

Well Name: **Knievel 12BD**

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

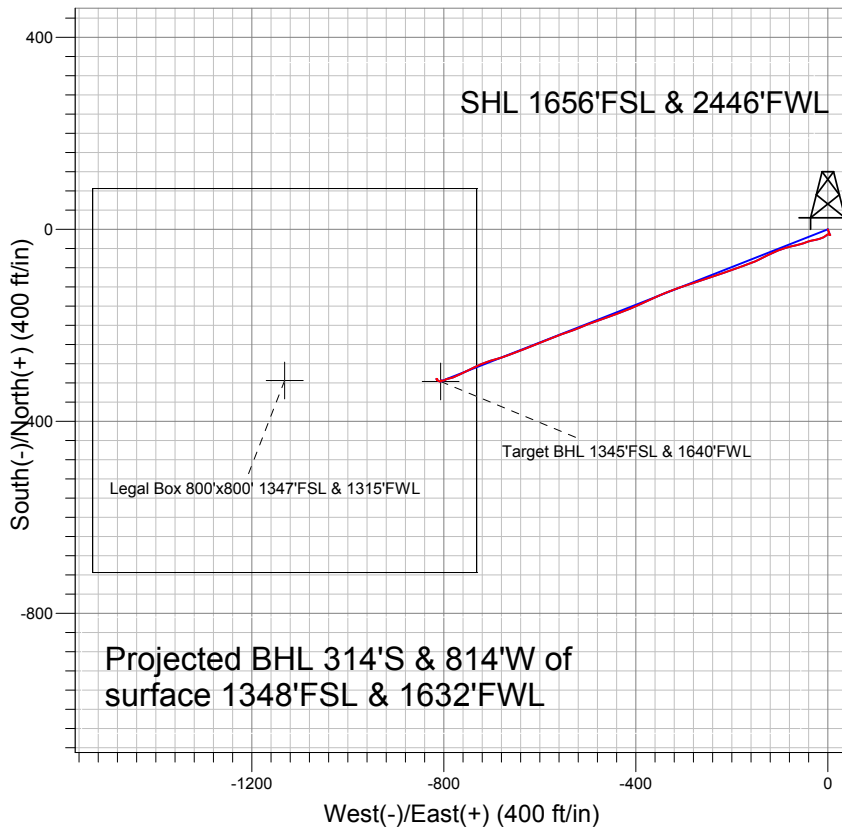
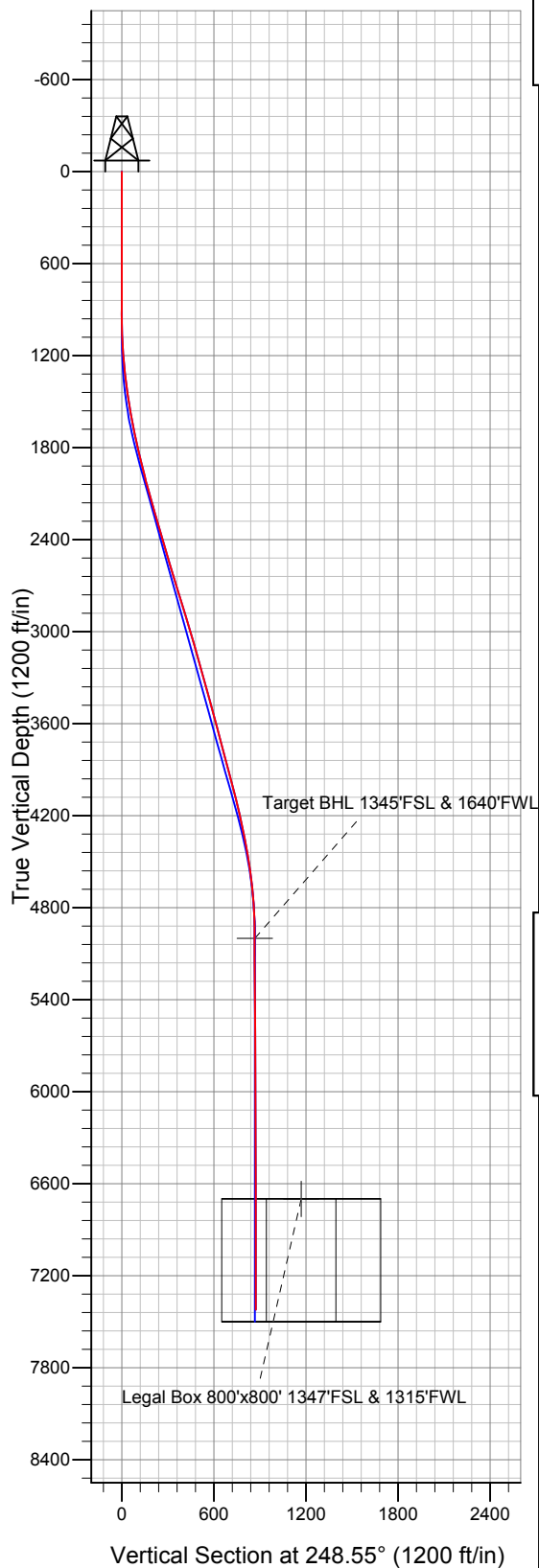
Ground Elevation: 4867.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1425256.84	3182868.50	40.498870	-104.842440

Original Well Elev WELL @ 4880.0ft (Original Well Elev)

Slot

PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- ✕ Knievel 12BD, Wellbore #1, Plan #3 (2-15-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7530'MD & 7423'TVD @ 873'VS
 0.1 deg Inc 154.6 deg AZ

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



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

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

Kniewel 12BD

Wellbore #1

Survey: Survey #1

Standard Survey Report

23 May, 2011

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 12BD
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4880.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4880.0ft (Original Well Elev)
Well:	Knievel 12BD	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 12BD					
Well Position	+N-S	0.0 ft	Northing:	1,425,256.84 ft	Latitude:	40.498870
	+E-W	0.0 ft	Easting:	3,182,868.50 ft	Longitude:	-104.842440
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,867.0 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 (°)	
	5,000.0	0.0	0.0	248.55	

Survey Program	Date 5/23/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
770.0	7,530.0	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
770.0	1.80	157.10	769.9	-11.1	4.7	-0.3	0.23	0.23	0.00
865.0	0.90	306.50	864.9	-12.1	4.7	0.1	2.75	-0.95	157.26
959.0	1.00	301.40	958.8	-11.2	3.4	0.9	0.14	0.11	-5.43
1,054.0	1.00	297.00	1,053.8	-10.4	1.9	2.0	0.08	0.00	-4.63
1,149.0	3.50	240.00	1,148.8	-11.5	-1.3	5.4	3.23	2.63	-60.00
1,244.0	5.00	234.80	1,243.5	-15.3	-7.2	12.3	1.63	1.58	-5.47
1,339.0	6.70	252.70	1,338.0	-19.3	-15.9	21.8	2.60	1.79	18.84
1,434.0	8.70	259.10	1,432.1	-22.3	-28.2	34.4	2.29	2.11	6.74
1,529.0	9.50	251.30	1,526.0	-26.2	-42.7	49.3	1.55	0.84	-8.21
1,624.0	10.90	254.20	1,619.5	-31.2	-58.8	66.1	1.57	1.47	3.05
1,719.0	11.80	257.00	1,712.6	-35.8	-76.9	84.7	1.11	0.95	2.95

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 12BD
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4880.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4880.0ft (Original Well Elev)
Well:	Knievel 12BD	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)
1,814.0	13.00	251.00	1,805.4	-41.5	-96.4	104.9	1.85	1.26	-6.32
1,909.0	13.50	244.10	1,897.9	-49.8	-116.5	126.7	1.74	0.53	-7.26
2,004.0	14.10	242.40	1,990.1	-60.0	-136.8	149.2	0.76	0.63	-1.79
2,099.0	15.80	249.90	2,081.9	-69.8	-159.2	173.7	2.71	1.79	7.89
2,194.0	16.10	249.80	2,173.2	-78.8	-183.7	199.8	0.32	0.32	-0.11
2,289.0	15.70	250.90	2,264.6	-87.6	-208.2	225.8	0.53	-0.42	1.16
2,384.0	16.10	251.00	2,356.0	-96.1	-232.8	251.8	0.42	0.42	0.11
2,479.0	16.70	252.30	2,447.1	-104.5	-258.2	278.6	0.74	0.63	1.37
2,574.0	17.20	251.20	2,538.0	-113.2	-284.5	306.2	0.63	0.53	-1.16
2,669.0	16.70	251.10	2,628.9	-122.1	-310.8	333.9	0.53	-0.53	-0.11
2,764.0	16.70	248.60	2,719.9	-131.5	-336.4	361.2	0.76	0.00	-2.63
2,859.0	16.90	244.40	2,810.8	-142.5	-361.5	388.6	1.29	0.21	-4.42
2,954.0	16.60	245.50	2,901.8	-154.1	-386.3	415.9	0.46	-0.32	1.16
3,047.0	17.20	247.90	2,990.8	-164.7	-411.2	442.9	0.99	0.65	2.58
3,142.0	16.20	248.50	3,081.7	-174.9	-436.5	470.2	1.07	-1.05	0.63
3,237.0	15.40	251.20	3,173.2	-183.8	-460.8	496.1	1.14	-0.84	2.84
3,332.0	15.30	250.90	3,264.8	-192.0	-484.6	521.2	0.13	-0.11	-0.32
3,426.0	15.60	245.40	3,355.4	-201.3	-507.8	546.2	1.59	0.32	-5.85
3,521.0	15.70	251.70	3,446.9	-210.6	-531.6	571.8	1.79	0.11	6.63
3,616.0	15.20	249.80	3,538.4	-219.0	-555.5	597.1	0.75	-0.53	-2.00
3,711.0	14.50	247.10	3,630.3	-227.9	-578.1	621.4	1.04	-0.74	-2.84
3,806.0	14.90	249.50	3,722.1	-236.8	-600.5	645.5	0.77	0.42	2.53
3,901.0	14.90	248.10	3,814.0	-245.6	-623.3	670.0	0.38	0.00	-1.47
3,996.0	14.70	247.90	3,905.8	-254.7	-645.8	694.2	0.22	-0.21	-0.21
4,091.0	15.00	250.70	3,997.6	-263.3	-668.6	718.6	0.82	0.32	2.95
4,186.0	14.20	254.20	4,089.6	-270.6	-691.4	742.4	1.25	-0.84	3.68
4,281.0	12.80	250.20	4,181.9	-277.3	-712.5	764.6	1.77	-1.47	-4.21
4,375.0	12.40	244.90	4,273.7	-285.1	-731.4	785.0	1.30	-0.43	-5.64
4,470.0	10.40	244.30	4,366.8	-293.2	-748.4	803.8	2.11	-2.11	-0.63
4,565.0	9.80	242.50	4,460.3	-300.6	-763.3	820.4	0.71	-0.63	-1.89
4,660.0	8.40	249.30	4,554.1	-306.8	-777.0	835.4	1.86	-1.47	7.16
4,755.0	6.20	256.30	4,648.4	-310.5	-788.4	847.4	2.49	-2.32	7.37
4,848.0	4.60	243.10	4,740.9	-313.4	-796.7	856.1	2.17	-1.72	-14.19
4,943.0	3.40	265.20	4,835.7	-315.3	-802.9	862.6	2.03	-1.26	23.26
5,038.0	0.80	333.50	4,930.7	-315.0	-806.0	865.3	3.36	-2.74	71.89
5,107.3	0.26	109.27	5,000.0	-314.6	-806.0	865.2	1.44	-0.78	195.80
Target BHL 1345'FSL & 1640'FWL									
5,133.0	0.60	129.40	5,025.6	-314.7	-805.9	865.1	1.44	1.34	78.45
5,228.0	0.40	173.10	5,120.6	-315.3	-805.4	865.0	0.44	-0.21	46.00
5,323.0	0.50	199.20	5,215.6	-316.0	-805.5	865.3	0.24	0.11	27.47
5,418.0	0.40	228.20	5,310.6	-316.7	-805.9	865.9	0.26	-0.11	30.53
5,513.0	0.40	247.80	5,405.6	-317.0	-806.5	866.5	0.14	0.00	20.63
5,608.0	0.60	268.10	5,500.6	-317.1	-807.3	867.3	0.28	0.21	21.37
5,703.0	0.60	285.60	5,595.6	-317.0	-808.3	868.2	0.19	0.00	18.42
5,798.0	0.50	272.50	5,690.6	-316.9	-809.2	869.0	0.17	-0.11	-13.79
5,893.0	0.70	297.80	5,785.6	-316.6	-810.1	869.7	0.34	0.21	26.63
5,988.0	0.50	302.90	5,880.6	-316.1	-810.9	870.4	0.22	-0.21	5.37
6,083.0	0.40	288.50	5,975.6	-315.8	-811.6	870.9	0.16	-0.11	-15.16
6,178.0	0.50	296.50	6,070.6	-315.5	-812.3	871.4	0.12	0.11	8.42
6,273.0	0.40	332.90	6,165.6	-315.0	-812.8	871.7	0.31	-0.11	38.32
6,368.0	0.50	340.20	6,260.6	-314.3	-813.1	871.7	0.12	0.11	7.68
6,463.0	0.40	351.40	6,355.6	-313.6	-813.3	871.6	0.14	-0.11	11.79
6,558.0	0.50	357.50	6,450.6	-312.8	-813.4	871.4	0.12	0.11	6.42

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Survey									
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6,653.0	0.20	348.80	6,545.6	-312.3	-813.4	871.3	0.32	-0.32	-9.16
6,748.0	0.30	286.30	6,640.6	-312.0	-813.7	871.4	0.29	0.11	-65.79
6,809.7	0.50	293.44	6,702.3	-311.9	-814.1	871.8	0.33	0.32	11.57
Legal Box 800'x800' 1347'FSL & 1315'FWL									
6,842.0	0.60	295.30	6,734.6	-311.8	-814.4	872.0	0.33	0.32	5.77
6,937.0	0.30	259.20	6,829.6	-311.6	-815.1	872.6	0.42	-0.32	-38.00
7,032.0	0.20	250.50	6,924.6	-311.7	-815.5	873.0	0.11	-0.11	-9.16
7,127.0	0.20	80.10	7,019.6	-311.7	-815.5	873.0	0.42	0.00	-179.37
7,222.0	0.50	129.80	7,114.6	-312.0	-815.0	872.6	0.42	0.32	52.32
7,317.0	0.40	172.10	7,209.6	-312.5	-814.6	872.5	0.36	-0.11	44.53
7,412.0	0.40	174.50	7,304.6	-313.2	-814.5	872.6	0.02	0.00	2.53
7,530.0	0.10	154.60	7,422.6	-313.7	-814.4	872.8	0.26	-0.25	-16.86

Checked By: _____	Approved By: _____	Date: _____
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