.2	-455.5	633.6	0.22	-0.22	0.00
3,498.0	16.10	224.50	3,409.5	-433.8	-474.4	659.4	1.48	0.21	-5.32
3,591.0	15.10	230.80	3,499.1	-450.7	-492.8	684.4	2.11	-1.08	6.77
3,684.0	15.80	233.70	3,588.8	-465.8	-512.4	709.1	1.12	0.75	3.12
3,777.0	16.00	232.00	3,678.2	-481.2	-532.7	734.5	0.54	0.22	-1.83
3,871.0	15.80	230.70	3,768.6	-497.3	-552.8	760.3	0.43	-0.21	-1.38
3,964.0	16.90	228.90	3,857.8	-514.2	-572.8	786.5	1.30	1.18	-1.94
4,057.0	16.40	229.10	3,946.9	-531.7	-592.9	813.1	0.54	-0.54	0.22
4,150.0	17.90	227.00	4,035.8	-550.0	-613.3	840.5	1.74	1.61	-2.26
4,243.0	17.80	226.10	4,124.3	-569.6	-634.0	869.0	0.32	-0.11	-0.97
4,336.0	17.80	226.20	4,212.9	-589.3	-654.5	897.4	0.03	0.00	0.11
4,430.0	17.20	227.00	4,302.5	-608.8	-675.1	925.6	0.69	-0.64	0.85
4,523.0	17.20	228.90	4,391.4	-627.2	-695.5	953.1	0.60	0.00	2.04
4,616.0	17.70	231.60	4,480.1	-645.0	-716.9	981.0	1.02	0.54	2.90
4,709.0	17.50	232.60	4,568.7	-662.3	-739.1	1,009.1	0.39	-0.22	1.08
4,802.0	16.80	230.40	4,657.6	-679.3	-760.6	1,036.5	1.03	-0.75	-2.37
4,895.0	15.30	230.40	4,747.0	-695.7	-780.4	1,062.2	1.61	-1.61	0.00
4,989.0	13.30	230.60	4,838.1	-710.5	-798.3	1,085.4	2.13	-2.13	0.21
5,082.0	12.00	230.60	4,928.8	-723.4	-814.0	1,105.7	1.40	-1.40	0.00
5,176.0	10.70	227.80	5,021.0	-735.5	-828.0	1,124.2	1.50	-1.38	-2.98
5,269.0	8.80	228.70	5,112.6	-746.0	-839.8	1,140.0	2.05	-2.04	0.97
5,362.0	6.20	220.80	5,204.8	-754.5	-848.4	1,152.1	3.00	-2.80	-8.49
5,455.0	4.40	228.10	5,297.4	-760.7	-854.3	1,160.6	2.06	-1.94	7.85
5,549.0	3.10	228.30	5,391.2	-764.8	-858.9	1,166.7	1.38	-1.38	0.21
5,642.0	0.50	313.60	5,484.2	-766.2	-861.1	1,169.3	3.33	-2.80	91.72
5,828.0	0.80	321.30	5,670.1	-764.6	-862.5	1,169.3	0.17	0.16	4.14
5,857.8	0.69	316.18	5,700.0	-764.3	-862.8	1,169.3	0.42	-0.36	-17.16
TARGET BHL 1971'FSL & 666'FWL									
6,013.0	0.40	248.00	5,855.1	-763.8	-863.9	1,169.9	0.42	-0.19	-43.94
6,197.0	0.00	197.30	6,039.1	-764.1	-864.5	1,170.5	0.22	-0.22	0.00
6,384.0	0.10	255.90	6,226.1	-764.1	-864.7	1,170.7	0.05	0.05	0.00
6,570.0	0.10	108.30	6,412.1	-764.2	-864.7	1,170.7	0.10	0.00	-79.35
6,756.0	0.40	62.10	6,598.1	-763.9	-863.9	1,170.0	0.18	0.16	-24.84
6,857.9	0.44	47.18	6,700.0	-763.5	-863.3	1,169.3	0.12	0.04	-14.64
TARGET BOX 400'X400' 1977'FSL, 669'FWL									

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Well:	Carlson 13-2D	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)
6,942.0	0.50	37.40	6,784.1	-763.0	-862.9	1,168.6	0.12	0.07	-11.63
7,128.0	0.40	5.80	6,970.1	-761.7	-862.3	1,167.3	0.14	-0.05	-16.99
7,316.0	0.50	11.50	7,158.1	-760.2	-862.1	1,166.2	0.06	0.05	3.03
7,503.0	1.10	47.90	7,345.1	-758.2	-860.6	1,163.7	0.41	0.32	19.47
7,626.0	1.10	53.50	7,468.1	-756.7	-858.8	1,161.4	0.09	0.00	4.55
7,676.0	1.10	53.50	7,518.1	-756.2	-858.0	1,160.4	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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