

Well Name: **Knieval 24-12D**

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

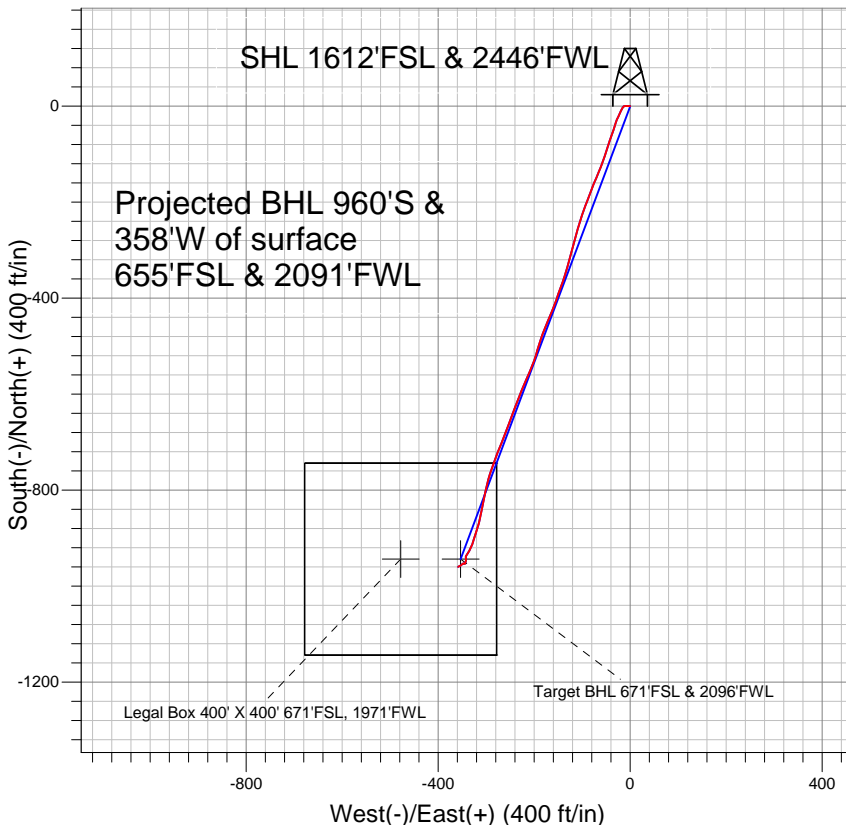
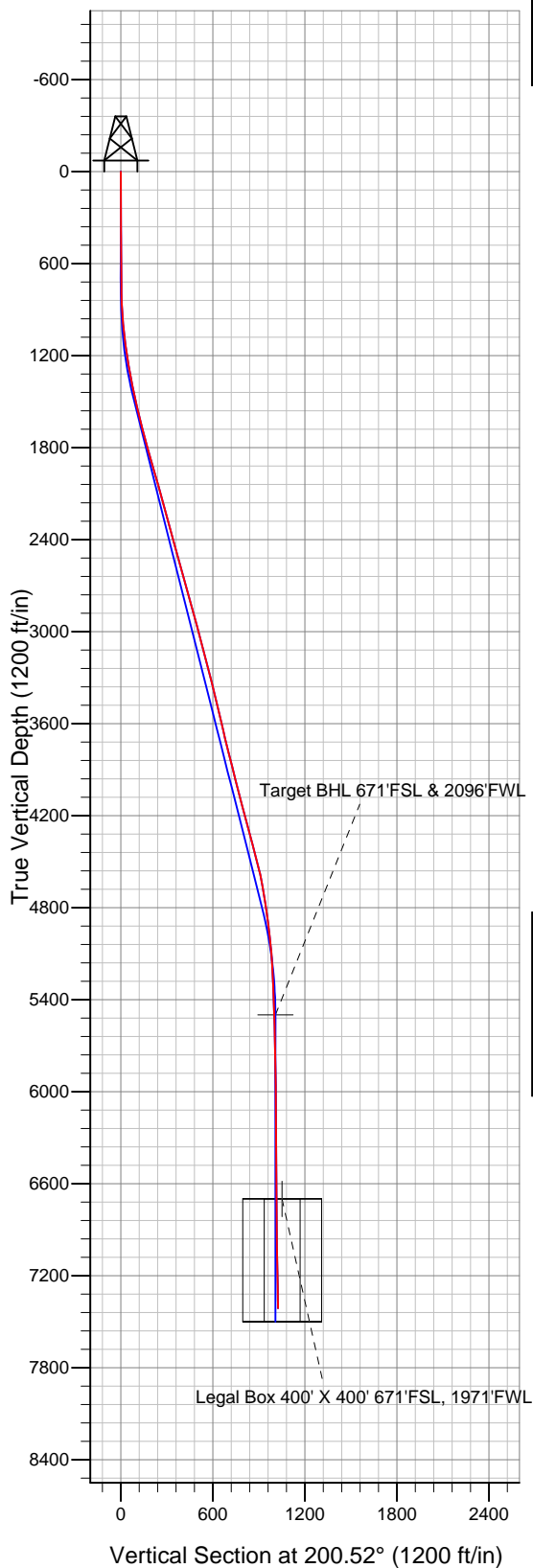
Ground Elevation: 4868.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1425213.13	3182868.83	40.498750	-104.842440

Original Well Elev WELL @ 4881.0ft (Original Well Elev)

Slot

PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- ✕ Knieval 24-12D, Wellbore #1, Plan #3 (2-15-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7532'MD & 7413'TVD @ 1025'VS
1.0 deg Inc 219.4 deg AZ

Project: SEC.12-T6N-R67W
Site: Knieval 23-12D Pad Sec.12-T6N-R67W
Well: Knieval 24-12D
Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

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

Knieval 24-12D

Wellbore #1

Survey: Survey #1

Standard Survey Report

13 May, 2011

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 24-12D
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Well:	Knievel 24-12D	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 24-12D					
Well Position	+N-S	0.0 ft	Northing:	1,425,213.13 ft	Latitude:	40.498750
	+E-W	0.0 ft	Easting:	3,182,868.83 ft	Longitude:	-104.842440
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,868.0 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 (°)	
	0.0	0.0	0.0	200.52	

Survey Program	Date 5/13/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
743.0	7,532.0	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
743.0	1.50	272.50	742.9	0.4	-9.7	3.0	0.20	0.20	0.00
838.0	3.00	244.90	837.8	-0.6	-13.2	5.2	1.90	1.58	-29.05
933.0	3.60	201.70	932.7	-4.4	-16.6	9.9	2.62	0.63	-45.47
1,028.0	6.00	207.10	1,027.4	-11.6	-19.9	17.8	2.57	2.53	5.68
1,123.0	7.80	205.40	1,121.7	-21.8	-25.0	29.2	1.91	1.89	-1.79
1,218.0	9.00	197.80	1,215.6	-34.7	-30.0	43.0	1.72	1.26	-8.00
1,313.0	10.10	198.50	1,309.3	-49.7	-34.9	58.8	1.16	1.16	0.74
1,407.0	11.60	200.30	1,401.6	-66.4	-40.8	76.5	1.64	1.60	1.91
1,502.0	12.60	195.90	1,494.5	-85.3	-47.0	96.4	1.43	1.05	-4.63
1,597.0	13.10	199.90	1,587.2	-105.4	-53.5	117.5	1.07	0.53	4.21
1,692.0	14.30	200.90	1,679.5	-126.5	-61.3	140.0	1.29	1.26	1.05

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Knievel 24-12D
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4881.0ft (Original Well Elev)
Site:	Knievel 23-12D Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4881.0ft (Original Well Elev)
Well:	Knievel 24-12D	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)
1,787.0	15.70	203.60	1,771.2	-149.2	-70.6	164.5	1.65	1.47	2.84
1,882.0	16.50	200.30	1,862.5	-173.7	-80.5	190.9	1.28	0.84	-3.47
1,977.0	16.00	200.50	1,953.7	-198.6	-89.7	217.4	0.53	-0.53	0.21
2,072.0	16.00	200.30	2,045.0	-223.1	-98.9	243.6	0.06	0.00	-0.21
2,167.0	15.60	195.80	2,136.4	-247.7	-106.9	269.4	1.36	-0.42	-4.74
2,262.0	15.10	195.20	2,228.0	-271.9	-113.6	294.5	0.55	-0.53	-0.63
2,357.0	15.00	194.90	2,319.8	-295.7	-120.0	319.1	0.13	-0.11	-0.32
2,451.0	15.10	195.70	2,410.6	-319.3	-126.5	343.4	0.25	0.11	0.85
2,547.0	14.90	196.20	2,503.3	-343.2	-133.3	368.1	0.25	-0.21	0.52
2,641.0	15.90	199.20	2,593.9	-366.9	-140.9	393.1	1.36	1.06	3.19
2,736.0	16.60	201.30	2,685.1	-391.9	-150.1	419.6	0.96	0.74	2.21
2,831.0	15.60	198.20	2,776.4	-416.7	-159.0	446.0	1.39	-1.05	-3.26
2,926.0	14.10	204.30	2,868.2	-439.3	-167.8	470.3	2.28	-1.58	6.42
3,020.0	15.50	203.00	2,959.1	-461.3	-177.4	494.3	1.53	1.49	-1.38
3,115.0	15.50	197.70	3,050.7	-485.1	-186.2	519.6	1.49	0.00	-5.58
3,210.0	14.00	195.40	3,142.5	-508.3	-193.1	543.7	1.69	-1.58	-2.42
3,305.0	14.20	200.60	3,234.7	-530.3	-200.3	566.8	1.35	0.21	5.47
3,400.0	14.10	202.70	3,326.8	-551.9	-208.8	590.1	0.55	-0.11	2.21
3,495.0	14.30	203.60	3,418.9	-573.3	-218.0	613.3	0.31	0.21	0.95
3,589.0	13.50	202.70	3,510.1	-594.1	-226.9	635.9	0.88	-0.85	-0.96
3,684.0	12.60	200.10	3,602.7	-614.0	-234.7	657.3	1.13	-0.95	-2.74
3,779.0	13.80	201.00	3,695.2	-634.3	-242.3	679.0	1.28	1.26	0.95
3,874.0	14.00	200.00	3,787.4	-655.7	-250.3	701.8	0.33	0.21	-1.05
3,969.0	14.60	201.00	3,879.4	-677.7	-258.6	725.3	0.68	0.63	1.05
4,064.0	14.30	202.80	3,971.4	-699.7	-267.4	749.0	0.57	-0.32	1.89
4,159.0	13.90	200.70	4,063.6	-721.2	-276.0	772.1	0.68	-0.42	-2.21
4,254.0	14.50	200.00	4,155.7	-743.0	-284.1	795.4	0.66	0.63	-0.74
4,348.0	15.30	198.50	4,246.5	-765.8	-292.0	819.6	0.94	0.85	-1.60
4,443.0	15.50	192.30	4,338.1	-790.1	-298.7	844.7	1.75	0.21	-6.53
4,538.0	15.70	191.20	4,429.6	-815.1	-303.9	869.9	0.38	0.21	-1.16
4,633.0	14.00	192.70	4,521.4	-839.0	-308.9	894.0	1.83	-1.79	1.58
4,728.0	11.30	191.20	4,614.1	-859.3	-313.3	914.6	2.86	-2.84	-1.58
4,823.0	9.30	196.30	4,707.6	-875.8	-317.2	931.4	2.31	-2.11	5.37
4,918.0	8.50	197.90	4,801.4	-889.8	-321.5	946.1	0.88	-0.84	1.68
5,013.0	7.30	198.10	4,895.5	-902.3	-325.6	959.1	1.26	-1.26	0.21
5,108.0	6.60	198.30	4,989.8	-913.2	-329.2	970.6	0.74	-0.74	0.21
5,202.0	4.60	208.90	5,083.4	-921.6	-332.7	979.8	2.39	-2.13	11.28
5,297.0	3.30	211.50	5,178.1	-927.3	-336.0	986.2	1.38	-1.37	2.74
5,392.0	2.90	212.50	5,273.0	-931.6	-338.7	991.2	0.42	-0.42	1.05
5,487.0	2.20	216.60	5,367.9	-935.1	-341.1	995.3	0.76	-0.74	4.32
5,582.0	1.60	194.70	5,462.9	-937.9	-342.5	998.4	0.98	-0.63	-23.05
5,619.3	1.63	183.29	5,500.1	-938.9	-342.6	999.4	0.87	0.09	-30.60
Target BHL 671'FSL & 2096'FWL									
5,677.0	1.80	167.50	5,557.8	-940.6	-342.5	1,001.0	0.87	0.29	-27.36
5,772.0	1.70	176.20	5,652.8	-943.5	-342.1	1,003.5	0.30	-0.11	9.16
5,866.0	1.30	191.90	5,746.7	-945.9	-342.2	1,005.8	0.61	-0.43	16.70
5,961.0	1.20	187.40	5,841.7	-948.0	-342.6	1,007.9	0.15	-0.11	-4.74
6,056.0	0.80	199.90	5,936.7	-949.6	-342.9	1,009.5	0.48	-0.42	13.16
6,151.0	0.80	189.70	6,031.7	-950.8	-343.2	1,010.8	0.15	0.00	-10.74
6,245.0	0.60	199.30	6,125.7	-952.0	-343.5	1,012.0	0.25	-0.21	10.21
6,340.0	0.30	211.60	6,220.7	-952.6	-343.8	1,012.7	0.33	-0.32	12.95
6,435.0	0.40	228.70	6,315.7	-953.1	-344.2	1,013.2	0.15	0.11	18.00
6,530.0	0.40	251.90	6,410.7	-953.4	-344.8	1,013.7	0.17	0.00	24.42

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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)
6,625.0	0.50	288.50	6,505.7	-953.4	-345.5	1,014.0	0.31	0.11	38.53
6,720.0	0.60	289.90	6,600.7	-953.1	-346.3	1,014.0	0.11	0.11	1.47
6,815.0	0.60	278.40	6,695.7	-952.8	-347.3	1,014.1	0.13	0.00	-12.11
6,820.4	0.58	276.95	6,701.1	-952.8	-347.3	1,014.1	0.42	-0.31	-27.03
Legal Box 400' X 400' 671'FSL, 1971'FWL									
6,910.0	0.40	237.60	6,790.7	-952.9	-348.1	1,014.5	0.42	-0.20	-43.90
7,005.0	0.80	242.60	6,885.7	-953.4	-348.9	1,015.2	0.42	0.42	5.26
7,100.0	1.20	224.90	6,980.7	-954.4	-350.2	1,016.6	0.53	0.42	-18.63
7,195.0	1.40	227.60	7,075.6	-955.9	-351.8	1,018.6	0.22	0.21	2.84
7,290.0	1.40	246.90	7,170.6	-957.1	-353.7	1,020.4	0.49	0.00	20.32
7,385.0	1.50	232.30	7,265.6	-958.4	-355.8	1,022.2	0.40	0.11	-15.37
7,480.0	1.20	255.80	7,360.5	-959.4	-357.7	1,023.9	0.66	-0.32	24.74
7,506.0	1.10	226.60	7,386.5	-959.6	-358.1	1,024.3	2.26	-0.38	-112.31
7,532.0	1.00	219.40	7,412.5	-959.9	-358.5	1,024.7	0.64	-0.38	-27.69

Checked By: _____ Approved By: _____ Date: _____