

Well Name: **Knieval 13-12D**

Surface Location: Knieval 23-12D Pad Sec.12-T6N-R67W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

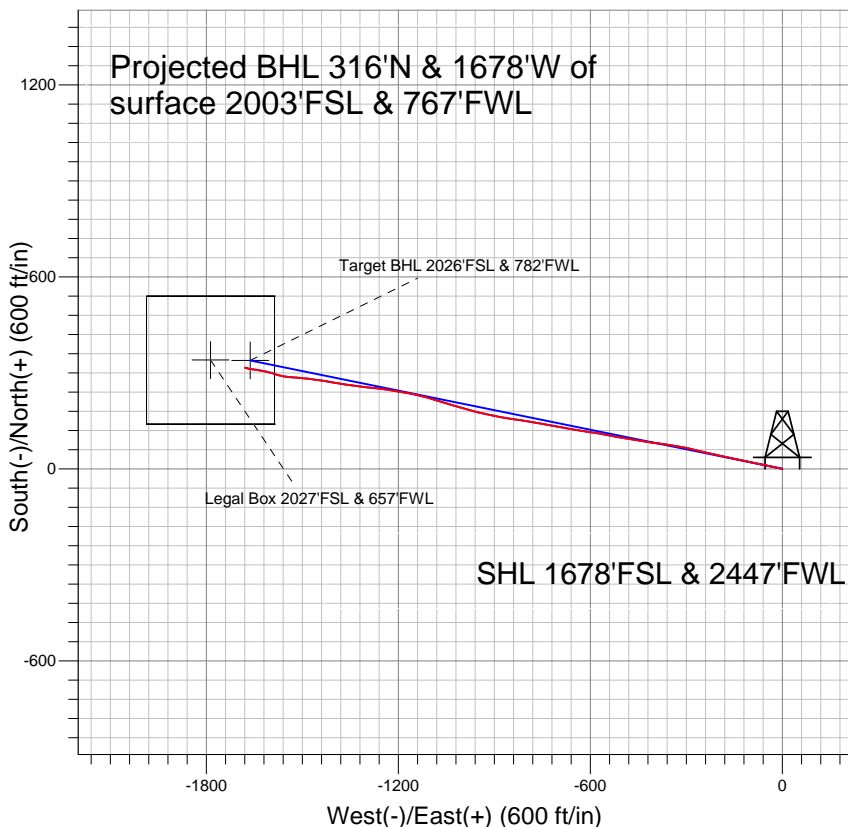
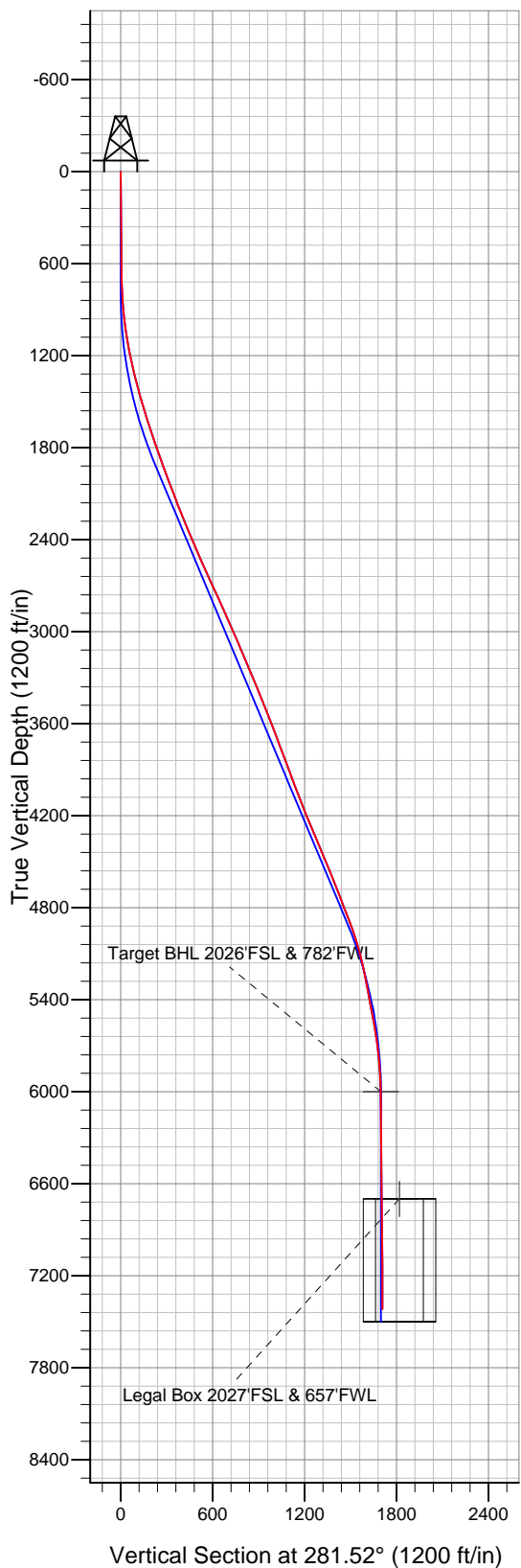
Ground Elevation: 4866.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1425278.69	3182868.34	40.498930	-104.842440

Original Well Elev WELL @ 4879.0ft (Original Well Elev)

Slot

PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- x Knieval 13-12D, Wellbore #1, Plan #3 (2-15-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7718'MD & 7418'TVD @ 1708'VS
 0.3 deg Inc 50.9 deg AZ

Project: SEC.12-T6N-R67W
 Site: Knieval 23-12D Pad Sec.12-T6N-R67W
 Well: Knieval 13-12D
 Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

Knieval 23-12D Pad Sec.12-T6N-R67W

Knieval 13-12D

Wellbore #1

Survey: Survey #1

Standard Survey Report

31 May, 2011

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 13-12D
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4879.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4879.0ft (Original Well Elev)
Well:	Knievel 13-12D	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	Knievel 23-12D Pad Sec.12-T6N-R67W				
Site Position:		Northing:	1,425,300.57 ft	Latitude:	40.498990
From:	Lat/Long	Easting:	3,182,868.18 ft	Longitude:	-104.842440
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.42 °

Well	Knievel 13-12D					
Well Position	+N-S	0.0 ft	Northing:	1,425,278.69 ft	Latitude:	40.498930
	+E-W	0.0 ft	Easting:	3,182,868.34 ft	Longitude:	-104.842440
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,866.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/21/2011	8.96	67.13	53,207

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 (°)	
	6,000.0	0.0	0.0	281.52	

Survey Program	Date 5/31/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
705.0	7,718.0	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
705.0	1.00	284.40	705.0	1.5	-6.0	6.1	0.14	0.14	0.00
801.0	3.50	278.00	800.9	2.1	-9.7	9.9	2.61	2.60	-6.67
896.0	5.40	282.50	895.6	3.5	-16.9	17.3	2.03	2.00	4.74
991.0	6.90	281.60	990.0	5.6	-26.9	27.4	1.58	1.58	-0.95
1,086.0	8.80	280.70	1,084.1	8.1	-39.6	40.4	2.00	2.00	-0.95
1,181.0	10.50	283.70	1,177.8	11.5	-55.1	56.3	1.87	1.79	3.16
1,276.0	12.90	281.20	1,270.8	15.6	-74.0	75.6	2.58	2.53	-2.63
1,371.0	14.40	282.50	1,363.1	20.3	-95.9	98.0	1.61	1.58	1.37
1,466.0	16.10	282.10	1,454.8	25.6	-120.3	123.0	1.79	1.79	-0.42
1,561.0	17.30	280.70	1,545.8	31.0	-147.1	150.3	1.33	1.26	-1.47
1,656.0	18.40	281.20	1,636.2	36.5	-175.7	179.4	1.17	1.16	0.53

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 13-12D
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4879.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4879.0ft (Original Well Elev)
Well:	Knievel 13-12D	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)
1,751.0	18.30	283.20	1,726.4	42.8	-204.9	209.3	0.67	-0.11	2.11
1,845.0	19.30	283.90	1,815.4	49.9	-234.3	239.6	1.09	1.06	0.74
1,940.0	19.60	283.50	1,904.9	57.4	-265.1	271.2	0.35	0.32	-0.42
2,035.0	20.40	281.80	1,994.2	64.5	-296.8	303.7	1.04	0.84	-1.79
2,130.0	21.50	279.90	2,082.9	70.9	-330.1	337.6	1.36	1.16	-2.00
2,225.0	21.20	278.20	2,171.4	76.3	-364.3	372.2	0.72	-0.32	-1.79
2,320.0	22.30	277.20	2,259.6	81.0	-399.2	407.3	1.22	1.16	-1.05
2,415.0	22.30	280.00	2,347.5	86.4	-434.8	443.3	1.12	0.00	2.95
2,510.0	23.30	279.10	2,435.1	92.5	-471.1	480.1	1.11	1.05	-0.95
2,606.0	23.60	279.30	2,523.2	98.6	-508.8	518.3	0.32	0.31	0.21
2,700.0	24.40	280.90	2,609.1	105.4	-546.5	556.5	1.10	0.85	1.70
2,795.0	26.10	279.50	2,695.0	112.5	-586.3	597.0	1.90	1.79	-1.47
2,890.0	23.90	278.40	2,781.1	118.8	-626.0	637.1	2.37	-2.32	-1.16
2,985.0	23.20	279.80	2,868.2	124.8	-663.5	675.0	0.94	-0.74	1.47
3,080.0	23.80	280.80	2,955.3	131.5	-700.7	712.9	0.76	0.63	1.05
3,175.0	24.50	280.10	3,042.0	138.6	-739.0	751.7	0.80	0.74	-0.74
3,270.0	23.00	280.30	3,128.9	145.4	-776.6	790.0	1.58	-1.58	0.21
3,365.0	22.70	277.80	3,216.5	151.2	-813.0	826.8	1.07	-0.32	-2.63
3,458.0	22.70	278.80	3,302.3	156.4	-848.5	862.7	0.41	0.00	1.08
3,553.0	22.40	280.40	3,390.0	162.4	-884.5	899.1	0.72	-0.32	1.68
3,648.0	22.20	282.50	3,477.9	169.6	-919.8	935.1	0.86	-0.21	2.21
3,743.0	21.60	283.90	3,566.0	177.7	-954.3	970.5	0.84	-0.63	1.47
3,838.0	20.00	286.30	3,654.9	186.4	-986.9	1,004.2	1.91	-1.68	2.53
3,933.0	20.80	286.50	3,743.9	195.8	-1,018.6	1,037.2	0.85	0.84	0.21
4,028.0	21.00	286.10	3,832.6	205.3	-1,051.2	1,071.0	0.26	0.21	-0.42
4,123.0	20.50	287.00	3,921.5	214.9	-1,083.4	1,104.5	0.62	-0.53	0.95
4,218.0	20.70	286.20	4,010.4	224.4	-1,115.4	1,137.8	0.36	0.21	-0.84
4,313.0	21.40	281.20	4,099.1	232.5	-1,148.6	1,171.9	2.03	0.74	-5.26
4,408.0	22.40	280.00	4,187.2	239.0	-1,183.4	1,207.3	1.15	1.05	-1.26
4,503.0	22.20	278.60	4,275.1	244.8	-1,219.0	1,243.3	0.60	-0.21	-1.47
4,598.0	22.90	278.00	4,362.8	250.1	-1,255.0	1,279.7	0.78	0.74	-0.63
4,693.0	23.70	276.00	4,450.1	254.6	-1,292.3	1,317.1	1.18	0.84	-2.11
4,786.0	22.60	276.90	4,535.6	258.7	-1,328.6	1,353.6	1.24	-1.18	0.97
4,881.0	21.20	277.60	4,623.8	263.2	-1,363.8	1,388.9	1.50	-1.47	0.74
4,976.0	20.70	281.00	4,712.5	268.7	-1,397.3	1,422.8	1.38	-0.53	3.58
5,071.0	21.80	279.40	4,801.0	274.8	-1,431.2	1,457.2	1.31	1.16	-1.68
5,166.0	21.50	277.00	4,889.3	279.8	-1,465.9	1,492.2	0.98	-0.32	-2.53
5,261.0	18.50	275.40	4,978.6	283.3	-1,498.2	1,524.6	3.21	-3.16	-1.68
5,356.0	15.60	274.60	5,069.4	285.7	-1,525.9	1,552.2	3.06	-3.05	-0.84
5,451.0	13.10	275.90	5,161.4	287.9	-1,549.4	1,575.6	2.65	-2.63	1.37
5,546.0	11.60	284.90	5,254.2	291.4	-1,569.3	1,595.9	2.56	-1.58	9.47
5,641.0	10.70	288.00	5,347.4	296.6	-1,586.9	1,614.2	1.14	-0.95	3.26
5,736.0	10.00	285.40	5,440.9	301.5	-1,603.3	1,631.2	0.89	-0.74	-2.74
5,831.0	10.80	279.80	5,534.3	305.2	-1,620.0	1,648.3	1.36	0.84	-5.89
5,926.0	8.70	279.10	5,628.0	307.9	-1,635.8	1,664.4	2.21	-2.21	-0.74
6,021.0	7.10	278.90	5,722.1	309.9	-1,648.7	1,677.4	1.68	-1.68	-0.21
6,116.0	5.00	280.00	5,816.5	311.6	-1,658.6	1,687.4	2.21	-2.21	1.16
6,210.0	2.40	271.00	5,910.3	312.3	-1,664.6	1,693.5	2.83	-2.77	-9.57
6,299.6	0.96	252.95	5,999.8	312.1	-1,667.2	1,696.0	1.69	-1.60	-20.15
Target BHL 2026'FSL & 782'FWL									
6,304.0	0.90	250.60	6,004.3	312.1	-1,667.3	1,696.0	1.69	-1.45	-52.87
6,400.0	0.70	231.40	6,100.3	312.3	-1,668.4	1,697.1	0.98	-0.21	73.75
6,494.0	0.60	282.00	6,194.3	312.9	-1,669.2	1,698.1	0.48	-0.11	-41.91

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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)
6,589.0	0.60	326.70	6,289.3	313.4	-1,670.0	1,698.9	0.48	0.00	47.05
6,684.0	0.80	295.50	6,384.2	314.1	-1,670.8	1,699.9	0.45	0.21	-32.84
6,779.0	0.40	307.30	6,479.2	314.6	-1,671.7	1,700.8	0.44	-0.42	12.42
6,874.0	0.40	288.80	6,574.2	314.9	-1,672.3	1,701.5	0.14	0.00	-19.47
6,969.0	0.60	315.40	6,669.2	315.3	-1,672.9	1,702.2	0.32	0.21	28.00
7,001.1	0.62	297.89	6,701.3	315.5	-1,673.2	1,702.5	0.58	0.07	-54.61
Legal Box 2027'FSL & 657'FWL									
7,064.0	0.80	271.60	6,764.2	315.7	-1,674.0	1,703.3	0.58	0.28	-41.77
7,159.0	0.40	263.80	6,859.2	315.7	-1,674.9	1,704.2	0.43	-0.42	-8.21
7,254.0	0.40	280.40	6,954.2	315.7	-1,675.6	1,704.9	0.12	0.00	17.47
7,348.0	0.80	268.40	7,048.2	315.8	-1,676.6	1,705.9	0.44	0.43	-12.77
7,443.0	0.40	262.30	7,143.2	315.7	-1,677.6	1,706.8	0.43	-0.42	-6.42
7,538.0	0.20	250.30	7,238.2	315.6	-1,678.1	1,707.3	0.22	-0.21	-12.63
7,633.0	0.40	344.20	7,333.2	315.9	-1,678.3	1,707.6	0.48	0.21	98.84
7,718.0	0.30	50.90	7,418.2	316.3	-1,678.2	1,707.6	0.46	-0.12	78.47

Checked By: _____	Approved By: _____	Date: _____
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