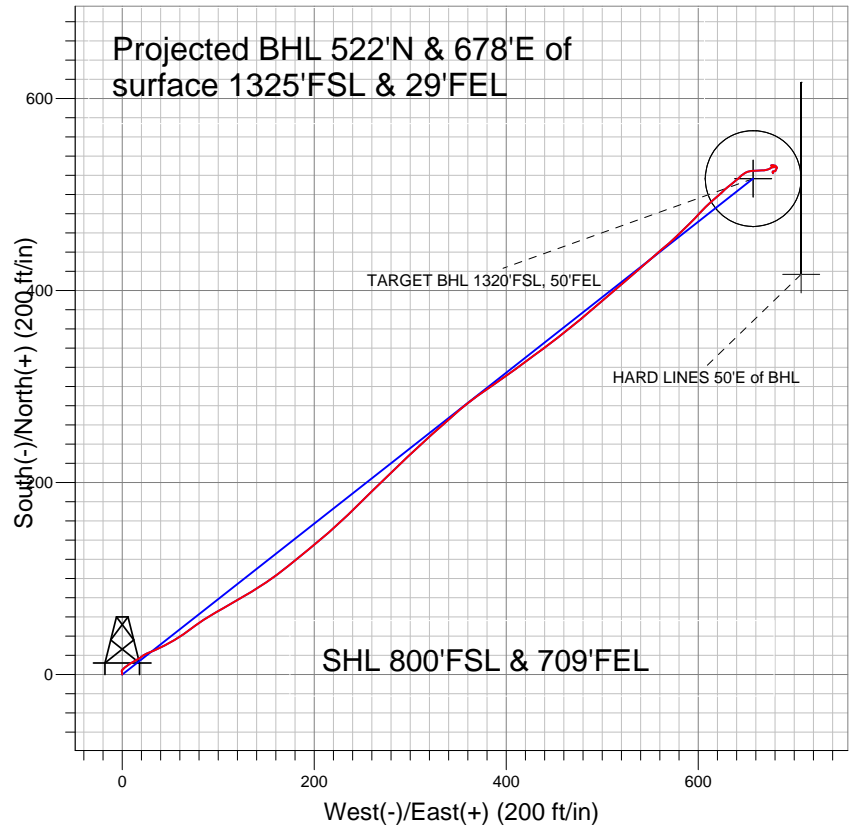


Anadarko, Weld County CO



LEGEND

- + Cottonwood 39-33, Wellbore #1, Plan #1 (11-01-10) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
7740'MD & 7641'TVD @ 855' VS
0.4 deg Inc 170.0 deg AZ

Project: SEC.33-T2N-R66W
Site: Cottonwood 16-33 Pad Sec.33-T2N-R66W
Well: Cottonwood 39-33
Plan: Wellbore #1



Directional

Anadarko, Weld County CO

SEC.33-T2N-R66W

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

Cottonwood 39-33

Wellbore #1

Survey: Survey #1

Standard Survey Report

15 November, 2010

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cottonwood 39-33
Project:	SEC.33-T2N-R66W	TVD Reference:	WELL @ 5002.0ft (Original Well Elev)
Site:	Cottonwood 16-33 Pad Sec.33-T2N-R66W	MD Reference:	WELL @ 5002.0ft (Original Well Elev)
Well:	Cottonwood 39-33	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 39-33		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40° 5' 22.340 N
		Longitude:	104° 46' 30.824 W
		Ground Level:	4,987.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/1/2010	8.93	66.82	53,031

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	52.40	

Survey Program	Date	11/15/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
188.0	7,740.0	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	
188.0	0.90	352.00	188.0	1.5	-0.2	0.7	0.48	0.48	0.00	
278.0	1.20	338.00	278.0	3.0	-0.7	1.3	0.44	0.33	-15.56	
370.0	1.20	49.70	370.0	4.6	-0.3	2.6	1.53	0.00	77.93	
610.0	1.60	48.10	609.9	8.4	4.1	8.4	0.17	0.17	-0.67	
859.0	2.10	60.50	858.8	13.0	10.7	16.4	0.26	0.20	4.98	
950.0	1.90	68.20	949.7	14.4	13.5	19.5	0.37	-0.22	8.46	
1,034.0	2.80	53.00	1,033.6	16.1	16.5	22.9	1.29	1.07	-18.10	
1,129.0	4.80	57.60	1,128.4	19.6	21.7	29.2	2.13	2.11	4.84	
1,224.0	5.40	70.00	1,223.0	23.3	29.2	37.4	1.32	0.63	13.05	
1,320.0	8.60	62.40	1,318.3	28.2	39.8	48.8	3.46	3.33	-7.92	
1,415.0	9.60	61.80	1,412.1	35.2	53.1	63.6	1.06	1.05	-0.63	
1,510.0	12.00	52.30	1,505.4	45.0	67.9	81.3	3.14	2.53	-10.00	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Cottonwood 39-33
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Site:	Cottonwood 16-33 Pad Sec.33-T2N-R66W	MD Reference:	WELL @ 5002.0ft (Original Well Elev)
Well:	Cottonwood 39-33	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)
1,605.0	13.10	57.30	1,598.2	56.8	84.8	101.9	1.63	1.16	5.26
1,700.0	15.80	60.70	1,690.2	69.0	105.1	125.4	2.98	2.84	3.58
1,795.0	15.30	59.70	1,781.7	81.7	127.2	150.6	0.60	-0.53	-1.05
1,891.0	17.10	55.90	1,873.9	96.0	149.9	177.3	2.18	1.88	-3.96
1,986.0	17.40	51.20	1,964.6	112.7	172.5	205.4	1.50	0.32	-4.95
2,081.0	16.70	50.70	2,055.4	130.2	194.1	233.3	0.75	-0.74	-0.53
2,176.0	16.60	49.00	2,146.4	147.8	214.9	260.5	0.52	-0.11	-1.79
2,271.0	16.90	46.20	2,237.4	166.2	235.1	287.7	0.91	0.32	-2.95
2,366.0	15.40	44.40	2,328.7	184.8	253.9	314.0	1.66	-1.58	-1.89
2,461.0	14.30	46.40	2,420.5	201.9	271.3	338.1	1.28	-1.16	2.11
2,557.0	12.70	46.80	2,513.8	217.3	287.5	360.4	1.67	-1.67	0.42
2,652.0	13.40	45.70	2,606.4	232.2	303.0	381.7	0.78	0.74	-1.16
2,747.0	13.00	48.70	2,698.9	246.9	318.9	403.3	0.83	-0.42	3.16
2,842.0	13.80	47.90	2,791.3	261.5	335.4	425.3	0.86	0.84	-0.84
2,937.0	13.10	49.40	2,883.7	276.1	352.0	447.3	0.82	-0.74	1.58
3,033.0	13.80	54.50	2,977.0	289.9	369.5	469.6	1.43	0.73	5.31
3,128.0	15.10	55.40	3,069.0	303.5	388.9	493.3	1.39	1.37	0.95
3,223.0	15.40	53.80	3,160.7	318.0	409.3	518.3	0.54	0.32	-1.68
3,318.0	14.90	53.80	3,252.4	332.6	429.3	543.1	0.53	-0.53	0.00
3,413.0	15.20	52.90	3,344.1	347.3	449.1	567.8	0.40	0.32	-0.95
3,508.0	16.00	50.30	3,435.6	363.2	469.1	593.3	1.12	0.84	-2.74
3,603.0	14.60	49.80	3,527.3	379.3	488.4	618.4	1.48	-1.47	-0.53
3,698.0	14.90	49.10	3,619.1	395.0	506.7	642.5	0.37	0.32	-0.74
3,794.0	15.50	50.50	3,711.8	411.3	526.0	667.7	0.73	0.63	1.46
3,889.0	14.90	47.50	3,803.5	427.6	544.8	692.5	1.04	-0.63	-3.16
3,984.0	13.10	50.00	3,895.6	442.8	562.0	715.4	2.00	-1.89	2.63
4,079.0	11.30	46.80	3,988.5	456.1	577.1	735.5	2.02	-1.89	-3.37
4,174.0	11.20	44.60	4,081.7	469.0	590.3	753.9	0.46	-0.11	-2.32
4,269.0	9.50	42.40	4,175.1	481.4	602.1	770.7	1.84	-1.79	-2.32
4,364.0	9.20	49.70	4,268.8	492.1	613.2	786.0	1.29	-0.32	7.68
4,460.0	8.60	46.90	4,363.7	501.9	624.3	800.8	0.77	-0.63	-2.92
4,555.0	6.60	52.00	4,457.9	510.2	633.7	813.4	2.22	-2.11	5.37
4,650.0	5.40	48.00	4,552.3	516.5	641.4	823.3	1.34	-1.26	-4.21
4,745.0	4.40	52.70	4,647.0	521.7	647.6	831.4	1.13	-1.05	4.95
4,840.0	5.10	83.80	4,741.7	524.4	654.7	838.6	2.77	0.74	32.74
4,935.0	6.20	89.00	4,836.2	524.9	664.0	846.4	1.28	1.16	5.47
5,030.0	3.10	72.00	4,930.9	525.8	671.6	852.9	3.54	-3.26	-17.89
5,125.0	1.50	57.50	5,025.8	527.3	675.1	856.6	1.78	-1.68	-15.26
5,220.0	0.40	63.50	5,120.8	528.1	676.4	858.1	1.16	-1.16	6.32
5,299.1	0.40	80.77	5,199.8	528.3	676.9	858.6	0.15	0.00	21.84
TARGET BHL 1320'FSL, 50'FEL									
5,315.0	0.40	84.20	5,215.8	528.3	677.1	858.7	0.15	0.02	21.53
5,410.0	0.20	98.90	5,310.8	528.3	677.5	859.1	0.22	-0.21	15.47
5,506.0	0.40	45.10	5,406.8	528.5	677.9	859.6	0.34	0.21	-56.04
5,601.0	0.40	140.50	5,501.8	528.5	678.4	859.9	0.62	0.00	100.42
5,696.0	0.40	23.20	5,596.8	528.5	678.7	860.2	0.72	0.00	-123.47
5,791.0	0.60	56.60	5,691.8	529.1	679.3	861.0	0.36	0.21	35.16
5,886.0	0.70	49.10	5,786.8	529.7	680.1	862.1	0.14	0.11	-7.89
5,981.0	0.60	248.30	5,881.8	529.9	680.1	862.2	1.35	-0.11	-169.26
6,077.0	0.40	296.40	5,977.8	529.9	679.3	861.6	0.47	-0.21	50.10
6,172.0	0.60	278.90	6,072.8	530.1	678.6	861.1	0.26	0.21	-18.42
6,267.0	0.70	281.40	6,167.8	530.3	677.5	860.3	0.11	0.11	2.63
6,362.0	0.50	253.10	6,262.8	530.3	676.5	859.6	0.37	-0.21	-29.79
6,454.0	0.30	293.00	6,354.8	530.3	675.9	859.1	0.36	-0.22	43.37

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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)
6,549.0	0.30	158.60	6,449.8	530.2	675.8	858.9	0.58	0.00	-141.47
6,647.0	0.40	86.10	6,547.8	529.9	676.2	859.1	0.43	0.10	-73.98
6,742.0	0.80	89.00	6,642.8	530.0	677.2	859.9	0.42	0.42	3.05
6,837.0	1.50	102.00	6,737.7	529.7	679.1	861.3	0.78	0.74	13.68
6,932.0	0.70	152.50	6,832.7	529.0	680.6	862.0	1.25	-0.84	53.16
7,028.0	0.80	89.00	6,928.7	528.4	681.5	862.4	0.83	0.10	-66.15
7,123.0	1.00	193.20	7,023.7	527.7	682.0	862.3	1.50	0.21	109.68
7,218.0	0.90	230.00	7,118.7	526.4	681.2	860.9	0.64	-0.11	38.74
7,263.6	0.93	208.30	7,164.3	525.8	680.8	860.2	0.76	0.07	-47.55
TARGET CIRCLE 1320'FSL, 50'FEL									
7,313.0	1.10	189.20	7,213.7	525.0	680.5	859.5	0.76	0.34	-38.69
7,408.0	1.70	270.70	7,308.7	524.1	679.0	857.7	1.98	0.63	85.79
7,503.0	0.60	208.80	7,403.6	523.7	677.3	856.1	1.59	-1.16	-65.16
7,599.0	0.50	133.50	7,499.6	523.0	677.4	855.8	0.70	-0.10	-78.44
7,689.0	0.40	170.00	7,589.6	522.4	677.7	855.7	0.33	-0.11	40.56
7,740.0	0.40	170.00	7,640.6	522.0	677.8	855.5	0.00	0.00	0.00
HARD LINES 50'E of BHL									

Checked By: _____ Approved By: _____ Date: _____