

Well Name: **Barron Federal 23-18**

Surface Location: Barron Federal 10-18 Pad Sec.18-T3N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

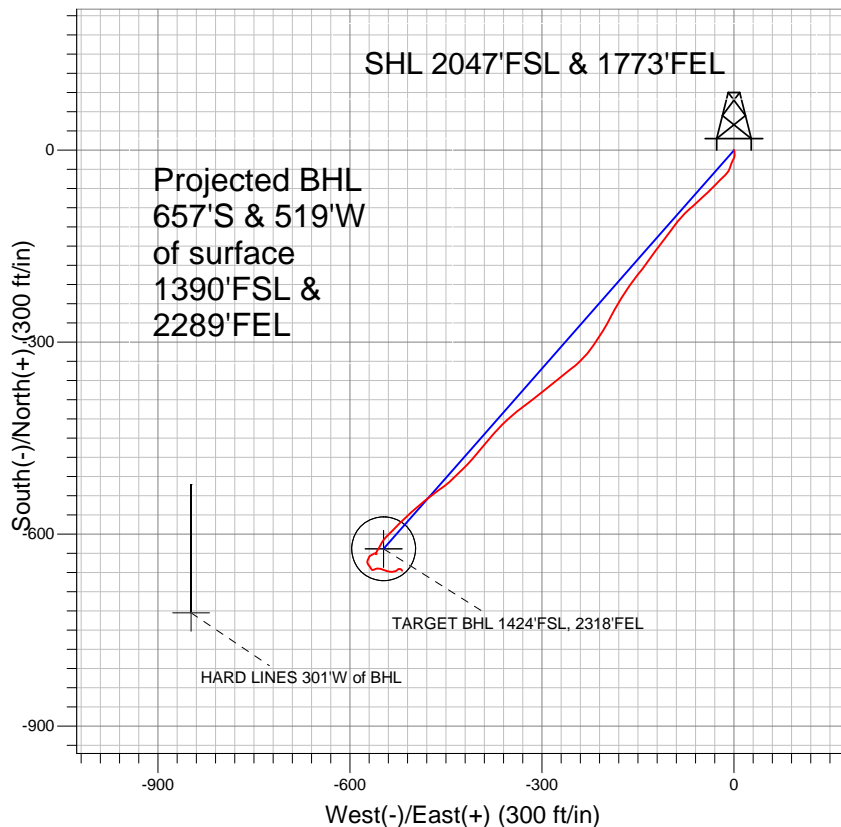
Ground Elevation: 4826.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1324804.27	3190683.90	40° 13' 22.692 N	104° 49' 1.632 W

Original Well Elev WELL @ 4840.0ft (Original Well Elev)

Slot

## Anadarko, Weld County CO

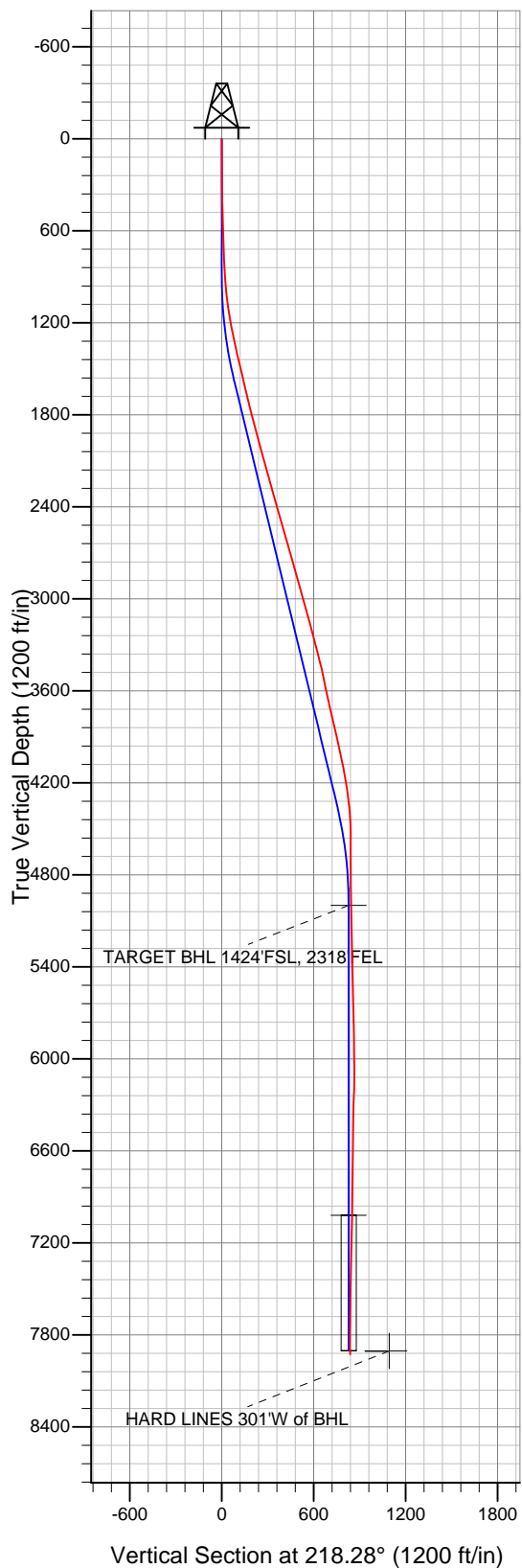


### LEGEND

- △— Barron Federal 23-18, Wellbore #1, Plan #2 (10-14-10) V0
- Wellbore #1

## Final Survey Plot

Projected Final Survey -  
8031'MD & 7928'TVD @ 836' VS  
1.0 deg Inc 169.4 deg AZ



Project: SEC.18-T3N-R66W  
Site: Barron Federal 10-18 Pad Sec.18-T3N-R66W  
Well: Barron Federal 23-18  
Plan: Wellbore #1



## **Directional**

### **Anadarko, Weld County CO**

**SEC.18-T3N-R66W**

**Barron Federal 10-18 Pad Sec.18-T3N-R66W**

**Barron Federal 23-18**

**Wellbore #1**

**Design: Wellbore #1**

### **Standard Survey Report**

**22 November, 2010**

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Barron Federal 23-18
<b>Project:</b>	SEC.18-T3N-R66W	<b>TVD Reference:</b>	WELL @ 4840.0ft (Original Well Elev)
<b>Site:</b>	Barron Federal 10-18 Pad Sec.18-T3N-R66W	<b>MD Reference:</b>	WELL @ 4840.0ft (Original Well Elev)
<b>Well:</b>	Barron Federal 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-T3N-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>	Barron Federal 10-18 Pad Sec.18-T3N-R66W		
<b>Site Position:</b>		<b>Northing:</b>	1,324,804.29 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,190,683.90 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 13' 22.692 N
		<b>Longitude:</b>	104° 49' 1.632 W
		<b>Grid Convergence:</b>	0.44 °

<b>Well</b>	Barron Federal 23-18		
<b>Well Position</b>	<b>+N-S</b>	0.0 ft	<b>Northing:</b> 1,324,804.27 ft
	<b>+E-W</b>	0.0 ft	<b>Easting:</b> 3,190,683.90 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 40° 13' 22.692 N
			<b>Longitude:</b> 104° 49' 1.632 W
			<b>Ground Level:</b> 4,826.0 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	10/12/2010	8.97	66.92	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	218.28	

<b>Survey Program</b>	<b>Date</b>	11/22/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
157.0	8,031.0	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	
157.0	0.90	158.00	157.0	-1.1	0.5	0.6	0.57	0.57	0.00	
258.0	0.70	187.90	258.0	-2.5	0.7	1.5	0.45	-0.20	29.60	
463.0	1.70	169.10	462.9	-6.7	1.1	4.6	0.52	0.49	-9.17	
548.0	1.60	192.90	547.9	-9.1	1.1	6.5	0.81	-0.12	28.00	
641.0	2.20	195.70	640.9	-12.1	0.3	9.3	0.65	0.65	3.01	
734.0	2.50	211.80	733.8	-15.5	-1.3	13.0	0.78	0.32	17.31	
796.0	2.20	214.00	795.7	-17.7	-2.7	15.5	0.51	-0.48	3.55	
875.0	3.30	197.80	874.6	-21.1	-4.2	19.2	1.69	1.39	-20.51	
970.0	5.60	198.40	969.3	-28.1	-6.5	26.1	2.42	2.42	0.63	
1,065.0	7.40	221.20	1,063.7	-37.1	-12.0	36.6	3.28	1.89	24.00	
1,160.0	9.40	226.90	1,157.7	-47.0	-21.7	50.3	2.28	2.11	6.00	
1,255.0	11.30	224.00	1,251.2	-59.0	-33.8	67.3	2.07	2.00	-3.05	

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Barron Federal 23-18
<b>Project:</b>	SEC.18-T3N-R66W	<b>TVD Reference:</b>	WELL @ 4840.0ft (Original Well Elev)
<b>Site:</b>	Barron Federal 10-18 Pad Sec.18-T3N-R66W	<b>MD Reference:</b>	WELL @ 4840.0ft (Original Well Elev)
<b>Well:</b>	Barron Federal 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)
1,351.0	12.80	227.60	1,345.1	-72.9	-48.2	87.1	1.75	1.56	3.75
1,446.0	13.40	227.50	1,437.6	-87.5	-64.1	108.4	0.63	0.63	-0.11
1,541.0	13.30	224.80	1,530.0	-102.7	-79.9	130.1	0.66	-0.11	-2.84
1,636.0	13.10	216.00	1,622.5	-119.1	-93.9	151.7	2.12	-0.21	-9.26
1,731.0	14.30	217.10	1,714.8	-137.2	-107.3	174.2	1.29	1.26	1.16
1,826.0	14.60	216.80	1,806.8	-156.1	-121.6	197.9	0.33	0.32	-0.32
1,922.0	14.90	215.00	1,899.6	-175.9	-135.9	222.3	0.57	0.31	-1.88
2,017.0	15.10	219.50	1,991.4	-195.5	-150.8	246.9	1.24	0.21	4.74
2,112.0	15.20	213.60	2,083.1	-215.4	-165.6	271.7	1.63	0.11	-6.21
2,207.0	16.30	211.70	2,174.5	-237.1	-179.5	297.3	1.28	1.16	-2.00
2,302.0	15.90	206.50	2,265.8	-260.1	-192.3	323.3	1.57	-0.42	-5.47
2,397.0	15.60	211.40	2,357.3	-282.7	-204.7	348.7	1.43	-0.32	5.16
2,492.0	15.80	215.00	2,448.7	-304.2	-218.8	374.3	1.05	0.21	3.79
2,588.0	14.70	223.20	2,541.3	-323.8	-234.6	399.5	2.52	-1.15	8.54
2,683.0	17.40	231.10	2,632.6	-341.5	-254.0	425.4	3.65	2.84	8.32
2,778.0	17.10	231.10	2,723.4	-359.2	-275.9	452.8	0.32	-0.32	0.00
2,873.0	16.80	232.40	2,814.2	-376.3	-297.6	479.8	0.51	-0.32	1.37
2,968.0	16.10	231.40	2,905.4	-392.9	-318.8	505.9	0.79	-0.74	-1.05
3,063.0	15.20	232.80	2,996.8	-408.7	-339.0	530.8	1.03	-0.95	1.47
3,159.0	15.60	225.90	3,089.4	-425.2	-358.3	555.8	1.95	0.42	-7.19
3,254.0	14.50	220.00	3,181.1	-443.2	-375.1	580.3	1.98	-1.16	-6.21
3,349.0	14.60	222.00	3,273.1	-461.3	-390.8	604.2	0.54	0.11	2.11
3,444.0	14.90	218.80	3,365.0	-479.7	-406.4	628.3	0.91	0.32	-3.37
3,539.0	13.80	226.10	3,457.0	-497.1	-422.3	651.8	2.23	-1.16	7.68
3,634.0	12.00	225.60	3,549.6	-511.8	-437.5	672.8	1.90	-1.89	-0.53
3,729.0	12.30	232.40	3,642.5	-524.9	-452.6	692.4	1.54	0.32	7.16
3,825.0	13.00	232.90	3,736.1	-537.7	-469.3	712.8	0.74	0.73	0.52
3,920.0	12.20	232.40	3,828.9	-550.2	-485.8	732.8	0.85	-0.84	-0.53
4,015.0	13.70	227.90	3,921.4	-563.9	-502.1	753.7	1.90	1.58	-4.74
4,110.0	12.90	225.10	4,013.9	-578.9	-517.9	775.3	1.08	-0.84	-2.95
4,205.0	10.80	225.00	4,106.9	-592.7	-531.7	794.7	2.21	-2.21	-0.11
4,300.0	9.20	224.40	4,200.4	-604.4	-543.3	811.1	1.69	-1.68	-0.63
4,395.0	7.90	206.20	4,294.4	-615.7	-551.5	825.0	3.14	-1.37	-19.16
4,491.0	4.60	214.10	4,389.8	-624.8	-556.6	835.3	3.54	-3.44	8.23
4,586.0	2.00	188.60	4,484.6	-629.6	-559.0	840.5	3.08	-2.74	-26.84
4,681.0	0.60	84.70	4,579.6	-631.2	-558.7	841.6	2.34	-1.47	-109.37
4,776.0	0.70	302.00	4,674.6	-630.9	-558.7	841.3	1.30	0.11	-150.21
4,871.0	1.10	282.00	4,769.6	-630.4	-560.1	841.8	0.53	0.42	-21.05
4,966.0	0.90	253.30	4,864.6	-630.4	-561.7	842.8	0.56	-0.21	-30.21
5,061.0	0.70	243.70	4,959.6	-630.9	-563.0	844.0	0.25	-0.21	-10.11
5,101.2	0.82	235.16	4,999.7	-631.1	-563.4	844.5	0.41	0.29	-21.26
<b>TARGET BHL 1424'FSL, 2318'FEL</b>									
5,156.0	1.00	227.00	5,054.6	-631.7	-564.1	845.3	0.41	0.33	-14.88
5,251.0	1.50	253.20	5,149.5	-632.6	-565.9	847.1	0.79	0.53	27.58
5,346.0	1.20	240.70	5,244.5	-633.4	-567.9	849.1	0.44	-0.32	-13.16
5,441.0	0.90	227.90	5,339.5	-634.4	-569.4	850.7	0.40	-0.32	-13.47
5,537.0	1.50	193.40	5,435.5	-636.2	-570.2	852.6	0.95	0.63	-35.94
5,632.0	1.40	205.60	5,530.5	-638.4	-571.0	854.9	0.34	-0.11	12.84
5,727.0	1.80	204.90	5,625.4	-640.8	-572.1	857.5	0.42	0.42	-0.74
5,822.0	1.50	186.90	5,720.4	-643.4	-572.9	860.0	0.63	-0.32	-18.95
5,917.0	1.80	153.20	5,815.3	-646.0	-572.4	861.7	1.05	0.32	-35.47
6,013.0	3.30	140.00	5,911.2	-649.4	-569.9	862.9	1.67	1.56	-13.75
6,108.0	2.50	155.90	6,006.1	-653.4	-567.3	864.4	1.19	-0.84	16.74
6,203.0	1.50	118.22	6,101.1	-655.9	-565.4	865.1	1.69	-1.05	-39.66

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<b>Site:</b>	Barron Federal 10-18 Pad Sec.18-T3N-R66W	<b>MD Reference:</b>	WELL @ 4840.0ft (Original Well Elev)
<b>Well:</b>	Barron Federal 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)
6,298.0	1.80	63.60	6,196.0	-655.8	-562.9	863.6	1.62	0.32	-57.49
6,393.0	2.10	65.50	6,291.0	-654.4	-560.0	860.7	0.32	0.32	2.00
6,488.0	1.40	82.70	6,385.9	-653.6	-557.3	858.3	0.91	-0.74	18.11
6,679.0	1.80	111.80	6,576.9	-654.4	-552.2	855.8	0.47	0.21	15.24
6,996.0	2.00	105.90	6,893.7	-657.8	-542.3	852.3	0.09	0.06	-1.86
7,121.8	2.00	99.06	7,019.4	-658.7	-538.0	850.3	0.19	0.00	-5.43
<b>TARGET CIRCLE 1424'FSL, 2318'FEL</b>									
7,123.0	2.00	99.00	7,020.6	-658.7	-537.9	850.3	0.19	0.01	-5.42
7,250.0	1.70	85.40	7,147.5	-658.9	-533.9	848.0	0.42	-0.24	-10.71
7,440.0	1.60	68.60	7,337.5	-657.7	-528.6	843.8	0.26	-0.05	-8.84
7,630.0	0.90	32.30	7,527.4	-655.5	-525.3	840.0	0.54	-0.37	-19.11
7,821.0	1.80	99.00	7,718.4	-654.7	-521.6	837.0	0.87	0.47	34.92
7,980.0	1.00	169.40	7,877.3	-656.4	-518.8	836.7	1.10	-0.50	44.28
8,007.7	1.00	169.40	7,905.1	-656.9	-518.7	837.0	0.00	0.00	0.00
<b>HARD LINES 301'W of BHL</b>									
8,031.0	1.00	169.40	7,928.3	-657.3	-518.7	837.3	0.00	0.00	0.00

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