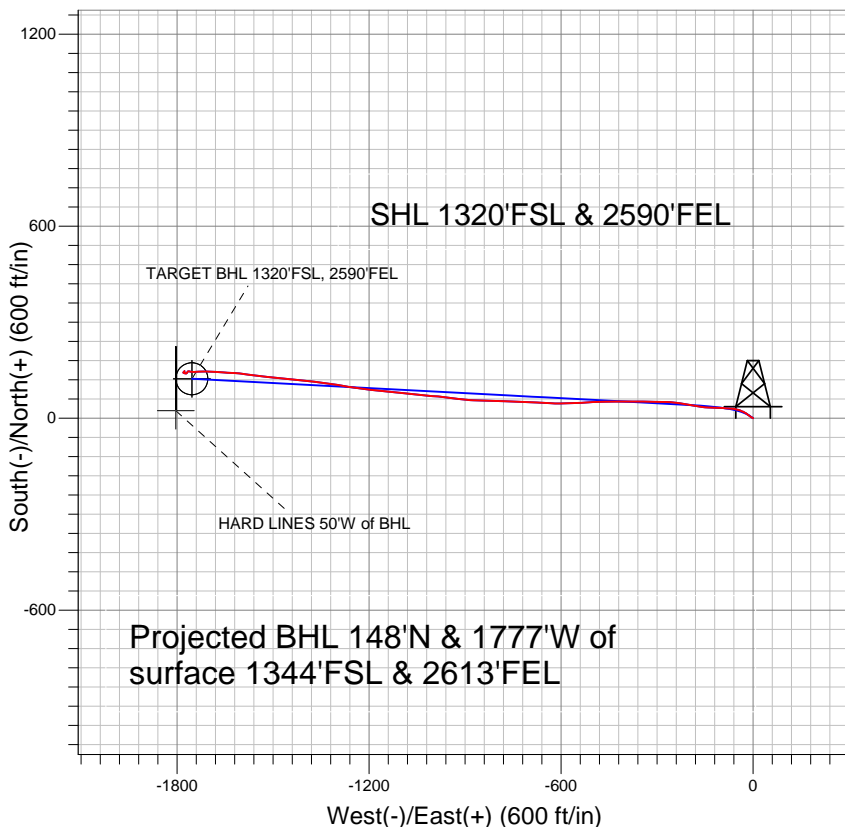


## Anadarko, Weld County CO



### LEGEND

- Denver 23-18, Wellbore #1, Plan #1 (12-14-10) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
8400'MD & 8081'TVD @ 1783' VS  
0.6 deg Inc 19.4 deg AZ

Project: SEC.18-T1N-R66W  
Site: Denver 20-18 Pad Sec.18-T1N-R66W  
Well: Denver 23-18  
Plan: Wellbore #1



## **Anadarko, Weld County CO**

**SEC.18-T1N-R66W**

**Denver 20-18 Pad Sec.18-T1N-R66W**

**Denver 23-18**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**16 February, 2011**



<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Denver 23-18
<b>Project:</b>	SEC.18-T1N-R66W	<b>TVD Reference:</b>	WELL @ 4950.0ft (Original Well Elev)
<b>Site:</b>	Denver 20-18 Pad Sec.18-T1N-R66W	<b>MD Reference:</b>	WELL @ 4950.0ft (Original Well Elev)
<b>Well:</b>	Denver 23-18	<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.18-T1N-R66W, Weld County, Colorado		
<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>	Denver 20-18 Pad Sec.18-T1N-R66W		
<b>Site Position:</b>		<b>Northing:</b>	1,260,775.29 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,192,217.36 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 2' 49.826 N
		<b>Longitude:</b>	104° 48' 48.254 W
		<b>Grid Convergence:</b>	0.44 °

<b>Well</b>	Denver 23-18		
<b>Well Position</b>	<b>+N-S</b>	0.0 ft	<b>Northing:</b> 1,260,774.75 ft
	<b>+E-W</b>	0.0 ft	<b>Easting:</b> 3,192,197.21 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 40° 2' 49.823 N
			<b>Longitude:</b> 104° 48' 48.514 W
			<b>Ground Level:</b> 4,935.0 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	1/26/2011	8.91	66.77	52,980

<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	274.75	

<b>Survey Program</b>	<b>Date</b>	2/16/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
172.0	8,400.0	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	
172.0	0.70	310.60	172.0	0.7	-0.8	0.9	0.41	0.41	0.00	
261.0	2.00	296.30	261.0	1.7	-2.6	2.7	1.50	1.46	-16.07	
353.0	3.30	302.70	352.9	3.9	-6.3	6.6	1.45	1.41	6.96	
445.0	5.00	309.00	444.6	7.8	-11.6	12.2	1.91	1.85	6.85	
537.0	6.80	304.20	536.1	13.4	-19.2	20.3	2.03	1.96	-5.22	
629.0	9.30	296.00	627.2	19.7	-30.4	32.0	2.98	2.72	-8.91	
721.0	11.30	287.00	717.7	25.6	-45.7	47.7	2.78	2.17	-9.78	
816.0	12.20	276.00	810.8	29.4	-64.6	66.8	2.54	0.95	-11.58	
911.0	14.20	274.00	903.2	31.3	-86.2	88.5	2.16	2.11	-2.11	
952.0	14.70	272.40	943.0	31.8	-96.4	98.7	1.56	1.22	-3.90	
1,025.0	15.30	271.40	1,013.5	32.4	-115.3	117.6	0.90	0.82	-1.37	
1,121.0	15.60	273.00	1,106.0	33.4	-140.9	143.2	0.54	0.31	1.67	

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Denver 23-18
<b>Project:</b>	SEC.18-T1N-R66W	<b>TVD Reference:</b>	WELL @ 4950.0ft (Original Well Elev)
<b>Site:</b>	Denver 20-18 Pad Sec.18-T1N-R66W	<b>MD Reference:</b>	WELL @ 4950.0ft (Original Well Elev)
<b>Well:</b>	Denver 23-18	<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)
1,216.0	17.60	279.50	1,197.0	36.5	-167.8	170.2	2.87	2.11	6.84
1,311.0	19.80	279.50	1,287.0	41.5	-197.8	200.6	2.32	2.32	0.00
1,406.0	21.20	279.20	1,376.0	46.9	-230.7	233.8	1.48	1.47	-0.32
1,501.0	22.80	271.60	1,464.1	50.2	-266.0	269.3	3.43	1.68	-8.00
1,596.0	24.00	271.50	1,551.3	51.2	-303.7	306.9	1.26	1.26	-0.11
1,692.0	25.10	270.60	1,638.6	51.9	-343.6	346.7	1.21	1.15	-0.94
1,787.0	24.90	270.10	1,724.7	52.2	-383.8	386.8	0.31	-0.21	-0.53
1,882.0	24.20	270.20	1,811.1	52.3	-423.2	426.1	0.74	-0.74	0.11
1,977.0	23.80	268.60	1,897.9	51.9	-461.9	464.6	0.80	-0.42	-1.68
2,074.0	22.50	266.40	1,987.1	50.2	-500.0	502.4	1.61	-1.34	-2.27
2,170.0	21.80	266.50	2,076.0	48.0	-536.1	538.2	0.73	-0.73	0.10
2,265.0	20.80	269.30	2,164.5	46.7	-570.6	572.5	1.50	-1.05	2.95
2,360.0	19.50	268.60	2,253.7	46.1	-603.3	605.0	1.39	-1.37	-0.74
2,455.0	19.30	273.30	2,343.3	46.6	-634.8	636.5	1.66	-0.21	4.95
2,551.0	19.30	274.30	2,433.9	48.7	-666.5	668.2	0.34	0.00	1.04
2,646.0	22.10	270.10	2,522.8	49.9	-700.0	701.7	3.33	2.95	-4.42
2,741.0	23.00	274.20	2,610.5	51.3	-736.4	738.1	1.91	0.95	4.32
2,836.0	23.00	271.40	2,698.0	53.1	-773.5	775.2	1.15	0.00	-2.95
2,931.0	22.60	272.20	2,785.6	54.3	-810.3	812.0	0.53	-0.42	0.84
3,027.0	22.22	269.70	2,874.3	54.9	-846.8	848.5	1.07	-0.40	-2.60
3,122.0	24.80	275.20	2,961.4	56.6	-884.7	886.3	3.56	2.72	5.79
3,217.0	24.40	276.70	3,047.8	60.7	-924.0	925.8	0.78	-0.42	1.58
3,312.0	25.50	276.90	3,133.9	65.4	-963.8	965.9	1.16	1.16	0.21
3,407.0	24.60	273.50	3,220.0	69.1	-1,003.8	1,006.1	1.79	-0.95	-3.58
3,502.0	24.00	275.90	3,306.6	72.3	-1,042.8	1,045.2	1.22	-0.63	2.53
3,597.0	23.60	277.30	3,393.5	76.7	-1,080.9	1,083.5	0.73	-0.42	1.47
3,692.0	22.10	276.20	3,481.0	81.1	-1,117.5	1,120.4	1.64	-1.58	-1.16
3,788.0	21.50	274.30	3,570.2	84.3	-1,153.0	1,156.0	0.96	-0.63	-1.98
3,883.0	22.40	275.50	3,658.3	87.4	-1,188.4	1,191.5	1.06	0.95	1.26
3,978.0	23.20	279.00	3,745.9	92.0	-1,224.9	1,228.3	1.66	0.84	3.68
4,073.0	23.20	280.20	3,833.2	98.3	-1,261.8	1,265.6	0.50	0.00	1.26
4,168.0	22.80	277.50	3,920.6	104.0	-1,298.4	1,302.6	1.19	-0.42	-2.84
4,263.0	22.50	278.40	4,008.3	109.0	-1,334.7	1,339.1	0.48	-0.32	0.95
4,358.0	23.10	277.60	4,095.9	114.2	-1,371.1	1,375.9	0.71	0.63	-0.84
4,454.0	22.20	275.00	4,184.5	118.2	-1,407.8	1,412.8	1.40	-0.94	-2.71
4,549.0	24.50	275.30	4,271.7	121.6	-1,445.3	1,450.5	2.42	2.42	0.32
4,644.0	21.90	274.60	4,359.0	124.9	-1,482.6	1,487.9	2.75	-2.74	-0.74
4,739.0	20.30	277.20	4,447.6	128.3	-1,516.6	1,522.1	1.95	-1.68	2.74
4,834.0	18.80	278.80	4,537.2	132.8	-1,548.1	1,553.8	1.68	-1.58	1.68
4,929.0	17.80	277.40	4,627.4	137.0	-1,577.6	1,583.6	1.15	-1.05	-1.47
5,024.0	16.60	274.50	4,718.1	139.9	-1,605.6	1,611.6	1.55	-1.26	-3.05
5,119.0	14.70	273.00	4,809.6	141.6	-1,631.1	1,637.3	2.04	-2.00	-1.58
5,214.0	13.10	274.10	4,901.8	143.0	-1,653.9	1,660.1	1.71	-1.68	1.16
5,309.0	10.60	272.80	4,994.8	144.2	-1,673.4	1,679.6	2.65	-2.63	-1.37
5,404.0	8.50	272.50	5,088.4	144.9	-1,689.1	1,695.3	2.21	-2.21	-0.32
5,500.0	7.00	272.70	5,183.6	145.5	-1,702.1	1,708.3	1.56	-1.56	0.21
5,595.0	6.20	270.80	5,277.9	145.9	-1,713.0	1,719.2	0.87	-0.84	-2.00
5,690.0	5.10	267.10	5,372.5	145.7	-1,722.3	1,728.5	1.22	-1.16	-3.89
5,785.0	3.90	267.80	5,467.2	145.4	-1,729.8	1,735.9	1.26	-1.26	0.74
5,880.0	3.40	267.40	5,562.0	145.1	-1,735.8	1,741.9	0.53	-0.53	-0.42
5,976.0	2.70	268.20	5,657.9	144.9	-1,740.9	1,746.9	0.73	-0.73	0.83
6,071.0	2.40	267.20	5,752.8	144.8	-1,745.1	1,751.1	0.32	-0.32	-1.05
6,166.0	2.10	270.60	5,847.7	144.7	-1,748.9	1,754.8	0.35	-0.32	3.58
6,218.4	1.82	272.73	5,900.1	144.7	-1,750.7	1,756.6	0.55	-0.53	4.06

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Denver 23-18
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<b>Site:</b>	Denver 20-18 Pad Sec.18-T1N-R66W	<b>MD Reference:</b>	WELL @ 4950.0ft (Original Well Elev)
<b>Well:</b>	Denver 23-18	<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)
<b>TARGET BHL 1320'FSL, 2590'FEL</b>									
6,261.0	1.60	275.00	5,942.6	144.8	-1,751.9	1,757.9	0.55	-0.52	5.33
6,356.0	1.40	274.20	6,037.6	145.0	-1,754.4	1,760.4	0.21	-0.21	-0.84
6,451.0	1.80	283.10	6,132.6	145.4	-1,757.0	1,763.0	0.49	0.42	9.37
6,546.0	1.80	277.80	6,227.5	146.0	-1,759.9	1,766.0	0.18	0.00	-5.58
6,642.0	1.90	277.90	6,323.5	146.4	-1,763.0	1,769.1	0.10	0.10	0.10
6,737.0	2.30	234.10	6,418.4	145.5	-1,766.1	1,772.1	1.69	0.42	-46.11
6,832.0	1.50	196.20	6,513.4	143.2	-1,768.0	1,773.8	1.52	-0.84	-39.89
6,927.0	1.30	212.80	6,608.3	141.1	-1,768.9	1,774.5	0.47	-0.21	17.47
7,022.0	1.40	253.00	6,703.3	139.8	-1,770.6	1,776.1	0.98	0.11	42.32
7,118.0	2.00	270.20	6,799.3	139.5	-1,773.4	1,778.9	0.81	0.63	17.92
7,213.0	0.40	0.20	6,894.2	139.8	-1,775.1	1,780.6	2.15	-1.68	94.74
7,308.0	1.10	299.10	6,989.2	140.6	-1,775.9	1,781.4	1.02	0.74	-64.32
7,403.0	1.80	283.80	7,084.2	141.4	-1,778.1	1,783.7	0.84	0.74	-16.11
7,428.3	1.50	283.72	7,109.5	141.6	-1,778.8	1,784.5	1.18	-1.18	-0.33
<b>TARGET CIRCLE 1320'FSL &amp; 2590'FEL</b>									
7,530.0	0.30	281.70	7,211.2	142.0	-1,780.4	1,786.0	1.18	-1.18	-1.98
7,625.0	0.20	351.20	7,306.2	142.2	-1,780.7	1,786.3	0.31	-0.11	73.16
7,720.0	0.40	37.00	7,401.2	142.6	-1,780.5	1,786.2	0.31	0.21	48.21
7,815.0	0.70	61.10	7,496.2	143.1	-1,779.8	1,785.5	0.39	0.32	25.37
7,911.0	0.80	63.30	7,592.2	143.7	-1,778.7	1,784.5	0.11	0.10	2.29
8,006.0	0.80	49.20	7,687.2	144.5	-1,777.6	1,783.4	0.21	0.00	-14.84
8,101.0	0.40	349.20	7,782.2	145.2	-1,777.1	1,783.1	0.73	-0.42	-63.16
8,196.0	0.40	350.10	7,877.2	145.9	-1,777.3	1,783.2	0.01	0.00	0.95
8,350.0	0.60	19.40	8,031.1	147.2	-1,777.1	1,783.2	0.21	0.13	19.03
<b>HARD LINES 50'W of BHL</b>									
8,400.0	0.60	19.40	8,081.1	147.7	-1,776.9	1,783.0	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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