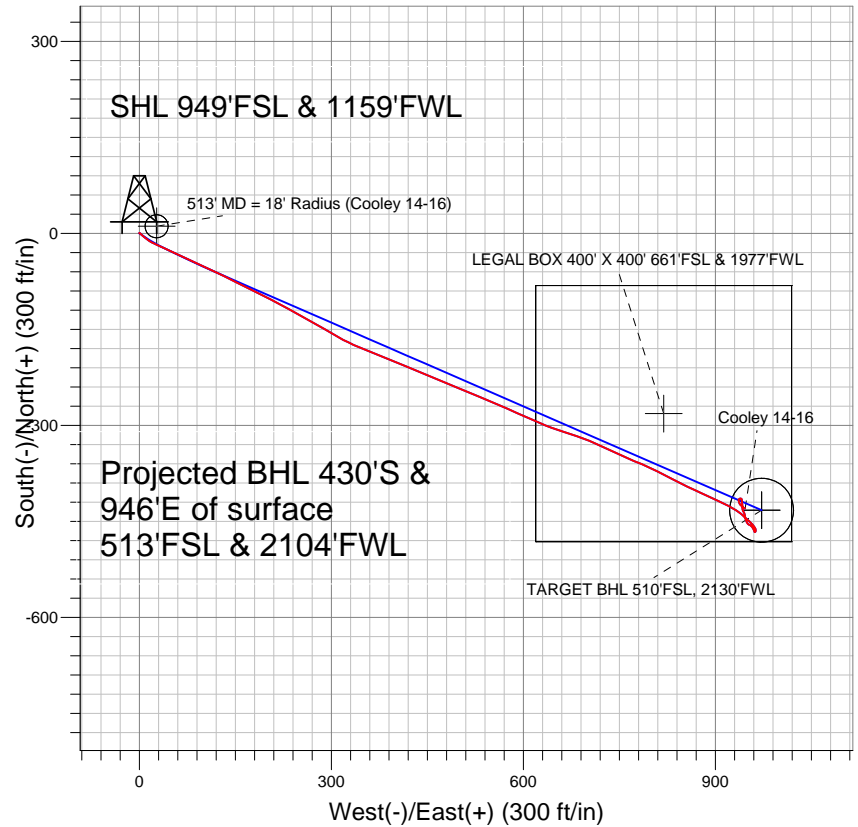
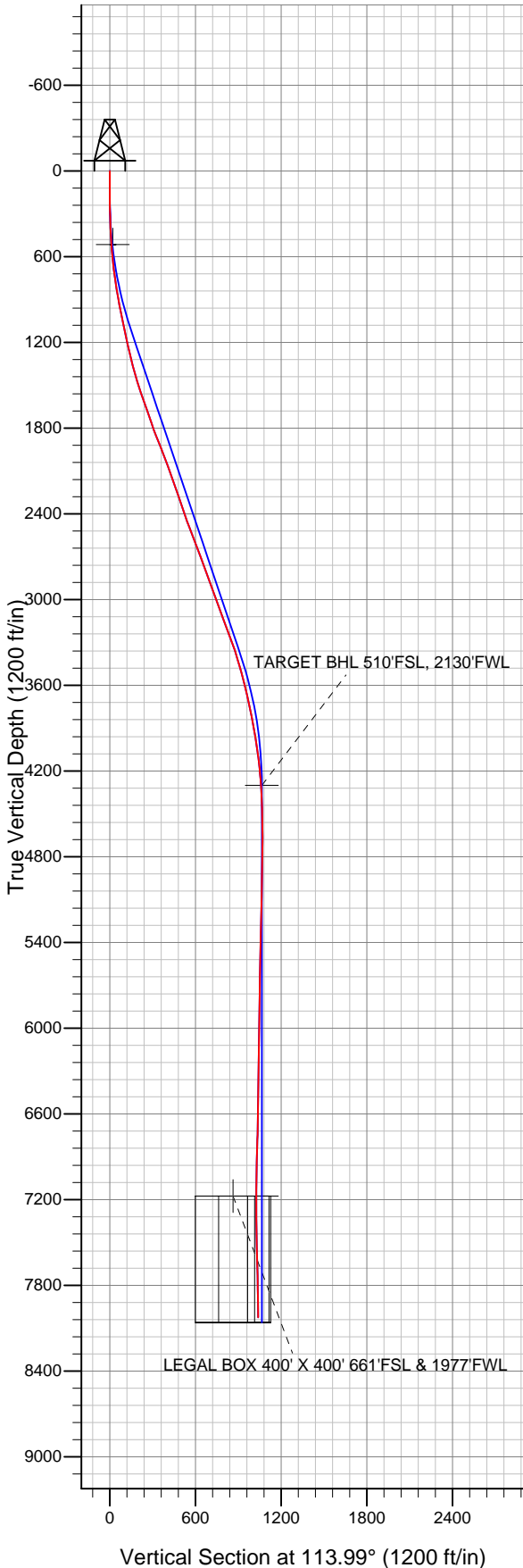


Anadarko, Weld County CO



LEGEND

- ✕ Cooley 14-16, Wellbore #1, Plan #1 (7-25-11) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 8185'MD & 8024'TVD @ 1039'VS
 1.1 deg Inc 113.9 deg AZ

Project: SEC.16-T2N-R68W
 Site: Cooley 19-16 Pad Sec.16-T2N-R68W
 Well: Cooley 14-16
 Plan: Wellbore #1



Directional

Anadarko, Weld County CO

SEC.16-T2N-R68W

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

Cooley 14-16

Wellbore #1

Survey: Survey #1

Standard Survey Report

23 August, 2011

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 14-16
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 14-16	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 14-16					
Well Position	+N/-S	0.0 ft	Northing:	1,292,065.80 ft	Latitude:	40.134090
	+E/-W	0.0 ft	Easting:	3,136,024.38 ft	Longitude:	-105.013506
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	113.99	

Survey Program	Date	8/23/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	8,185.0	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	0.30	332.70	144.0	0.3	-0.2	-0.3	0.21	0.21	0.00	
233.0	0.50	106.30	233.0	0.4	0.1	-0.1	0.83	0.22	150.11	
325.0	1.70	130.20	325.0	-0.6	1.5	1.6	1.37	1.30	25.98	
417.0	2.80	132.90	416.9	-3.0	4.2	5.1	1.20	1.20	2.93	
509.0	4.00	129.20	508.7	-6.5	8.3	10.3	1.33	1.30	-4.02	
515.6	4.11	128.85	515.3	-6.8	8.7	10.7	1.66	1.62	-5.38	
513' MD = 18' Radius (Cooley 14-16)										
601.0	5.50	125.50	600.4	-11.1	14.4	17.7	1.66	1.63	-3.92	
693.0	7.10	115.70	691.9	-16.1	23.1	27.7	2.09	1.74	-10.65	
785.0	8.90	114.40	783.0	-21.5	34.7	40.5	1.97	1.96	-1.41	
876.0	9.80	115.50	872.8	-27.8	48.1	55.3	1.01	0.99	1.21	
900.0	10.10	115.80	896.4	-29.6	51.9	59.4	1.27	1.25	1.25	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cooley 14-16
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 14-16	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)
943.0	10.80	114.30	938.7	-32.9	58.9	67.2	1.75	1.63	-3.49
1,039.0	11.80	114.60	1,032.8	-40.7	76.1	86.0	1.04	1.04	0.31
1,134.0	12.00	115.70	1,125.8	-49.0	93.8	105.6	0.32	0.21	1.16
1,229.0	12.60	113.90	1,218.6	-57.5	112.2	125.8	0.75	0.63	-1.89
1,324.0	13.50	116.40	1,311.1	-66.6	131.6	147.3	1.12	0.95	2.63
1,419.0	15.70	117.20	1,403.1	-77.4	152.9	171.2	2.33	2.32	0.84
1,515.0	17.90	116.20	1,495.0	-89.9	177.7	198.9	2.31	2.29	-1.04
1,610.0	19.30	116.90	1,585.0	-103.4	204.8	229.2	1.49	1.47	0.74
1,705.0	19.30	119.20	1,674.7	-118.2	232.5	260.5	0.80	0.00	2.42
1,800.0	19.20	118.30	1,764.4	-133.2	260.0	291.7	0.33	-0.11	-0.95
1,895.0	20.80	120.80	1,853.6	-149.3	288.2	324.0	1.91	1.68	2.63
1,990.0	22.30	118.30	1,942.0	-166.5	318.6	358.8	1.85	1.58	-2.63
2,086.0	20.40	111.40	2,031.4	-181.2	350.2	393.7	3.28	-1.98	-7.19
2,181.0	19.30	111.60	2,120.8	-193.0	380.2	425.9	1.16	-1.16	0.21
2,276.0	19.40	112.70	2,210.4	-204.9	409.4	457.3	0.40	0.11	1.16
2,373.0	19.10	112.80	2,302.0	-217.3	438.9	489.3	0.31	-0.31	0.10
2,468.0	18.80	112.30	2,391.8	-229.1	467.4	520.2	0.36	-0.32	-0.53
2,564.0	21.10	112.80	2,482.1	-241.7	497.6	552.9	2.40	2.40	0.52
2,659.0	20.90	112.50	2,570.7	-254.8	529.0	586.9	0.24	-0.21	-0.32
2,754.0	20.70	113.00	2,659.6	-267.8	560.2	620.7	0.28	-0.21	0.53
2,849.0	19.50	114.40	2,748.8	-280.9	590.0	653.3	1.36	-1.26	1.47
2,945.0	19.60	113.20	2,839.2	-293.9	619.4	685.4	0.43	0.10	-1.25
3,040.0	20.00	109.70	2,928.6	-305.7	649.4	717.6	1.32	0.42	-3.68
3,135.0	20.90	107.90	3,017.6	-316.3	680.8	750.6	1.16	0.95	-1.89
3,230.0	20.30	113.70	3,106.6	-328.2	712.0	783.9	2.24	-0.63	6.11
3,325.0	20.80	115.30	3,195.5	-342.0	742.4	817.3	0.79	0.53	1.68
3,420.0	20.30	113.70	3,284.5	-355.8	772.7	850.6	0.79	-0.53	-1.68
3,516.0	17.10	114.00	3,375.4	-368.3	800.9	881.4	3.33	-3.33	0.31
3,611.0	15.80	118.10	3,466.5	-380.0	825.0	908.3	1.83	-1.37	4.32
3,706.0	14.80	116.40	3,558.1	-391.5	847.3	933.3	1.15	-1.05	-1.79
3,801.0	13.30	115.30	3,650.3	-401.6	868.0	956.3	1.60	-1.58	-1.16
3,896.0	12.10	114.10	3,743.0	-410.3	887.0	977.2	1.29	-1.26	-1.26
3,991.0	10.80	115.00	3,836.1	-418.2	904.2	996.1	1.38	-1.37	0.95
4,086.0	9.80	116.70	3,929.6	-425.6	919.5	1,013.1	1.10	-1.05	1.79
4,181.0	9.10	122.90	4,023.3	-433.3	933.0	1,028.6	1.30	-0.74	6.53
4,276.0	7.20	134.80	4,117.3	-441.6	943.5	1,041.5	2.66	-2.00	12.53
4,372.0	5.20	129.50	4,212.7	-448.6	951.2	1,051.4	2.16	-2.08	-5.52
4,459.3	4.18	136.97	4,299.8	-453.4	956.4	1,058.1	1.35	-1.16	8.55
TARGET BHL 510'FSL, 2130'FWL									
4,467.0	4.10	137.80	4,307.4	-453.8	956.8	1,058.6	1.35	-1.11	10.81
4,562.0	3.10	144.80	4,402.2	-458.4	960.5	1,063.9	1.15	-1.05	7.37
4,657.0	1.90	159.80	4,497.1	-462.0	962.5	1,067.2	1.43	-1.26	15.79
4,752.0	1.60	186.70	4,592.1	-464.8	962.9	1,068.7	0.91	-0.32	28.32
4,848.0	1.10	229.70	4,688.1	-466.7	962.1	1,068.7	1.14	-0.52	44.79
4,943.0	0.90	338.50	4,783.1	-466.6	961.1	1,067.8	1.72	-0.21	114.53
5,038.0	1.30	344.00	4,878.1	-464.9	960.5	1,066.6	0.43	0.42	5.79
5,133.0	1.40	342.10	4,973.0	-462.8	959.9	1,065.1	0.12	0.11	-2.00
5,323.0	1.40	312.90	5,163.0	-459.0	957.5	1,061.4	0.37	0.00	-15.37
5,418.0	1.50	313.80	5,257.9	-457.3	955.7	1,059.1	0.11	0.11	0.95
5,513.0	1.40	296.70	5,352.9	-455.9	953.8	1,056.8	0.47	-0.11	-18.00
5,608.0	1.50	300.10	5,447.9	-454.8	951.7	1,054.4	0.14	0.11	3.58
5,703.0	1.10	334.00	5,542.9	-453.3	950.2	1,052.4	0.89	-0.42	35.68
5,798.0	1.00	333.30	5,637.8	-451.8	949.4	1,051.1	0.11	-0.11	-0.74
5,894.0	1.20	338.70	5,733.8	-450.1	948.7	1,049.7	0.23	0.21	5.63

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
5,989.0	1.40	338.00	5,828.8	-448.1	947.9	1,048.2	0.21	0.21	-0.74
6,084.0	1.30	329.80	5,923.8	-446.1	946.9	1,046.5	0.23	-0.11	-8.63
6,179.0	1.30	1.60	6,018.8	-444.1	946.4	1,045.2	0.75	0.00	33.47
6,274.0	1.40	354.40	6,113.7	-441.8	946.3	1,044.2	0.21	0.11	-7.58
6,369.0	1.30	344.90	6,208.7	-439.7	945.9	1,043.0	0.26	-0.11	-10.00
6,465.0	1.20	337.70	6,304.7	-437.7	945.3	1,041.5	0.19	-0.10	-7.50
6,560.0	1.30	331.70	6,399.7	-435.8	944.4	1,040.0	0.17	0.11	-6.32
6,655.0	1.40	331.50	6,494.6	-433.8	943.3	1,038.2	0.11	0.11	-0.21
6,750.0	1.20	347.00	6,589.6	-431.8	942.5	1,036.7	0.42	-0.21	16.32
6,845.0	1.80	2.30	6,684.6	-429.4	942.4	1,035.5	0.75	0.63	16.11
6,940.0	4.50	355.10	6,779.4	-424.2	942.1	1,033.2	2.87	2.84	-7.58
7,036.0	2.90	354.00	6,875.2	-418.0	941.5	1,030.1	1.67	-1.67	-1.15
7,131.0	1.10	315.70	6,970.2	-415.0	940.6	1,028.1	2.26	-1.89	-40.32
7,226.0	0.90	260.20	7,065.1	-414.4	939.3	1,026.6	1.00	-0.21	-58.42
7,321.0	0.70	258.20	7,160.1	-414.7	938.0	1,025.5	0.21	-0.21	-2.11
7,335.5	0.75	249.63	7,174.6	-414.7	937.8	1,025.4	0.81	0.32	-59.06
TARGET CIRCLE 510'FSL & 2130'FWL									
7,336.2	0.75	249.27	7,175.3	-414.7	937.8	1,025.4	0.81	0.38	-54.95
LEGAL BOX 400' X 400' 661'FSL & 1977'FWL									
7,416.0	1.20	220.80	7,255.1	-415.6	936.7	1,024.8	0.81	0.56	-35.66
7,511.0	2.60	170.30	7,350.1	-418.4	936.5	1,025.7	2.17	1.47	-53.16
7,606.0	1.80	156.60	7,445.0	-421.9	937.4	1,028.0	1.00	-0.84	-14.42
7,702.0	1.30	135.00	7,541.0	-424.1	938.8	1,030.1	0.79	-0.52	-22.50
7,797.0	1.20	129.00	7,635.9	-425.5	940.3	1,032.1	0.17	-0.11	-6.32
7,892.0	1.10	142.40	7,730.9	-426.8	941.6	1,033.8	0.30	-0.11	14.11
7,987.0	1.20	124.80	7,825.9	-428.1	943.0	1,035.6	0.38	0.11	-18.53
8,082.0	1.10	119.80	7,920.9	-429.1	944.6	1,037.5	0.15	-0.11	-5.26
8,185.0	1.10	113.90	8,023.9	-430.0	946.4	1,039.5	0.11	0.00	-5.73

Checked By: _____	Approved By: _____	Date: _____
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