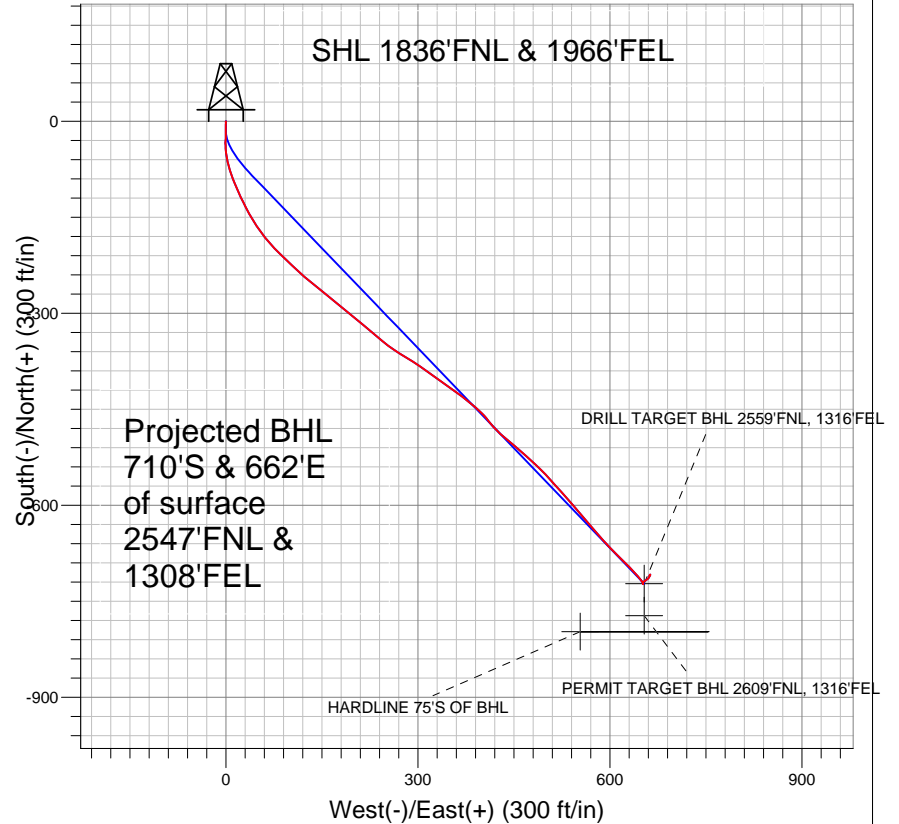
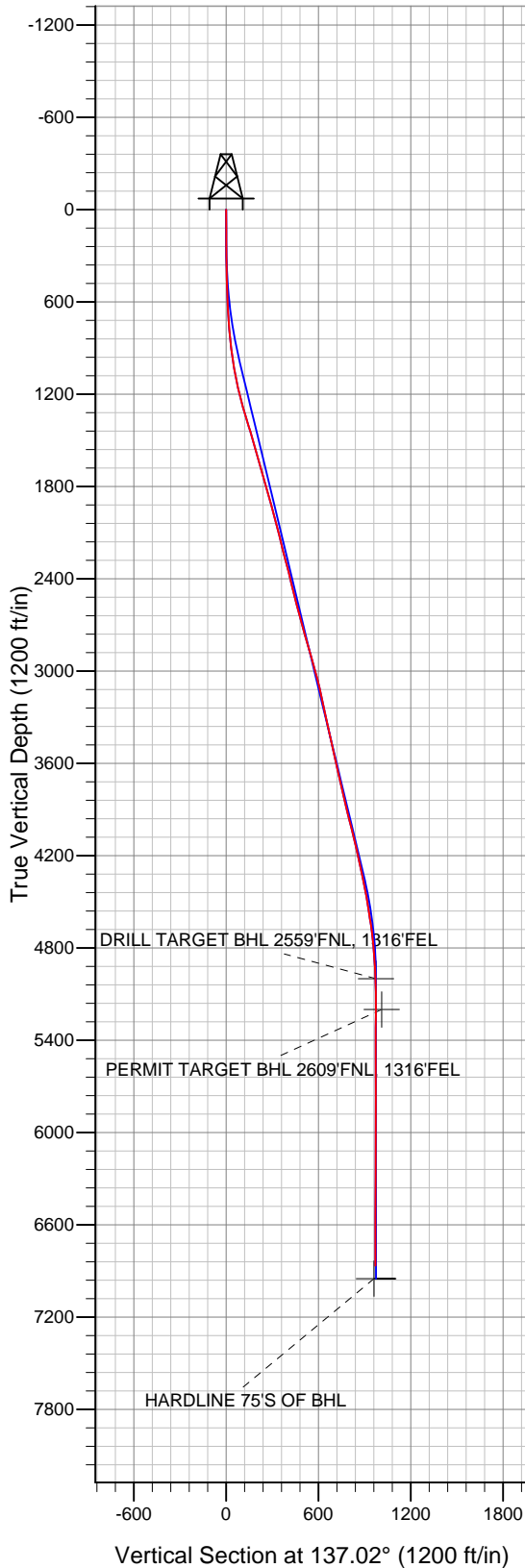


Well Name: **P&H 22SD**
 Surface Location: P&H 22CD Pad Sec.22-T5N-R64W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4600.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1385313.69 3269234.67 40° 23' 13.416 N 104° 32' 0.492 W
 Original Well Elev WELL @ 4613.0ft (Original Well Elev)

PETROLEUM DEVELOPMENT CORP Weld County CO



LEGEND

- P&H 22SD, Wellbore #1, Plan #2 (11-12-10) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 6984'MD & 6866'TVD @ 971' VS
 0.5 deg Inc 172.5 deg AZ

Project: SEC.22-T5N-R64W
 Site: P&H 22CD Pad Sec.22-T5N-R64W
 Well: P&H 22SD
 Plan: Wellbore #1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R64W

P&H 22CD Pad Sec.22-T5N-R64W

P&H 22SD

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 December, 2010

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well P&H 22SD
Project:	SEC.22-T5N-R64W	TVD Reference:	WELL @ 4613.0ft (Original Well Elev)
Site:	P&H 22CD Pad Sec.22-T5N-R64W	MD Reference:	WELL @ 4613.0ft (Original Well Elev)
Well:	P&H 22SD	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.22-T5N-R64W, 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	P&H 22CD Pad Sec.22-T5N-R64W				
Site Position:		Northing:	1,385,324.42 ft	Latitude:	40° 23' 13.524 N
From:	Lat/Long	Easting:	3,269,215.05 ft	Longitude:	104° 32' 0.744 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.62 °

Well	P&H 22SD					
Well Position	+N/-S	0.0 ft	Northing:	1,385,313.69 ft	Latitude:	40° 23' 13.416 N
	+E/-W	0.0 ft	Easting:	3,269,234.67 ft	Longitude:	104° 32' 0.492 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,600.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/12/2010	8.82	67.10	53,214

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	137.02	

Survey Program	Date	12/7/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
140.0	6,984.0	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	
140.0	0.40	193.80	140.0	-0.5	-0.1	0.3	0.29	0.29	0.00	
231.0	0.60	174.10	231.0	-1.3	-0.1	0.8	0.29	0.22	-21.65	
322.0	1.00	174.30	322.0	-2.5	0.0	1.8	0.44	0.44	0.22	
412.0	1.80	186.70	412.0	-4.7	-0.1	3.4	0.95	0.89	13.78	
504.0	2.60	178.80	503.9	-8.2	-0.2	5.9	0.93	0.87	-8.59	
597.0	3.60	179.80	596.8	-13.3	-0.2	9.6	1.08	1.08	1.08	
661.0	4.30	179.30	660.6	-17.7	-0.1	12.8	1.10	1.09	-0.78	
796.0	6.50	183.50	795.0	-30.4	-0.5	21.8	1.65	1.63	3.11	
891.0	8.60	176.00	889.2	-42.8	-0.4	31.1	2.44	2.21	-7.89	
986.0	10.40	168.80	982.9	-58.3	1.8	43.9	2.27	1.89	-7.58	
1,080.0	12.00	163.30	1,075.1	-76.0	6.2	59.8	2.04	1.70	-5.85	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well P&H 22SD
Project:	SEC.22-T5N-R64W	TVD Reference:	WELL @ 4613.0ft (Original Well Elev)
Site:	P&H 22CD Pad Sec.22-T5N-R64W	MD Reference:	WELL @ 4613.0ft (Original Well Elev)
Well:	P&H 22SD	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)
1,175.0	14.10	158.00	1,167.6	-96.2	13.4	79.5	2.54	2.21	-5.58
1,270.0	15.60	154.80	1,259.4	-118.5	23.2	102.5	1.80	1.58	-3.37
1,365.0	18.00	152.00	1,350.4	-143.0	35.5	128.8	2.67	2.53	-2.95
1,460.0	16.40	145.10	1,441.1	-167.0	50.1	156.3	2.73	-1.68	-7.26
1,555.0	15.80	139.10	1,532.4	-187.7	66.2	182.5	1.86	-0.63	-6.32
1,650.0	16.30	134.50	1,623.7	-206.9	84.2	208.7	1.44	0.53	-4.84
1,745.0	16.50	133.80	1,714.9	-225.5	103.5	235.5	0.30	0.21	-0.74
1,838.0	16.00	131.20	1,804.1	-243.1	122.6	261.5	0.95	-0.54	-2.80
1,933.0	15.10	127.80	1,895.7	-259.3	142.3	286.7	1.35	-0.95	-3.58
2,026.0	15.10	128.30	1,985.5	-274.3	161.3	310.6	0.14	0.00	0.54
2,122.0	14.80	130.10	2,078.2	-289.9	180.5	335.2	0.58	-0.31	1.88
2,217.0	13.70	129.20	2,170.3	-304.8	198.5	358.4	1.18	-1.16	-0.95
2,312.0	14.80	132.20	2,262.4	-320.1	216.2	381.6	1.39	1.16	3.16
2,408.0	15.10	128.90	2,355.1	-336.2	235.1	406.2	0.94	0.31	-3.44
2,503.0	13.70	127.20	2,447.1	-350.8	253.6	429.5	1.54	-1.47	-1.79
2,597.0	13.10	121.40	2,538.6	-363.0	271.6	450.8	1.57	-0.64	-6.17
2,692.0	16.40	122.40	2,630.4	-375.8	292.1	474.1	3.48	3.47	1.05
2,787.0	16.80	126.00	2,721.5	-391.1	314.6	500.6	1.16	0.42	3.79
2,882.0	15.50	125.40	2,812.7	-406.5	336.0	526.5	1.38	-1.37	-0.63
2,976.0	15.70	124.70	2,903.3	-421.0	356.7	551.2	0.29	0.21	-0.74
3,070.0	16.20	129.50	2,993.6	-436.6	377.3	576.6	1.50	0.53	5.11
3,165.0	13.60	131.90	3,085.4	-452.5	395.8	600.9	2.81	-2.74	2.53
3,260.0	11.60	142.50	3,178.2	-467.5	410.0	621.5	3.21	-2.11	11.16
3,355.0	12.50	136.80	3,271.1	-482.6	422.8	641.3	1.57	0.95	-6.00
3,449.0	13.20	128.70	3,362.7	-496.7	438.1	662.1	2.05	0.74	-8.62
3,544.0	11.80	129.90	3,455.5	-509.8	454.1	682.5	1.50	-1.47	1.26
3,639.0	12.70	133.00	3,548.3	-523.1	469.2	702.5	1.17	0.95	3.26
3,733.0	12.80	132.70	3,640.0	-537.2	484.4	723.2	0.13	0.11	-0.32
3,827.0	13.40	136.70	3,731.5	-552.2	499.5	744.5	1.16	0.64	4.26
3,922.0	13.40	139.10	3,824.0	-568.5	514.2	766.5	0.59	0.00	2.53
4,018.0	13.10	137.10	3,917.4	-584.9	528.9	788.5	0.57	-0.31	-2.08
4,110.0	14.30	138.70	4,006.8	-601.1	543.5	810.3	1.37	1.30	1.74
4,205.0	13.80	140.60	4,098.9	-618.7	558.5	833.3	0.72	-0.53	2.00
4,299.0	12.00	139.20	4,190.6	-634.7	572.0	854.3	1.94	-1.91	-1.49
4,394.0	13.10	138.90	4,283.3	-650.3	585.5	874.9	1.16	1.16	-0.32
4,487.0	10.80	137.50	4,374.3	-664.7	598.3	894.2	2.49	-2.47	-1.51
4,581.0	10.20	133.70	4,466.7	-676.9	610.3	911.3	0.97	-0.64	-4.04
4,676.0	9.40	134.00	4,560.3	-688.1	621.9	927.4	0.84	-0.84	0.32
4,771.0	7.60	137.80	4,654.3	-698.2	631.7	941.5	1.98	-1.89	4.00
4,866.0	6.00	137.10	4,748.6	-706.5	639.3	952.7	1.69	-1.68	-0.74
4,962.0	4.70	135.20	4,844.2	-712.9	645.5	961.7	1.37	-1.35	-1.98
5,056.0	3.10	153.20	4,938.0	-717.9	649.4	968.0	2.12	-1.70	19.15
5,118.2	1.92	152.40	5,000.1	-720.4	650.6	970.6	1.90	-1.90	-1.28
DRILL TARGET BHL 2559'FNL, 1316'FEL									
5,151.0	1.30	151.40	5,032.9	-721.2	651.1	971.5	1.90	-1.89	-3.06
5,246.0	0.60	151.70	5,127.9	-722.6	651.8	973.0	0.74	-0.74	0.32
5,318.0	0.45	341.68	5,199.9	-722.6	651.9	973.1	1.46	-0.21	-236.02
PERMIT TARGET BHL 2609'FNL, 1316'FEL									
5,342.0	0.80	339.20	5,223.9	-722.4	651.8	972.9	1.46	1.45	-10.34
5,437.0	0.50	358.00	5,318.9	-721.3	651.6	971.9	0.38	-0.32	19.79
5,532.0	0.70	38.00	5,413.9	-720.5	651.9	971.5	0.48	0.21	42.11
5,627.0	0.60	52.10	5,508.8	-719.7	652.7	971.5	0.20	-0.11	14.84
5,722.0	0.70	57.50	5,603.8	-719.1	653.5	971.6	0.12	0.11	5.68

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well P&H 22SD
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Site:	P&H 22CD Pad Sec.22-T5N-R64W	MD Reference:	WELL @ 4613.0ft (Original Well Elev)
Well:	P&H 22SD	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)
5,816.0	0.80	54.30	5,697.8	-718.4	654.6	971.8	0.12	0.11	-3.40
5,911.0	0.90	54.80	5,792.8	-717.6	655.7	972.0	0.11	0.11	0.53
6,005.0	1.20	56.60	5,886.8	-716.6	657.1	972.3	0.32	0.32	1.91
6,100.0	1.50	49.90	5,981.8	-715.3	658.9	972.5	0.36	0.32	-7.05
6,195.0	1.50	35.40	6,076.7	-713.4	660.6	972.3	0.40	0.00	-15.26
6,290.0	1.30	30.60	6,171.7	-711.5	661.9	971.7	0.24	-0.21	-5.05
6,385.0	0.40	357.90	6,266.7	-710.2	662.4	971.2	1.04	-0.95	-34.42
6,480.0	0.50	40.10	6,361.7	-709.6	662.6	970.9	0.35	0.11	44.42
6,574.0	0.60	36.10	6,455.7	-708.9	663.2	970.7	0.11	0.11	-4.26
6,669.0	0.40	273.70	6,550.7	-708.5	663.2	970.4	0.93	-0.21	-128.84
6,762.0	0.30	215.30	6,643.7	-708.6	662.7	970.2	0.38	-0.11	-62.80
6,858.0	0.50	207.30	6,739.7	-709.2	662.4	970.4	0.22	0.21	-8.33
6,952.0	0.50	210.70	6,833.7	-709.9	662.0	970.7	0.03	0.00	3.62
6,984.0	0.50	172.50	6,865.7	-710.2	661.9	970.8	1.02	0.00	-119.38
HARDLINE 75'S OF BHL									

Checked By: _____	Approved By: _____	Date: _____
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