

Well Name: **Cooley 12-16**

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

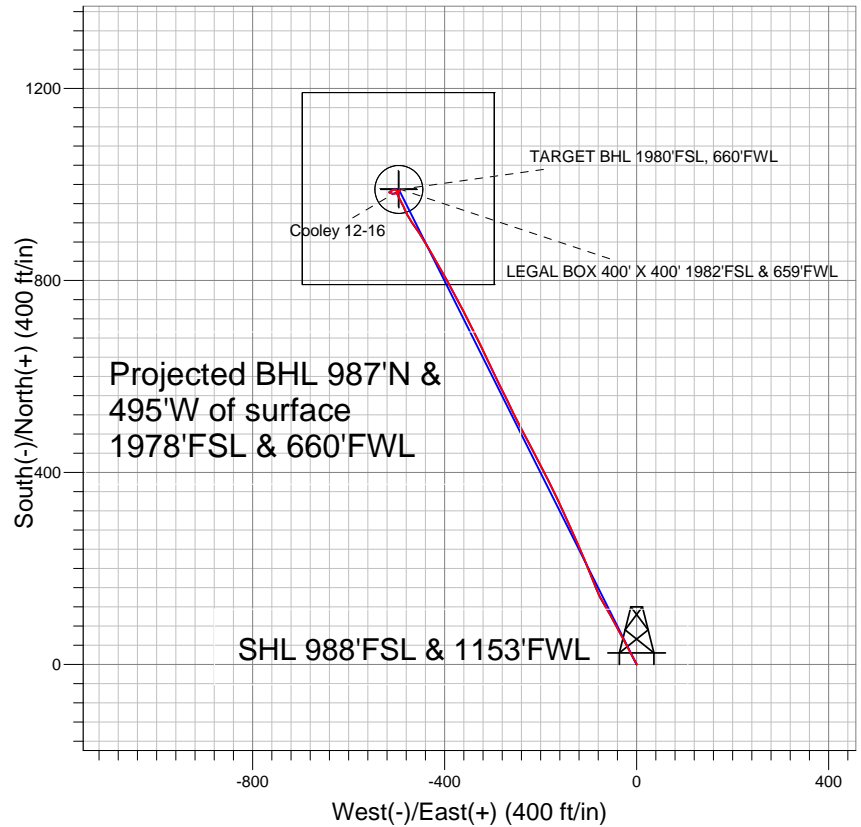
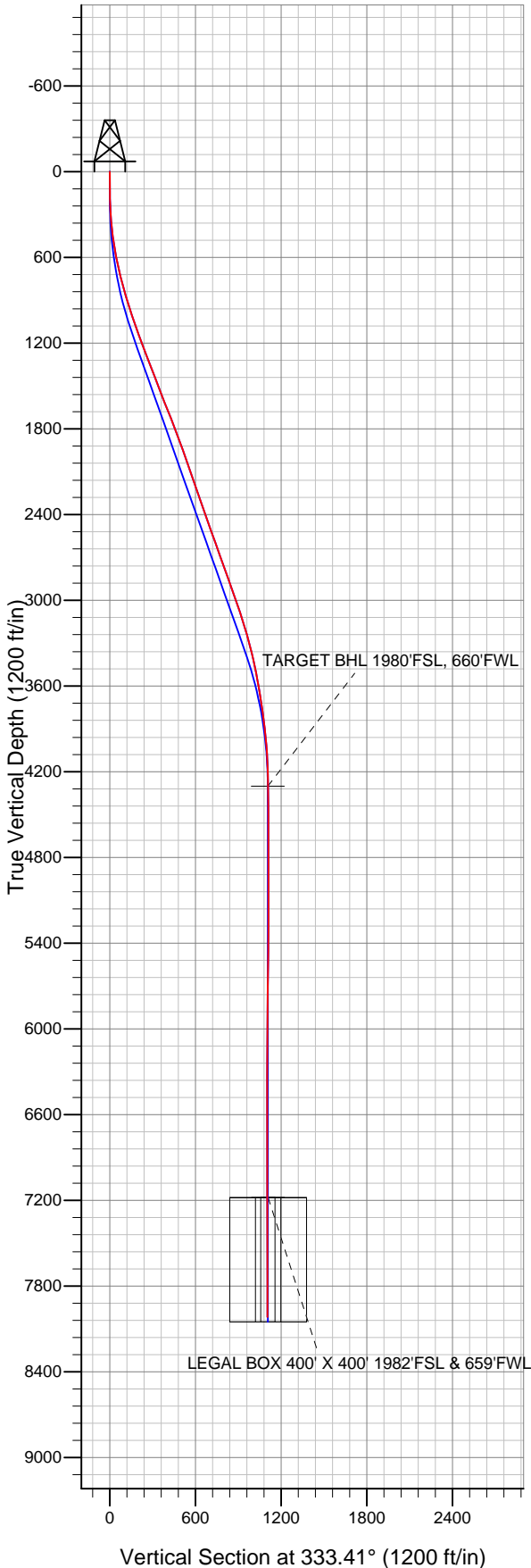
Ground Elevation: 4885.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1292105.10	3136017.45	40.134198	-105.013530

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

Slot

Anadarko, Weld County CO



LEGEND

- ✕ Cooley 12-16, Wellbore #1, Plan #2 (8-4-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 8190'MD & 8017'TVD @ 1104'VS
 0.3 deg Inc 255.1 deg AZ

Project: SEC.16-T2N-R68W
 Site: Cooley 19-16 Pad Sec.16-T2N-R68W
 Well: Cooley 12-16
 Plan: Wellbore #1



Directional

Anadarko, Weld County CO

SEC.16-T2N-R68W

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

Cooley 12-16

Wellbore #1

Survey: Survey #1

Standard Survey Report

12 September, 2011

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 12-16
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 12-16	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 12-16					
Well Position	+N-S	0.0 ft	Northing:	1,292,105.10 ft	Latitude:	40.134198
	+E-W	0.0 ft	Easting:	3,136,017.45 ft	Longitude:	-105.013530
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	333.41	

Survey Program	Date	9/12/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	8,190.0	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	0.40	353.50	144.0	0.5	-0.1	0.5	0.28	0.28	0.00	
233.0	2.30	332.00	233.0	2.4	-0.9	2.5	2.17	2.13	-24.16	
325.0	4.10	331.50	324.8	6.9	-3.4	7.7	1.96	1.96	-0.54	
417.0	6.40	330.80	416.4	14.3	-7.4	16.1	2.50	2.50	-0.76	
509.0	9.00	333.80	507.6	25.2	-13.1	28.4	2.86	2.83	3.26	
601.0	11.10	332.90	598.2	39.5	-20.3	44.5	2.29	2.28	-0.98	
693.0	12.80	331.30	688.2	56.4	-29.3	63.5	1.88	1.85	-1.74	
785.0	14.70	330.80	777.5	75.5	-39.8	85.4	2.07	2.07	-0.54	
876.0	17.10	331.00	865.1	97.3	-52.0	110.3	2.64	2.64	0.22	
905.0	17.70	330.00	892.7	104.8	-56.2	118.9	2.31	2.07	-3.45	
1,007.0	18.40	331.00	989.7	132.3	-71.8	150.5	0.75	0.69	0.98	
1,103.0	18.80	338.20	1,080.7	160.0	-84.9	181.0	2.43	0.42	7.50	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 12-16
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 12-16	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)
1,198.0	20.40	338.00	1,170.2	189.5	-96.8	212.8	1.69	1.68	-0.21
1,293.0	21.00	337.80	1,259.1	220.6	-109.4	246.3	0.64	0.63	-0.21
1,388.0	20.80	335.70	1,347.8	251.8	-122.8	280.1	0.82	-0.21	-2.21
1,483.0	21.10	336.40	1,436.5	282.8	-136.6	314.0	0.41	0.32	0.74
1,579.0	21.10	334.90	1,526.1	314.3	-150.8	348.6	0.56	0.00	-1.56
1,674.0	21.50	334.90	1,614.6	345.5	-165.5	383.1	0.42	0.42	0.00
1,769.0	21.50	333.60	1,703.0	376.9	-180.6	417.9	0.50	0.00	-1.37
1,864.0	21.00	332.40	1,791.5	407.6	-196.2	452.3	0.70	-0.53	-1.26
1,959.0	20.80	332.20	1,880.3	437.6	-212.0	486.2	0.22	-0.21	-0.21
2,054.0	20.00	332.00	1,969.3	466.9	-227.5	519.3	0.85	-0.84	-0.21
2,150.0	19.20	332.90	2,059.8	495.4	-242.4	551.5	0.89	-0.83	0.94
2,245.0	18.70	333.50	2,149.6	522.9	-256.3	582.3	0.56	-0.53	0.63
2,342.0	18.70	333.80	2,241.5	550.8	-270.1	613.4	0.10	0.00	0.31
2,437.0	19.30	333.60	2,331.3	578.5	-283.8	644.4	0.64	0.63	-0.21
2,532.0	19.30	334.90	2,421.0	606.8	-297.4	675.8	0.45	0.00	1.37
2,628.0	19.70	335.20	2,511.5	635.9	-310.9	707.8	0.43	0.42	0.31
2,723.0	19.70	334.50	2,600.9	664.9	-324.5	739.8	0.25	0.00	-0.74
2,818.0	19.30	332.60	2,690.5	693.3	-338.7	771.5	0.79	-0.42	-2.00
2,913.0	19.80	333.10	2,780.0	721.5	-353.2	803.3	0.55	0.53	0.53
3,009.0	20.40	331.50	2,870.1	750.7	-368.5	836.3	0.85	0.63	-1.67
3,104.0	19.80	331.20	2,959.4	779.4	-384.2	868.9	0.64	-0.63	-0.32
3,199.0	18.50	331.20	3,049.1	806.7	-399.2	900.1	1.37	-1.37	0.00
3,294.0	17.30	331.20	3,139.5	832.3	-413.2	929.2	1.26	-1.26	0.00
3,389.0	16.30	330.30	3,230.4	856.2	-426.6	956.7	1.09	-1.05	-0.95
3,484.0	14.50	328.40	3,322.0	878.0	-439.5	981.8	1.97	-1.89	-2.00
3,580.0	12.90	326.40	3,415.3	897.1	-451.7	1,004.4	1.74	-1.67	-2.08
3,675.0	11.50	325.20	3,508.1	913.7	-463.0	1,024.3	1.50	-1.47	-1.26
3,770.0	10.00	328.20	3,601.5	928.5	-472.7	1,041.9	1.68	-1.58	3.16
3,865.0	8.40	333.60	3,695.3	941.7	-480.2	1,057.1	1.91	-1.68	5.68
3,960.0	8.00	338.60	3,789.3	954.1	-485.7	1,070.6	0.86	-0.42	5.26
4,055.0	6.60	328.70	3,883.5	964.9	-490.9	1,082.6	1.98	-1.47	-10.42
4,150.0	5.50	335.00	3,978.0	973.7	-495.7	1,092.6	1.35	-1.16	6.63
4,245.0	3.30	341.40	4,072.7	980.4	-498.5	1,099.9	2.37	-2.32	6.74
4,341.0	2.50	351.60	4,168.6	985.1	-499.7	1,104.6	0.99	-0.83	10.63
4,436.0	1.00	350.50	4,263.5	988.0	-500.1	1,107.4	1.58	-1.58	-1.16
4,472.5	0.75	338.48	4,300.0	988.5	-500.2	1,107.9	0.86	-0.70	-32.97
TARGET BHL 1980'FSL, 660'FWL									
4,531.0	0.50	296.50	4,358.5	989.0	-500.6	1,108.5	0.86	-0.42	-71.71
4,626.0	1.10	272.00	4,453.5	989.2	-501.9	1,109.2	0.71	0.63	-25.79
4,721.0	1.10	265.80	4,548.5	989.2	-503.7	1,110.0	0.13	0.00	-6.53
4,816.0	1.40	262.80	4,643.5	989.0	-505.8	1,110.8	0.32	0.32	-3.16
4,912.0	1.00	252.90	4,739.5	988.6	-507.7	1,111.3	0.47	-0.42	-10.31
5,007.0	0.60	218.00	4,834.4	987.9	-508.8	1,111.2	0.65	-0.42	-36.74
5,102.0	0.70	228.70	4,929.4	987.2	-509.6	1,110.9	0.17	0.11	11.26
5,197.0	0.90	239.80	5,024.4	986.4	-510.7	1,110.7	0.27	0.21	11.68
5,291.0	0.80	245.90	5,118.4	985.8	-511.9	1,110.6	0.14	-0.11	6.49
5,387.0	1.00	242.20	5,214.4	985.1	-513.3	1,110.7	0.22	0.21	-3.85
5,482.0	1.10	229.90	5,309.4	984.1	-514.7	1,110.4	0.26	0.11	-12.95
5,577.0	0.50	162.40	5,404.4	983.2	-515.3	1,109.8	1.07	-0.63	-71.05
5,672.0	1.90	100.50	5,499.4	982.5	-513.6	1,108.4	1.81	1.47	-65.16
5,767.0	1.30	114.30	5,594.3	981.7	-511.1	1,106.7	0.75	-0.63	14.53
5,862.0	0.90	109.00	5,689.3	981.1	-509.4	1,105.3	0.43	-0.42	-5.58
5,958.0	0.80	104.90	5,785.3	980.6	-508.0	1,104.3	0.12	-0.10	-4.27
6,053.0	0.60	91.20	5,880.3	980.5	-506.9	1,103.6	0.27	-0.21	-14.42

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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)
6,148.0	0.70	79.80	5,975.3	980.5	-505.8	1,103.2	0.17	0.11	-12.00
6,243.0	0.70	75.40	6,070.3	980.8	-504.7	1,102.9	0.06	0.00	-4.63
6,338.0	0.80	73.80	6,165.3	981.1	-503.5	1,102.7	0.11	0.11	-1.68
6,433.0	0.50	77.00	6,260.3	981.4	-502.4	1,102.5	0.32	-0.32	3.37
6,529.0	0.40	85.10	6,356.3	981.5	-501.7	1,102.3	0.12	-0.10	8.44
6,624.0	0.40	92.50	6,451.3	981.5	-501.0	1,102.0	0.05	0.00	7.79
6,719.0	0.60	97.00	6,546.3	981.5	-500.2	1,101.6	0.21	0.21	4.74
6,814.0	0.60	86.50	6,641.2	981.4	-499.2	1,101.1	0.12	0.00	-11.05
6,909.0	0.60	64.50	6,736.2	981.7	-498.3	1,100.9	0.24	0.00	-23.16
7,004.0	0.50	58.90	6,831.2	982.1	-497.5	1,100.9	0.12	-0.11	-5.89
7,100.0	0.40	44.10	6,927.2	982.6	-496.9	1,101.0	0.16	-0.10	-15.42
7,195.0	0.30	10.20	7,022.2	983.1	-496.6	1,101.4	0.24	-0.11	-35.68
7,290.0	0.20	21.60	7,117.2	983.5	-496.5	1,101.7	0.12	-0.11	12.00
7,352.8	0.27	28.53	7,180.0	983.7	-496.4	1,101.8	0.11	0.10	11.04
TARGET CIRCLE 1980'FSL & 660'FWL - LEGAL BOX 400' X 400' 1982'FSL & 659'FWL									
7,385.0	0.30	30.90	7,212.2	983.8	-496.3	1,101.9	0.11	0.11	7.35
7,480.0	0.30	354.90	7,307.2	984.3	-496.2	1,102.3	0.20	0.00	-37.89
7,575.0	0.50	39.20	7,402.2	984.8	-495.9	1,102.7	0.37	0.21	46.63
7,670.0	0.70	26.20	7,497.2	985.7	-495.4	1,103.2	0.25	0.21	-13.68
7,766.0	0.50	43.20	7,593.2	986.5	-494.9	1,103.7	0.28	-0.21	17.71
7,861.0	0.40	32.90	7,688.2	987.1	-494.4	1,104.0	0.13	-0.11	-10.84
7,956.0	0.20	79.40	7,783.2	987.4	-494.1	1,104.1	0.32	-0.21	48.95
8,051.0	0.30	250.80	7,878.2	987.4	-494.2	1,104.1	0.52	0.11	180.42
8,140.0	0.30	255.10	7,967.2	987.2	-494.6	1,104.2	0.03	0.00	4.83
8,190.0	0.30	255.10	8,017.2	987.2	-494.8	1,104.2	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____