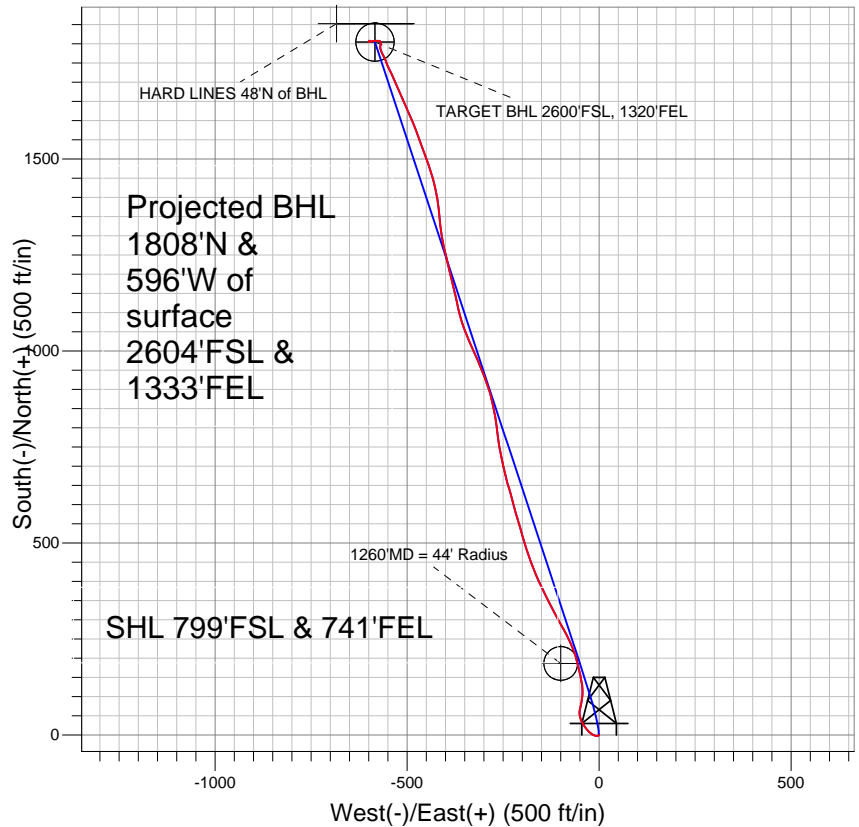


Anadarko, Weld County CO



LEGEND

- + Cottonwood 24-33, Wellbore #1, Plan #2 (11-05-10) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
8440' MD & 8088' TVD @ 1904' VS
0.7 deg Inc 69.5 deg AZ

Project: SEC.33-T2N-R66W
Site: Cottonwood 16-33 Pad Sec.33-T2N-R66W
Well: Cottonwood 24-33
Plan: Wellbore #1



Directional

Anadarko, Weld County CO

SEC.33-T2N-R66W

Cottonwood 16-33 Pad Sec.33-T2N-R66W

Cottonwood 24-33

Wellbore #1

Design: Wellbore #1

Standard Survey Report

02 December, 2010



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cottonwood 24-33
Project:	SEC.33-T2N-R66W	TVD Reference:	WELL @ 5001.0ft (Original Well Elev)
Site:	Cottonwood 16-33 Pad Sec.33-T2N-R66W	MD Reference:	WELL @ 5001.0ft (Original Well Elev)
Well:	Cottonwood 24-33	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.33-T2N-R66W, 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	Cottonwood 16-33 Pad Sec.33-T2N-R66W		
Site Position:		Northing:	1,276,292.40 ft
From:	Lat/Long	Easting:	3,202,778.35 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40° 5' 22.340 N
		Longitude:	104° 46' 30.824 W
		Grid Convergence:	0.47 °

Well	Cottonwood 24-33		
Well Position	+N-S	0.0 ft	Northing: 1,276,292.12 ft
	+E-W	0.0 ft	Easting: 3,202,746.18 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40° 5' 22.340 N
			Longitude: 104° 46' 31.238 W
			Ground Level: 4,986.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2010	8.92	66.82	53,026

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	341.75	

Survey Program	Date	12/2/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
148.0	8,440.0	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	
148.0	0.10	114.00	148.0	-0.1	0.1	-0.1	0.07	0.07	0.00	
238.0	1.30	231.50	238.0	-0.7	-0.6	-0.5	1.50	1.33	130.56	
331.0	2.60	248.50	330.9	-2.1	-3.4	-1.0	1.52	1.40	18.28	
427.0	3.20	278.40	426.8	-2.6	-8.1	0.1	1.67	0.63	31.15	
515.0	4.70	297.10	514.6	-0.6	-13.7	3.8	2.23	1.70	21.25	
604.0	6.10	307.10	603.2	4.0	-20.7	10.3	1.89	1.57	11.24	
697.0	6.70	315.60	695.6	10.8	-28.5	19.2	1.20	0.65	9.14	
791.0	7.30	324.40	788.9	19.6	-35.8	29.8	1.31	0.64	9.36	
886.0	7.60	331.00	883.1	30.0	-42.3	41.7	0.95	0.32	6.95	
946.0	7.00	337.50	942.7	36.8	-45.7	49.3	1.70	-1.00	10.83	
1,055.0	6.80	347.00	1,050.9	49.3	-49.7	62.3	1.06	-0.18	8.72	
1,150.0	6.30	4.60	1,145.3	59.9	-50.5	72.7	2.17	-0.53	18.53	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cottonwood 24-33
Project:	SEC.33-T2N-R66W	TVD Reference:	WELL @ 5001.0ft (Original Well Elev)
Site:	Cottonwood 16-33 Pad Sec.33-T2N-R66W	MD Reference:	WELL @ 5001.0ft (Original Well Elev)
Well:	Cottonwood 24-33	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)
1,246.0	8.20	12.70	1,240.5	71.9	-48.6	83.5	2.24	1.98	8.44
1,299.4	9.49	12.27	1,293.2	79.9	-46.8	90.5	2.42	2.42	-0.81
1260' MD = 44' Radius									
1,341.0	10.50	12.00	1,334.2	86.9	-45.3	96.8	2.42	2.42	-0.64
1,436.0	11.10	4.00	1,427.5	104.5	-42.9	112.7	1.70	0.63	-8.42
1,531.0	12.60	354.70	1,520.5	124.0	-43.2	131.3	2.55	1.58	-9.79
1,626.0	14.50	348.30	1,612.9	146.0	-46.5	153.2	2.54	2.00	-6.74
1,722.0	16.90	346.40	1,705.3	171.3	-52.3	179.0	2.56	2.50	-1.98
1,817.0	17.90	345.10	1,795.9	198.8	-59.3	207.4	1.13	1.05	-1.37
1,912.0	18.30	337.00	1,886.3	226.7	-68.8	236.8	2.68	0.42	-8.53
2,008.0	18.80	334.10	1,977.3	254.4	-81.5	267.2	1.09	0.52	-3.02
2,104.0	19.80	330.20	2,067.9	282.5	-96.3	298.4	1.70	1.04	-4.06
2,200.0	21.80	331.80	2,157.6	312.3	-112.8	331.9	2.17	2.08	1.67
2,295.0	23.60	333.10	2,245.3	344.8	-129.8	368.1	1.97	1.89	1.37
2,390.0	24.50	334.20	2,332.0	379.5	-147.0	406.4	1.06	0.95	1.16
2,485.0	25.50	336.80	2,418.1	416.0	-163.6	446.3	1.56	1.05	2.74
2,581.0	27.40	340.00	2,504.1	455.8	-179.3	489.0	2.47	1.98	3.33
2,676.0	27.10	343.80	2,588.5	497.1	-192.8	532.5	1.86	-0.32	4.00
2,771.0	26.20	343.30	2,673.4	538.0	-204.9	575.1	0.98	-0.95	-0.53
2,866.0	26.00	343.30	2,758.7	578.0	-216.9	616.8	0.21	-0.21	0.00
2,961.0	24.50	346.30	2,844.7	617.1	-227.5	657.3	2.08	-1.58	3.16
3,056.0	23.60	342.80	2,931.4	654.4	-237.8	696.0	1.77	-0.95	-3.68
3,152.0	24.80	348.40	3,019.0	692.5	-247.5	735.2	2.70	1.25	5.83
3,247.0	22.50	347.30	3,106.0	729.7	-255.5	773.1	2.47	-2.42	-1.16
3,342.0	24.70	352.80	3,193.1	767.2	-262.0	810.6	3.27	2.32	5.79
3,437.0	22.50	352.70	3,280.1	804.9	-266.8	848.0	2.32	-2.32	-0.11
3,532.0	24.50	349.70	3,367.2	842.3	-272.7	885.3	2.45	2.11	-3.16
3,627.0	24.80	344.90	3,453.6	880.9	-281.4	924.7	2.13	0.32	-5.05
3,722.0	23.70	340.00	3,540.2	918.1	-293.1	963.7	2.41	-1.16	-5.16
3,817.0	21.10	337.80	3,628.0	951.9	-306.1	999.9	2.88	-2.74	-2.32
3,912.0	21.10	335.70	3,716.7	983.3	-319.6	1,033.9	0.80	0.00	-2.21
4,008.0	20.50	336.80	3,806.4	1,014.5	-333.3	1,067.9	0.75	-0.63	1.15
4,103.0	19.90	338.00	3,895.6	1,044.8	-345.9	1,100.6	0.77	-0.63	1.26
4,198.0	20.40	341.80	3,984.8	1,075.5	-357.2	1,133.3	1.47	0.53	4.00
4,293.0	20.00	347.40	4,073.9	1,107.1	-365.9	1,166.0	2.08	-0.42	5.89
4,388.0	20.90	348.40	4,162.9	1,139.6	-372.8	1,199.0	1.02	0.95	1.05
4,484.0	24.00	345.30	4,251.7	1,175.2	-381.2	1,235.5	3.46	3.23	-3.23
4,579.0	24.10	347.50	4,338.4	1,212.9	-390.3	1,274.1	0.95	0.11	2.32
4,674.0	22.80	345.80	4,425.6	1,249.6	-399.0	1,311.7	1.54	-1.37	-1.79
4,769.0	21.10	348.60	4,513.7	1,284.2	-406.9	1,347.1	2.10	-1.79	2.95
4,864.0	20.70	353.90	4,602.4	1,317.7	-412.1	1,380.5	2.03	-0.42	5.58
4,959.0	20.50	354.80	4,691.4	1,351.0	-415.4	1,413.1	0.39	-0.21	0.95
5,054.0	21.60	351.70	4,780.0	1,384.8	-419.4	1,446.5	1.65	1.16	-3.26
5,149.0	24.20	348.50	4,867.5	1,421.2	-425.8	1,483.1	3.03	2.74	-3.37
5,244.0	27.00	342.90	4,953.2	1,460.9	-436.1	1,524.0	3.89	2.95	-5.89
5,339.0	26.30	339.80	5,038.1	1,501.3	-449.7	1,566.6	1.64	-0.74	-3.26
5,434.0	23.70	340.20	5,124.2	1,539.0	-463.4	1,606.7	2.74	-2.74	0.42
5,530.0	23.10	338.90	5,212.3	1,574.7	-476.7	1,644.8	0.82	-0.63	-1.35
5,625.0	21.60	336.60	5,300.2	1,608.2	-490.4	1,680.9	1.83	-1.58	-2.42
5,720.0	20.00	335.90	5,389.0	1,639.1	-504.0	1,714.4	1.70	-1.68	-0.74
5,815.0	16.50	336.50	5,479.2	1,666.3	-516.0	1,744.0	3.69	-3.68	0.63
5,910.0	16.00	336.10	5,570.4	1,690.6	-526.7	1,770.5	0.54	-0.53	-0.42
6,005.0	14.90	336.10	5,662.0	1,713.8	-536.9	1,795.7	1.16	-1.16	0.00
6,101.0	11.90	334.20	5,755.3	1,734.0	-546.2	1,817.8	3.16	-3.13	-1.98

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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)
6,196.0	10.90	338.80	5,848.5	1,751.1	-553.7	1,836.5	1.42	-1.05	4.84
6,257.5	10.05	335.77	5,908.9	1,761.5	-558.0	1,847.6	1.65	-1.38	-4.93
TARGET BHL 2600'FSL, 1320'FEL									
6,291.0	9.60	333.90	5,942.0	1,766.6	-560.5	1,853.3	1.65	-1.34	-5.58
6,386.0	7.00	335.70	6,035.9	1,779.0	-566.3	1,866.9	2.75	-2.74	1.89
6,481.0	4.70	347.90	6,130.5	1,788.1	-569.5	1,876.5	2.74	-2.42	12.84
6,576.0	3.80	19.00	6,225.2	1,794.9	-569.3	1,882.9	2.56	-0.95	32.74
6,672.0	3.00	11.00	6,321.0	1,800.4	-567.8	1,887.6	0.97	-0.83	-8.33
6,767.0	2.10	329.40	6,415.9	1,804.3	-568.2	1,891.5	2.10	-0.95	-43.79
6,862.0	2.90	291.60	6,510.9	1,806.7	-571.3	1,894.7	1.88	0.84	-39.79
6,957.0	2.90	271.90	6,605.7	1,807.7	-576.0	1,897.1	1.04	0.00	-20.74
7,052.0	2.50	263.70	6,700.6	1,807.5	-580.4	1,898.4	0.58	-0.42	-8.63
7,147.0	2.30	265.60	6,795.6	1,807.1	-584.4	1,899.2	0.23	-0.21	2.00
7,242.0	2.00	262.70	6,890.5	1,806.8	-587.9	1,900.0	0.34	-0.32	-3.05
7,338.0	1.80	262.40	6,986.4	1,806.4	-591.1	1,900.6	0.21	-0.21	-0.31
7,433.0	1.50	265.70	7,081.4	1,806.1	-593.8	1,901.2	0.33	-0.32	3.47
7,504.4	1.29	237.42	7,152.8	1,805.6	-595.4	1,901.2	1.00	-0.30	-39.62
TARGET CIRCLE 2600'FSL & 1320'FEL									
7,528.0	1.30	227.00	7,176.4	1,805.2	-595.8	1,901.0	1.00	0.05	-44.12
7,623.0	0.90	275.50	7,271.4	1,804.6	-597.4	1,900.9	1.03	-0.42	51.05
7,718.0	0.60	279.50	7,366.3	1,804.7	-598.6	1,901.4	0.32	-0.32	4.21
7,814.0	0.40	294.00	7,462.3	1,805.0	-599.4	1,901.9	0.24	-0.21	15.10
7,909.0	0.20	341.90	7,557.3	1,805.2	-599.8	1,902.3	0.32	-0.21	50.42
8,004.0	0.40	21.80	7,652.3	1,805.7	-599.7	1,902.7	0.29	0.21	42.00
8,099.0	0.60	28.10	7,747.3	1,806.5	-599.3	1,903.3	0.22	0.21	6.63
8,194.0	0.50	66.10	7,842.3	1,807.1	-598.7	1,903.7	0.39	-0.11	40.00
8,291.0	0.60	69.10	7,939.3	1,807.4	-597.9	1,903.7	0.11	0.10	3.09
8,396.0	0.70	69.50	8,044.3	1,807.8	-596.7	1,903.8	0.10	0.10	0.38
8,422.9	0.70	69.50	8,071.2	1,808.0	-596.4	1,903.8	0.00	0.00	0.00
HARD LINES 48'N of BHL									
8,440.0	0.70	69.50	8,088.3	1,808.0	-596.2	1,903.8	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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