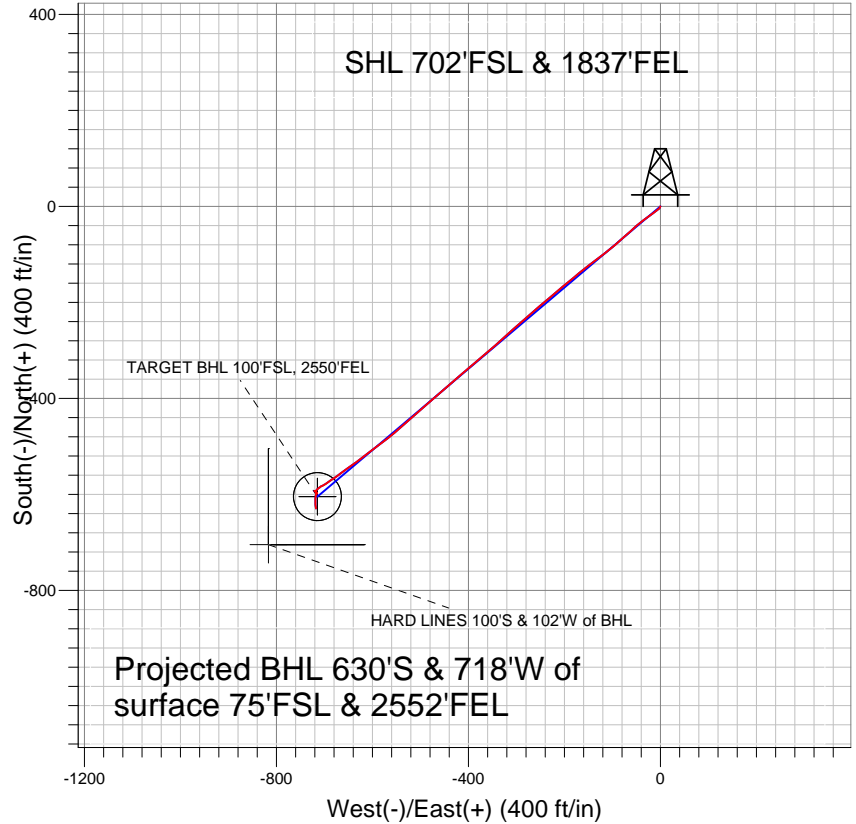


## Anadarko, Weld County CO



### LEGEND

- Rural 36-31, Wellbore #1, Plan #1 (1-10-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
8120'MD & 7974'TVD @ 955' VS  
1.1 deg Inc 170.0 deg AZ

Project: SEC.31-T4N-R65W  
Site: Rural 15-31 Pad Sec.31-T4N-R65W  
Well: Rural 36-31  
Plan: Wellbore #1



## **Anadarko, Weld County CO**

**SEC.31-T4N-R65W**

**Rural 15-31 Pad Sec.31-T4N-R65W**

**Rural 36-31**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**14 February, 2011**



<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rural 36-31
<b>Project:</b>	SEC.31-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4932.0ft (Original Well Elev)
<b>Site:</b>	Rural 15-31 Pad Sec.31-T4N-R65W	<b>MD Reference:</b>	WELL @ 4932.0ft (Original Well Elev)
<b>Well:</b>	Rural 36-31	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.31-T4N-R65W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Rural 15-31 Pad Sec.31-T4N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	1,339,873.57 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,222,349.36 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 15' 48.996 N
		<b>Longitude:</b>	104° 42' 11.664 W
		<b>Grid Convergence:</b>	0.51 °

<b>Well</b>	Rural 36-31		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,339,873.55 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,222,349.36 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 40° 15' 48.996 N
			<b>Longitude:</b> 104° 42' 11.664 W
			<b>Ground Level:</b> 4,918.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/3/2011	8.87	66.96	53,104

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	229.76	

<b>Survey Program</b>	<b>Date</b>	2/14/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
113.0	8,120.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
113.0	0.70	211.90	113.0	-0.6	-0.4	0.7	0.62	0.62	0.00	
206.0	0.90	200.30	206.0	-1.8	-0.9	1.8	0.28	0.22	-12.47	
330.0	1.40	211.60	330.0	-4.0	-2.0	4.1	0.44	0.40	9.11	
452.0	1.20	236.90	451.9	-5.9	-3.9	6.8	0.49	-0.16	20.74	
585.0	1.10	234.10	584.9	-7.4	-6.1	9.5	0.09	-0.08	-2.11	
720.0	1.50	231.90	719.9	-9.3	-8.5	12.5	0.30	0.30	-1.63	
810.0	1.00	228.90	809.8	-10.5	-10.1	14.5	0.56	-0.56	-3.33	
898.0	2.40	227.40	897.8	-12.3	-12.0	17.1	1.59	1.59	-1.70	
987.0	3.60	240.50	986.7	-14.9	-15.8	21.7	1.54	1.35	14.72	
1,076.0	4.90	235.60	1,075.4	-18.4	-21.4	28.2	1.52	1.46	-5.51	
1,164.0	6.70	232.60	1,163.0	-23.7	-28.5	37.1	2.07	2.05	-3.41	
1,253.0	8.60	229.60	1,251.2	-31.1	-37.7	48.9	2.18	2.13	-3.37	

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rural 36-31
<b>Project:</b>	SEC.31-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4932.0ft (Original Well Elev)
<b>Site:</b>	Rural 15-31 Pad Sec.31-T4N-R65W	<b>MD Reference:</b>	WELL @ 4932.0ft (Original Well Elev)
<b>Well:</b>	Rural 36-31	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,342.0	10.20	230.60	1,339.0	-40.5	-48.9	63.5	1.81	1.80	1.12
1,430.0	12.00	228.60	1,425.3	-51.5	-61.8	80.4	2.09	2.05	-2.27
1,519.0	13.90	228.50	1,512.1	-64.7	-76.7	100.3	2.13	2.13	-0.11
1,607.0	16.20	228.60	1,597.1	-79.8	-93.9	123.2	2.61	2.61	0.11
1,696.0	16.40	232.70	1,682.5	-95.6	-113.2	148.1	1.31	0.22	4.61
1,785.0	18.10	233.10	1,767.5	-111.5	-134.2	174.5	1.91	1.91	0.45
1,873.0	19.70	231.50	1,850.7	-129.0	-156.8	203.0	1.91	1.82	-1.82
1,962.0	20.00	230.10	1,934.4	-148.1	-180.2	233.2	0.63	0.34	-1.57
2,051.0	19.50	230.30	2,018.2	-167.3	-203.3	263.3	0.57	-0.56	0.22
2,139.0	20.00	229.80	2,101.0	-186.4	-226.1	293.0	0.60	0.57	-0.57
2,228.0	20.50	230.00	2,184.5	-206.3	-249.6	323.8	0.57	0.56	0.22
2,317.0	21.30	228.20	2,267.7	-227.1	-273.6	355.5	1.15	0.90	-2.02
2,405.0	21.00	229.50	2,349.7	-247.9	-297.5	387.3	0.63	-0.34	1.48
2,494.0	20.70	226.20	2,432.9	-269.2	-321.0	418.9	1.36	-0.34	-3.71
2,582.0	19.80	229.50	2,515.5	-289.6	-343.6	449.4	1.65	-1.02	3.75
2,671.0	20.00	229.50	2,599.2	-309.3	-366.6	479.7	0.22	0.22	0.00
2,760.0	19.90	230.20	2,682.8	-328.9	-389.8	510.0	0.29	-0.11	0.79
2,848.0	22.10	229.00	2,765.0	-349.3	-413.8	541.6	2.55	2.50	-1.36
2,937.0	22.20	229.00	2,847.4	-371.4	-439.1	575.1	0.11	0.11	0.00
3,026.0	22.30	229.00	2,929.8	-393.5	-464.6	608.8	0.11	0.11	0.00
3,114.0	22.50	229.30	3,011.1	-415.4	-489.9	642.3	0.26	0.23	0.34
3,203.0	22.60	228.20	3,093.3	-437.9	-515.6	676.5	0.49	0.11	-1.24
3,292.0	22.60	228.30	3,175.5	-460.7	-541.1	710.7	0.04	0.00	0.11
3,380.0	21.30	232.00	3,257.1	-481.8	-566.3	743.5	2.16	-1.48	4.20
3,469.0	19.30	233.30	3,340.6	-500.5	-590.9	774.4	2.30	-2.25	1.46
3,558.0	17.60	231.90	3,425.0	-517.6	-613.3	802.5	1.97	-1.91	-1.57
3,646.0	15.40	234.10	3,509.4	-532.7	-633.2	827.4	2.60	-2.50	2.50
3,735.0	13.80	234.60	3,595.5	-545.7	-651.4	849.8	1.80	-1.80	0.56
3,823.0	11.90	233.80	3,681.3	-557.2	-667.3	869.3	2.17	-2.16	-0.91
3,912.0	9.60	235.70	3,768.7	-566.8	-680.8	885.9	2.61	-2.58	2.13
4,001.0	7.60	234.30	3,856.7	-574.4	-691.7	899.1	2.26	-2.25	-1.57
4,089.0	5.80	243.10	3,944.1	-579.8	-700.4	909.2	2.35	-2.05	10.00
4,178.0	4.30	236.60	4,032.8	-583.7	-707.2	916.9	1.80	-1.69	-7.30
4,267.0	3.00	232.90	4,121.6	-586.9	-711.9	922.6	1.48	-1.46	-4.16
4,355.0	2.00	220.30	4,209.5	-589.5	-714.7	926.4	1.29	-1.14	-14.32
4,444.0	1.80	220.70	4,298.5	-591.7	-716.6	929.3	0.23	-0.22	0.45
4,533.0	0.50	231.90	4,387.4	-593.0	-717.8	931.1	1.48	-1.46	12.58
4,621.0	0.40	232.40	4,475.4	-593.5	-718.4	931.7	0.11	-0.11	0.57
4,754.0	0.70	269.40	4,608.4	-593.7	-719.6	932.8	0.34	0.23	27.82
4,887.0	0.10	306.30	4,741.4	-593.7	-720.5	933.5	0.47	-0.45	27.74
5,020.0	0.30	42.00	4,874.4	-593.4	-720.3	933.2	0.24	0.15	71.96
5,145.6	0.47	125.79	5,000.0	-593.4	-719.7	932.7	0.42	0.14	66.71
<b>TARGET BHL 100'FSL, 2550'FEL</b>									
5,153.0	0.50	127.80	5,007.4	-593.5	-719.6	932.7	0.42	0.36	27.21
5,286.0	0.90	126.10	5,140.4	-594.4	-718.3	932.3	0.30	0.30	-1.28
5,419.0	0.50	159.10	5,273.4	-595.6	-717.3	932.3	0.42	-0.30	24.81
5,552.0	0.50	136.40	5,406.4	-596.5	-716.7	932.4	0.15	0.00	-17.07
5,685.0	0.30	184.50	5,539.4	-597.3	-716.3	932.7	0.28	-0.15	36.17
5,818.0	0.40	150.00	5,672.4	-598.1	-716.1	933.0	0.17	0.08	-25.94
5,951.0	0.10	4.30	5,805.4	-598.3	-715.9	933.0	0.37	-0.23	-109.55
6,084.0	0.70	344.40	5,938.4	-597.5	-716.1	932.6	0.46	0.45	-14.96
6,217.0	0.30	343.30	6,071.4	-596.3	-716.4	932.1	0.30	-0.30	-0.83
6,350.0	0.30	190.00	6,204.4	-596.3	-716.6	932.2	0.44	0.00	-115.26
6,483.0	0.40	183.30	6,337.4	-597.1	-716.6	932.8	0.08	0.08	-5.04

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rural 36-31
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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
6,616.0	0.80	200.70	6,470.4	-598.5	-717.0	933.9	0.33	0.30	13.08
6,749.0	1.00	192.80	6,603.4	-600.5	-717.6	935.7	0.18	0.15	-5.94
6,882.0	1.10	191.00	6,736.3	-602.9	-718.1	937.6	0.08	0.08	-1.35
7,014.0	0.80	179.40	6,868.3	-605.0	-718.3	939.2	0.27	-0.23	-8.79
7,147.0	1.10	182.00	7,001.3	-607.2	-718.3	940.6	0.23	0.23	1.95
7,189.6	1.10	184.43	7,043.9	-608.1	-718.4	941.2	0.11	0.00	5.71
<b>TARGET CIRCLE 100'FSL &amp; 2550'FEL</b>									
7,280.0	1.10	189.60	7,134.3	-609.8	-718.6	942.5	0.11	0.00	5.72
7,413.0	1.80	180.70	7,267.2	-613.1	-718.8	944.8	0.55	0.53	-6.69
7,546.0	1.70	171.20	7,400.2	-617.2	-718.6	947.2	0.23	-0.08	-7.14
7,679.0	1.20	179.40	7,533.1	-620.5	-718.3	949.1	0.41	-0.38	6.17
7,812.0	1.30	182.40	7,666.1	-623.4	-718.3	951.0	0.09	0.08	2.26
7,945.0	1.20	171.20	7,799.1	-626.3	-718.2	952.8	0.20	-0.08	-8.42
8,074.0	1.10	170.00	7,928.0	-628.8	-717.7	954.1	0.08	-0.08	-0.93
<b>HARD LINES 100'S &amp; 102'W of BHL</b>									
8,120.0	1.10	170.00	7,974.0	-629.7	-717.6	954.5	0.00	0.00	0.00

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_