

Well Name: **Cooley 11-16**

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

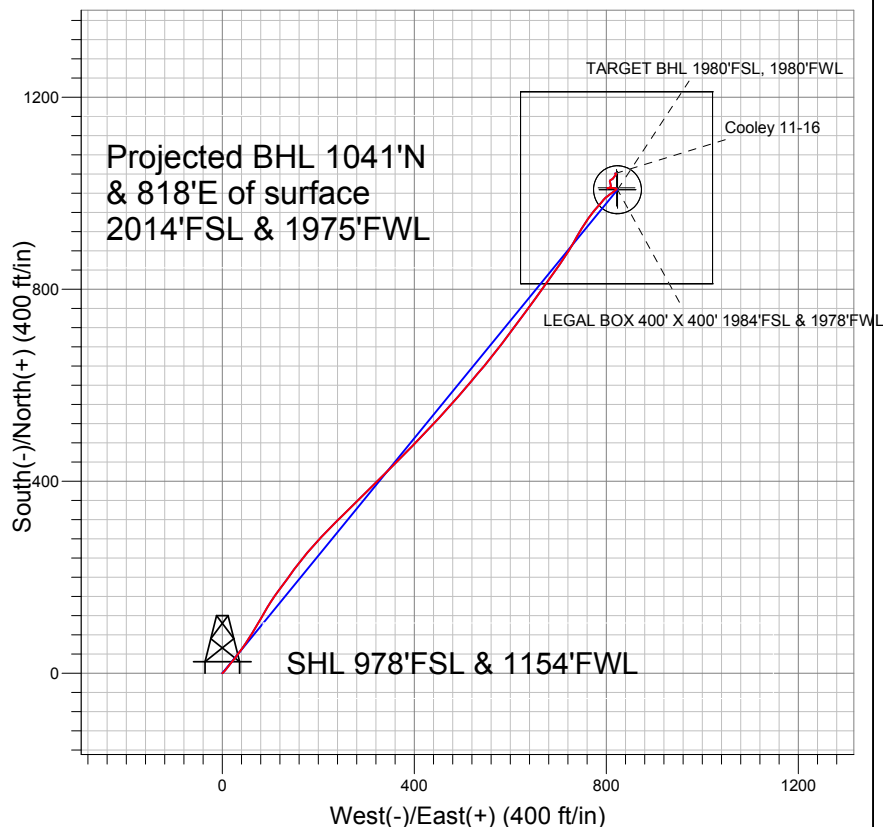
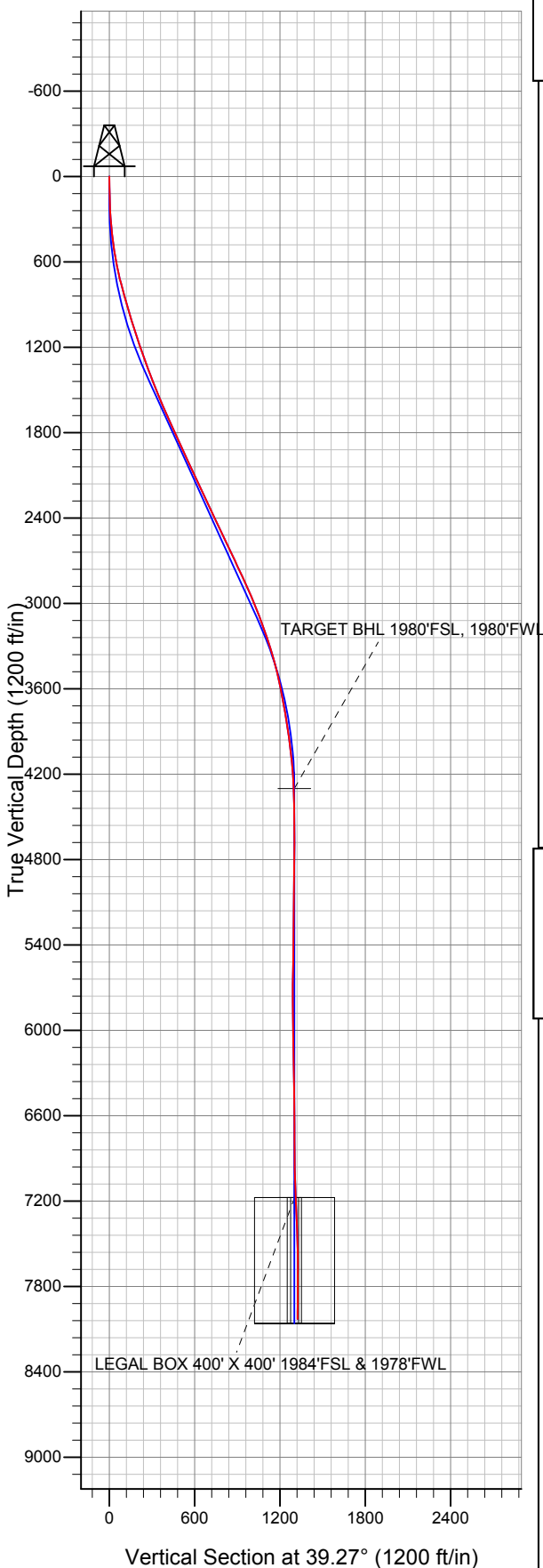
Ground Elevation: 4885.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1292095.28	3136019.18	40.134171	-105.013524

Original Well Elev WELL @ 4900.0ft (Original Well Elev)

Slot

Anadarko, Weld County CO



LEGEND

- Cooley 11-16, Wellbore #1, Plan #1 (7-26-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
8265'MD & 8029'TVD @ 1324'VS
0.4 deg Inc 245.4 deg AZ

Project: SEC.16-T2N-R68W
Site: Cooley 19-16 Pad Sec.16-T2N-R68W
Well: Cooley 11-16
Plan: Wellbore #1



Anadarko, Weld County CO

SEC.16-T2N-R68W

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

Cooley 11-16

Wellbore #1

Survey: Survey #1

Standard Survey Report

06 September, 2011



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 11-16
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 11-16	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	Latitude:	40.134063
From:	Lat/Long	Easting:	3,136,026.11 ft	Longitude:	-105.013500
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.31 °

Well	Cooley 11-16					
Well Position	+N/-S	0.0 ft	Northing:	1,292,095.28 ft	Latitude:	40.134171
	+E/-W	0.0 ft	Easting:	3,136,019.18 ft	Longitude:	-105.013524
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,885.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/2/2011	8.96	66.79	52,950

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	39.27	

Survey Program	Date	9/6/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	8,265.0	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	1.40	54.50	144.0	1.0	1.4	1.7	0.97	0.97	0.00	
233.0	2.90	39.50	232.9	3.4	3.7	5.0	1.79	1.69	-16.85	
325.0	4.60	38.50	324.7	8.1	7.5	11.0	1.85	1.85	-1.09	
417.0	6.50	37.80	416.3	15.1	13.0	19.9	2.07	2.07	-0.76	
509.0	8.70	41.10	507.5	24.4	20.8	32.1	2.44	2.39	3.59	
601.0	11.00	36.40	598.1	36.7	30.6	47.8	2.65	2.50	-5.11	
693.0	12.70	35.50	688.1	52.0	41.6	66.7	1.86	1.85	-0.98	
785.0	14.80	33.40	777.5	70.1	54.0	88.4	2.35	2.28	-2.28	
890.0	17.00	30.90	878.5	94.5	69.3	117.0	2.19	2.10	-2.38	
1,007.0	17.30	28.80	990.3	124.4	86.4	151.0	0.59	0.26	-1.79	
1,103.0	16.80	33.70	1,082.1	148.4	101.0	178.8	1.58	-0.52	5.10	
1,198.0	18.60	36.00	1,172.6	172.1	117.5	207.6	2.03	1.89	2.42	

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Site:	Cooley 19-16 Pad Sec.16-T2N-R68W	MD Reference:	WELL @ 4900.0ft (Original Well Elev)
Well:	Cooley 11-16	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)
1,293.0	20.30	36.40	1,262.1	197.6	136.2	239.2	1.79	1.79	0.42
1,388.0	20.50	37.10	1,351.2	224.2	156.0	272.3	0.33	0.21	0.74
1,483.0	20.90	39.70	1,440.1	250.5	176.9	305.9	1.05	0.42	2.74
1,579.0	22.60	43.20	1,529.2	277.1	200.4	341.4	2.23	1.77	3.65
1,674.0	23.40	44.60	1,616.7	303.8	226.2	378.4	1.02	0.84	1.47
1,769.0	24.20	45.30	1,703.6	331.0	253.3	416.5	0.89	0.84	0.74
1,864.0	24.40	45.30	1,790.2	358.5	281.1	455.4	0.21	0.21	0.00
1,959.0	25.00	45.20	1,876.5	386.4	309.3	494.9	0.63	0.63	-0.11
2,054.0	25.20	45.30	1,962.5	414.8	337.9	535.0	0.22	0.21	0.11
2,150.0	25.30	44.60	2,049.3	443.8	366.8	575.7	0.33	0.10	-0.73
2,245.0	25.30	44.30	2,135.2	472.7	395.2	616.2	0.13	0.00	-0.32
2,342.0	25.10	44.30	2,223.0	502.3	424.1	657.3	0.21	-0.21	0.00
2,437.0	25.00	42.00	2,309.1	531.6	451.6	697.4	1.03	-0.11	-2.42
2,532.0	25.10	41.80	2,395.1	561.6	478.5	737.6	0.14	0.11	-0.21
2,628.0	25.40	39.90	2,482.0	592.6	505.2	778.5	0.90	0.31	-1.98
2,723.0	25.60	41.00	2,567.7	623.7	531.8	819.4	0.54	0.21	1.16
2,818.0	25.90	38.30	2,653.3	655.5	558.1	860.7	1.27	0.32	-2.84
2,913.0	24.80	37.40	2,739.1	687.6	583.1	901.3	1.23	-1.16	-0.95
3,009.0	25.00	36.40	2,826.2	719.9	607.3	941.7	0.49	0.21	-1.04
3,104.0	23.70	36.60	2,912.7	751.4	630.6	980.9	1.37	-1.37	0.21
3,199.0	22.60	36.00	3,000.1	781.5	652.7	1,018.2	1.18	-1.16	-0.63
3,294.0	20.90	35.90	3,088.3	810.0	673.4	1,053.3	1.79	-1.79	-0.11
3,389.0	19.50	35.20	3,177.5	836.7	692.5	1,086.0	1.50	-1.47	-0.74
3,484.0	18.20	33.70	3,267.4	862.0	709.8	1,116.6	1.46	-1.37	-1.58
3,580.0	16.90	31.50	3,358.9	886.3	725.5	1,145.4	1.52	-1.35	-2.29
3,675.0	14.70	28.60	3,450.3	908.7	738.4	1,170.9	2.46	-2.32	-3.05
3,770.0	12.60	32.20	3,542.6	928.0	749.7	1,193.0	2.38	-2.21	3.79
3,865.0	10.80	34.60	3,635.7	944.1	760.3	1,212.2	1.96	-1.89	2.53
3,960.0	9.80	38.50	3,729.1	957.8	770.4	1,229.1	1.28	-1.05	4.11
4,055.0	9.10	42.00	3,822.8	969.7	780.5	1,244.7	0.95	-0.74	3.68
4,150.0	8.40	39.00	3,916.7	980.7	789.9	1,259.2	0.88	-0.74	-3.16
4,245.0	7.20	45.90	4,010.9	990.2	798.5	1,272.0	1.60	-1.26	7.26
4,341.0	5.80	55.20	4,106.2	997.2	806.8	1,282.7	1.82	-1.46	9.69
4,436.0	4.20	55.40	4,200.9	1,001.9	813.6	1,290.6	1.68	-1.68	0.21
4,531.0	2.80	52.20	4,295.7	1,005.3	818.3	1,296.2	1.49	-1.47	-3.37
4,535.5	2.72	52.03	4,300.2	1,005.4	818.5	1,296.4	1.71	-1.70	-3.75
TARGET BHL 1980'FSL, 1980'FWL									
4,626.0	1.20	44.10	4,390.6	1,007.4	820.8	1,299.5	1.71	-1.68	-8.76
4,721.0	0.50	329.20	4,485.6	1,008.5	821.3	1,300.6	1.24	-0.74	-78.84
4,816.0	0.60	300.80	4,580.6	1,009.1	820.7	1,300.7	0.30	0.11	-29.89
4,912.0	0.80	287.60	4,676.6	1,009.6	819.6	1,300.4	0.27	0.21	-13.75
5,007.0	0.80	281.20	4,771.6	1,009.9	818.3	1,299.8	0.09	0.00	-6.74
5,102.0	0.80	282.40	4,866.6	1,010.2	817.0	1,299.2	0.02	0.00	1.26
5,197.0	0.90	277.20	4,961.6	1,010.4	815.6	1,298.5	0.13	0.11	-5.47
5,291.0	1.00	273.70	5,055.6	1,010.5	814.1	1,297.6	0.12	0.11	-3.72
5,387.0	1.00	273.70	5,151.6	1,010.6	812.4	1,296.6	0.00	0.00	0.00
5,482.0	1.10	273.50	5,246.5	1,010.8	810.7	1,295.6	0.11	0.11	-0.21
5,577.0	1.00	269.60	5,341.5	1,010.8	808.9	1,294.6	0.13	-0.11	-4.11
5,672.0	1.10	265.40	5,436.5	1,010.7	807.2	1,293.4	0.13	0.11	-4.42
5,767.0	1.10	265.10	5,531.5	1,010.6	805.4	1,292.1	0.01	0.00	-0.32
5,862.0	1.10	262.10	5,626.5	1,010.4	803.6	1,290.8	0.06	0.00	-3.16
5,958.0	0.10	151.70	5,722.5	1,010.2	802.7	1,290.1	1.19	-1.04	-115.00
6,053.0	0.40	261.60	5,817.5	1,010.0	802.4	1,289.9	0.47	0.32	115.68
6,148.0	1.60	80.30	5,912.5	1,010.2	803.4	1,290.6	2.11	1.26	188.11

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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)	
6,243.0	1.30	67.30	6,007.4	1,010.9	805.7	1,292.6	0.47	-0.32	-13.68	
6,338.0	1.10	57.50	6,102.4	1,011.8	807.4	1,294.4	0.30	-0.21	-10.32	
6,433.0	1.00	35.70	6,197.4	1,012.9	808.7	1,296.1	0.43	-0.11	-22.95	
6,529.0	0.90	13.00	6,293.4	1,014.3	809.4	1,297.6	0.40	-0.10	-23.65	
6,624.0	0.80	0.20	6,388.4	1,015.7	809.5	1,298.8	0.23	-0.11	-13.47	
6,719.0	0.90	345.10	6,483.4	1,017.1	809.3	1,299.7	0.26	0.11	-15.89	
6,814.0	0.90	345.20	6,578.3	1,018.6	809.0	1,300.6	0.00	0.00	0.11	
6,909.0	0.80	343.80	6,673.3	1,019.9	808.6	1,301.4	0.11	-0.11	-1.47	
7,004.0	0.80	340.60	6,768.3	1,021.2	808.2	1,302.1	0.05	0.00	-3.37	
7,100.0	1.00	344.50	6,864.3	1,022.6	807.7	1,303.0	0.22	0.21	4.06	
7,195.0	1.10	351.90	6,959.3	1,024.3	807.4	1,304.1	0.18	0.11	7.79	
7,290.0	1.20	32.90	7,054.3	1,026.1	807.8	1,305.7	0.85	0.11	43.16	
7,385.0	3.20	61.00	7,149.2	1,028.2	810.6	1,309.1	2.33	2.11	29.58	
7,410.6	3.06	56.02	7,174.8	1,028.9	811.8	1,310.4	1.20	-0.56	-19.47	
TARGET CIRCLE 1980'FSL & 1980'FWL - LEGAL BOX 400' X 400' 1984'FSL & 1978'FWL										
7,480.0	2.80	40.40	7,244.1	1,031.2	814.5	1,313.9	1.20	-0.37	-22.50	
7,575.0	2.20	32.20	7,339.0	1,034.5	816.9	1,318.0	0.73	-0.63	-8.63	
7,670.0	2.10	38.30	7,433.9	1,037.5	819.0	1,321.6	0.26	-0.11	6.42	
7,766.0	0.70	19.70	7,529.9	1,039.4	820.3	1,323.9	1.51	-1.46	-19.38	
7,861.0	0.30	267.00	7,624.9	1,039.9	820.2	1,324.3	0.91	-0.42	-118.63	
7,956.0	0.30	328.20	7,719.9	1,040.1	819.9	1,324.2	0.32	0.00	64.42	
8,051.0	0.40	331.90	7,814.9	1,040.6	819.6	1,324.4	0.11	0.11	3.89	
8,146.0	0.40	274.60	7,909.9	1,040.9	819.1	1,324.3	0.40	0.00	-60.32	
8,215.0	0.40	245.40	7,978.9	1,040.9	818.6	1,324.0	0.29	0.00	-42.32	
8,265.0	0.40	245.40	8,028.9	1,040.7	818.3	1,323.7	0.00	0.00	0.00	

Checked By: _____ Approved By: _____ Date: _____