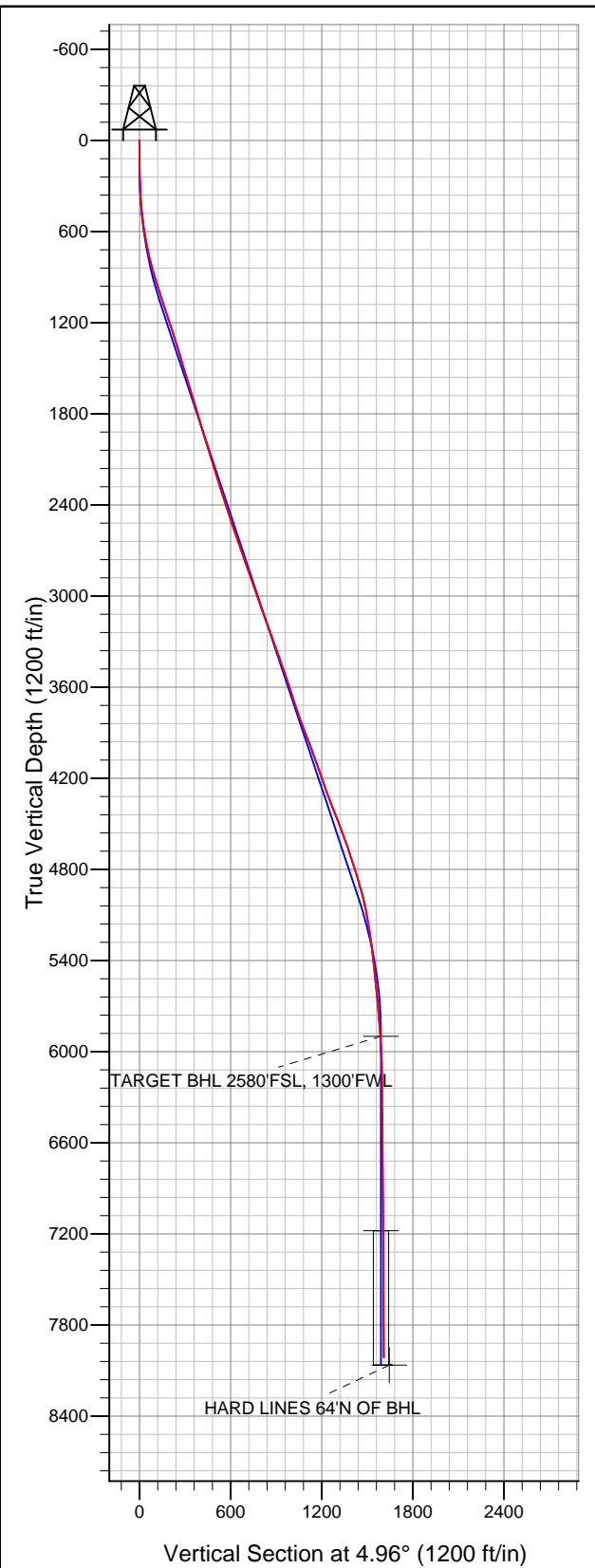


Well Name: Cooley 22-16

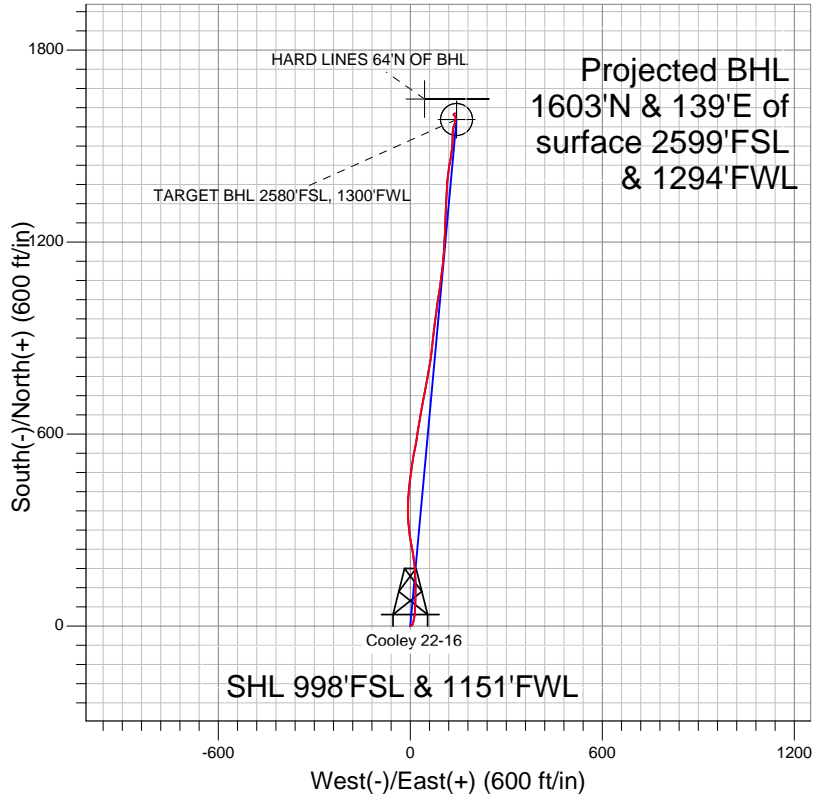
Surface Location: Cooley 19-16 Pad Sec.16-T2N-R68W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4885.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1292114.93	3136016.00	40.134225	-105.013535	

Original Well EleWELL @ 4900.0ft (Original Well Elev)



Anadarko, Weld County CO



LEGEND

- ◆ Cooley 22-16, Wellbore #1, Plan #1 (7-27-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
8260'MD & 8014'TVD @ 1609' VS
0.4 deg Inc 3.5 deg AZ

Project: SEC.16-T2N-R68W
Site: Cooley 19-16 Pad Sec.16-T2N-R68W
Well: Cooley 22-16
Plan: Wellbore #1



Anadarko, Weld County CO

SEC.16-T2N-R68W

Cooley 19-16 Pad Sec.16-T2N-R68W

Cooley 22-16

Wellbore #1

Survey: Survey #1

Standard Survey Report

15 September, 2011



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 22-16
Project:	SEC.16-T2N-R68W	TVD Reference:	WELL @ 4900.0ft (Original Well Elev)
Site:	Cooley 19-16 Pad Sec.16-T2N-R68W	MD Reference:	WELL @ 4900.0ft (Original Well Elev)
Well:	Cooley 22-16	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.16-T2N-R68W, 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	Cooley 19-16 Pad Sec.16-T2N-R68W		
Site Position:		Northing:	1,292,055.98 ft
From:	Lat/Long	Easting:	3,136,026.11 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.134063
		Longitude:	-105.013500
		Grid Convergence:	0.31 °

Well	Cooley 22-16		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.134225
		Longitude:	-105.013535
		Ground Level:	4,885.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/27/2011	8.96	66.79	52,952

Design	Wellbore #1			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	4.96

Survey Program	Date	9/15/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
144.0	8,260.0	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
144.0	1.00	81.60	144.0	0.2	1.2	0.3	0.69	0.69	0.00
233.0	1.80	67.00	233.0	0.8	3.3	1.1	0.98	0.90	-16.40
325.0	2.90	31.60	324.9	3.4	5.8	3.9	1.93	1.20	-38.48
417.0	4.40	19.00	416.7	8.7	8.2	9.4	1.84	1.63	-13.70
509.0	6.80	12.70	508.3	17.4	10.6	18.2	2.69	2.61	-6.85
601.0	9.30	5.80	599.3	30.1	12.5	31.0	2.91	2.72	-7.50
693.0	11.30	6.00	689.9	46.4	14.2	47.5	2.17	2.17	0.22
785.0	13.40	2.10	779.7	66.1	15.5	67.1	2.45	2.28	-4.24
876.0	16.50	0.30	867.6	89.5	16.0	90.6	3.44	3.41	-1.98
905.0	16.90	0.20	895.4	97.9	16.0	98.9	1.38	1.38	-0.34
977.0	17.10	1.00	964.3	118.9	16.3	119.9	0.43	0.28	1.11
1,072.0	18.10	358.20	1,054.8	147.6	16.0	148.5	1.38	1.05	-2.95

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 22-16
Project:	SEC.16-T2N-R68W	TVD Reference:	WELL @ 4900.0ft (Original Well Elev)
Site:	Cooley 19-16 Pad Sec.16-T2N-R68W	MD Reference:	WELL @ 4900.0ft (Original Well Elev)
Well:	Cooley 22-16	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)	
1,168.0	19.10	354.70	1,145.8	178.2	14.1	178.7	1.56	1.04	-3.65	
1,263.0	18.80	352.30	1,235.7	208.8	10.6	208.9	0.88	-0.32	-2.53	
1,358.0	18.10	350.70	1,325.8	238.5	6.2	238.2	0.91	-0.74	-1.68	
1,453.0	17.30	348.60	1,416.3	267.0	1.0	266.0	1.08	-0.84	-2.21	
1,548.0	16.60	354.40	1,507.2	294.3	-3.1	292.9	1.93	-0.74	6.11	
1,643.0	17.60	354.70	1,598.0	322.1	-5.8	320.4	1.06	1.05	0.32	
1,738.0	17.10	358.60	1,688.6	350.4	-7.4	348.4	1.33	-0.53	4.11	
1,833.0	16.40	1.40	1,779.6	377.8	-7.4	375.7	1.12	-0.74	2.95	
1,929.0	17.00	3.90	1,871.6	405.3	-6.2	403.3	0.97	0.63	2.60	
2,024.0	17.30	7.20	1,962.3	433.2	-3.4	431.3	1.07	0.32	3.47	
2,119.0	17.10	6.30	2,053.1	461.1	-0.1	459.3	0.35	-0.21	-0.95	
2,214.0	16.50	7.90	2,144.0	488.3	3.3	486.8	0.80	-0.63	1.68	
2,311.0	17.00	9.00	2,236.9	516.0	7.4	514.7	0.61	0.52	1.13	
2,407.0	18.60	11.20	2,328.3	544.8	12.5	543.9	1.81	1.67	2.29	
2,502.0	18.80	11.20	2,418.3	574.7	18.5	574.2	0.21	0.21	0.00	
2,597.0	18.70	7.70	2,508.3	604.8	23.5	604.6	1.19	-0.11	-3.68	
2,692.0	18.50	8.10	2,598.3	634.8	27.6	634.9	0.25	-0.21	0.42	
2,788.0	19.40	9.50	2,689.1	665.7	32.4	666.0	1.05	0.94	1.46	
2,883.0	19.30	12.10	2,778.7	696.6	38.3	697.3	0.91	-0.11	2.74	
2,978.0	19.60	10.40	2,868.3	727.6	44.5	728.7	0.67	0.32	-1.79	
3,073.0	19.20	10.70	2,957.9	758.6	50.2	760.1	0.43	-0.42	0.32	
3,168.0	18.70	11.10	3,047.8	788.9	56.1	790.8	0.54	-0.53	0.42	
3,264.0	20.10	9.00	3,138.3	820.3	61.6	822.6	1.63	1.46	-2.19	
3,359.0	20.80	6.70	3,227.3	853.2	66.1	855.7	1.12	0.74	-2.42	
3,454.0	19.70	6.00	3,316.5	885.9	69.8	888.6	1.19	-1.16	-0.74	
3,549.0	18.80	6.90	3,406.2	917.0	73.3	919.9	1.00	-0.95	0.95	
3,644.0	19.20	7.00	3,496.0	947.7	77.0	950.8	0.42	0.42	0.11	
3,740.0	18.60	7.70	3,586.8	978.5	81.0	981.9	0.67	-0.63	0.73	
3,834.0	17.40	7.40	3,676.2	1,007.3	84.8	1,010.9	1.28	-1.28	-0.32	
3,929.0	19.40	8.40	3,766.3	1,037.0	89.0	1,040.8	2.13	2.11	1.05	
4,025.0	20.40	9.30	3,856.6	1,069.3	94.0	1,073.4	1.09	1.04	0.94	
4,120.0	21.70	7.00	3,945.3	1,103.1	98.8	1,107.5	1.62	1.37	-2.42	
4,215.0	19.80	4.40	4,034.1	1,136.5	102.2	1,141.1	2.22	-2.00	-2.74	
4,310.0	19.60	3.90	4,123.5	1,168.5	104.5	1,173.1	0.28	-0.21	-0.53	
4,405.0	19.60	3.50	4,213.0	1,200.3	106.6	1,205.0	0.14	0.00	-0.42	
4,501.0	20.00	2.80	4,303.4	1,232.8	108.4	1,237.5	0.48	0.42	-0.73	
4,596.0	21.50	2.30	4,392.2	1,266.4	109.8	1,271.1	1.59	1.58	-0.53	
4,691.0	21.20	2.80	4,480.7	1,300.9	111.4	1,305.7	0.37	-0.32	0.53	
4,786.0	20.50	2.10	4,569.5	1,334.7	112.8	1,339.5	0.78	-0.74	-0.74	
4,881.0	18.10	1.60	4,659.1	1,366.1	113.9	1,370.8	2.53	-2.53	-0.53	
4,976.0	18.00	5.40	4,749.4	1,395.5	115.6	1,400.2	1.24	-0.11	4.00	
5,072.0	18.10	10.90	4,840.7	1,424.9	119.9	1,429.9	1.78	0.10	5.73	
5,167.0	15.60	9.10	4,931.6	1,452.0	124.7	1,457.3	2.69	-2.63	-1.89	
5,261.0	12.50	7.40	5,022.8	1,474.6	128.0	1,480.1	3.33	-3.30	-1.81	
5,356.0	9.50	6.00	5,116.1	1,492.5	130.1	1,498.2	3.17	-3.16	-1.47	
5,451.0	9.80	4.70	5,209.7	1,508.4	131.6	1,514.1	0.39	0.32	-1.37	
5,547.0	7.40	1.80	5,304.6	1,522.7	132.5	1,528.5	2.54	-2.50	-3.02	
5,642.0	6.40	356.60	5,398.9	1,534.1	132.4	1,539.8	1.24	-1.05	-5.47	
5,737.0	5.50	4.00	5,493.4	1,544.0	132.4	1,549.6	1.24	-0.95	7.79	
5,832.0	5.40	11.60	5,588.0	1,552.9	133.6	1,558.6	0.77	-0.11	8.00	
5,927.0	5.40	18.10	5,682.6	1,561.5	135.9	1,567.4	0.64	0.00	6.84	
6,022.0	5.30	16.00	5,777.2	1,570.0	138.5	1,576.1	0.23	-0.11	-2.21	
6,117.0	4.10	12.80	5,871.8	1,577.5	140.4	1,583.7	1.29	-1.26	-3.37	
6,145.5	3.86	10.80	5,900.3	1,579.4	140.8	1,585.7	0.99	-0.86	-7.02	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 22-16
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Site:	Cooley 19-16 Pad Sec.16-T2N-R68W	MD Reference:	WELL @ 4900.0ft (Original Well Elev)
Well:	Cooley 22-16	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)
TARGET BHL 2580'FSL, 1300'FWL									
6,213.0	3.30	4.90	5,967.6	1,583.6	141.4	1,589.9	0.99	-0.82	-8.74
6,308.0	1.60	20.20	6,062.6	1,587.6	142.1	1,593.9	1.90	-1.79	16.11
6,403.0	0.70	321.50	6,157.5	1,589.3	142.2	1,595.6	1.45	-0.95	-61.79
6,498.0	0.80	315.20	6,252.5	1,590.2	141.4	1,596.5	0.14	0.11	-6.63
6,593.0	0.80	322.60	6,347.5	1,591.2	140.5	1,597.4	0.11	0.00	7.79
6,689.0	0.80	334.70	6,443.5	1,592.3	139.8	1,598.5	0.18	0.00	12.60
6,784.0	0.80	333.30	6,538.5	1,593.5	139.2	1,599.6	0.02	0.00	-1.47
6,879.0	0.70	336.80	6,633.5	1,594.6	138.7	1,600.7	0.12	-0.11	3.68
6,974.0	0.50	315.70	6,728.5	1,595.5	138.2	1,601.4	0.31	-0.21	-22.21
7,069.0	0.50	306.20	6,823.5	1,596.0	137.6	1,601.9	0.09	0.00	-10.00
7,164.0	0.50	316.00	6,918.5	1,596.6	136.9	1,602.4	0.09	0.00	10.32
7,259.0	0.40	314.10	7,013.5	1,597.1	136.4	1,602.9	0.11	-0.11	-2.00
7,355.0	0.40	303.20	7,109.5	1,597.5	135.9	1,603.3	0.08	0.00	-11.35
7,425.4	0.40	317.32	7,179.9	1,597.8	135.5	1,603.6	0.14	-0.01	20.05
TARGET CIRCLE 2580'FSL & 1300'FWL									
7,450.0	0.40	322.20	7,204.5	1,597.9	135.4	1,603.7	0.14	0.02	19.87
7,545.0	0.30	16.40	7,299.5	1,598.4	135.3	1,604.2	0.35	-0.11	57.05
7,640.0	0.40	44.10	7,394.5	1,598.9	135.6	1,604.7	0.20	0.11	29.16
7,735.0	0.50	46.40	7,489.5	1,599.5	136.1	1,605.2	0.11	0.11	2.42
7,830.0	0.60	65.90	7,584.5	1,599.9	136.9	1,605.8	0.22	0.11	20.53
7,926.0	0.50	46.90	7,680.5	1,600.4	137.6	1,606.3	0.22	-0.10	-19.79
8,021.0	0.60	37.10	7,775.5	1,601.1	138.2	1,607.1	0.14	0.11	-10.32
8,116.0	0.40	45.00	7,870.4	1,601.7	138.8	1,607.7	0.22	-0.21	8.32
8,210.0	0.40	3.50	7,964.4	1,602.3	139.0	1,608.3	0.30	0.00	-44.15
8,260.0	0.40	3.50	8,014.4	1,602.7	139.0	1,608.7	0.00	0.00	0.00
HARD LINES 64'N OF BHL									

Checked By: _____	Approved By: _____	Date: _____
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