



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bulldog #30-21H 891
<b>Company:</b>	Axia Energy	<b>TVD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Project:</b>	Moffat County, CO	<b>MD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Site:</b>	SEC 30-T8N-R91W	<b>North Reference:</b>	True
<b>Well:</b>	Bulldog #30-21H 891	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot Hole		
<b>Design:</b>	Plan #1		

Project	Moffat County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		SEC 30-T8N-R91W			
Site Position:		Northing:	1,478,363.92 ft	Latitude:	40.626675
From:	Lat/Long	Easting:	2,403,814.61 ft	Longitude:	-107.648031
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Bulldog #30-21H 891					
Well Position	+N/-S	0.0 ft	Northing:	1,478,363.92 ft	Latitude:	40.626675
	+E/-W	0.0 ft	Easting:	2,403,814.61 ft	Longitude:	-107.648031
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,672.0 ft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/11/2013	10.07	66.67	52,694

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	229.94

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,364.5	10.94	229.94	3,362.3	-22.3	-26.5	3.00	3.00	0.00	229.94	
9,011.4	10.94	229.94	8,906.7	-711.7	-846.5	0.00	0.00	0.00	0.00	
9,376.0	0.00	0.00	9,269.0	-734.0	-873.0	3.00	-3.00	0.00	180.00	30-21H 891 Vert Tgt
14,076.0	0.00	0.00	13,969.0	-734.0	-873.0	0.00	0.00	0.00	0.00	

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**Company:** Axia Energy  
**Project:** Moffat County, CO  
**Site:** SEC 30-T8N-R91W  
**Well:** Bulldog #30-21H 891  
**Wellbore:** Pilot Hole  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Bulldog #30-21H 891  
**TVD Reference:** WELL @ 6704.0ft (Original Well Elev)  
**MD Reference:** WELL @ 6704.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 3000' MD
3,100.0	3.00	229.94	3,100.0	-1.7	-2.0	2.6	3.00	3.00	
3,200.0	6.00	229.94	3,199.6	-6.7	-8.0	10.5	3.00	3.00	
3,300.0	9.00	229.94	3,298.8	-15.1	-18.0	23.5	3.00	3.00	
3,364.5	10.94	229.94	3,362.3	-22.3	-26.5	34.7	3.00	3.00	EOB; 10.94°
3,400.0	10.94	229.94	3,397.2	-26.7	-31.7	41.4	0.00	0.00	
3,500.0	10.94	229.94	3,495.3	-38.9	-46.2	60.4	0.00	0.00	
3,600.0	10.94	229.94	3,593.5	-51.1	-60.7	79.4	0.00	0.00	
3,700.0	10.94	229.94	3,691.7	-63.3	-75.3	98.3	0.00	0.00	
3,800.0	10.94	229.94	3,789.9	-75.5	-89.8	117.3	0.00	0.00	
3,900.0	10.94	229.94	3,888.1	-87.7	-104.3	136.3	0.00	0.00	
4,000.0	10.94	229.94	3,986.3	-99.9	-118.8	155.2	0.00	0.00	
4,100.0	10.94	229.94	4,084.4	-112.1	-133.3	174.2	0.00	0.00	
4,200.0	10.94	229.94	4,182.6	-124.3	-147.9	193.2	0.00	0.00	
4,300.0	10.94	229.94	4,280.8	-136.5	-162.4	212.1	0.00	0.00	
4,400.0	10.94	229.94	4,379.0	-148.7	-176.9	231.1	0.00	0.00	
4,500.0	10.94	229.94	4,477.2	-160.9	-191.4	250.1	0.00	0.00	
4,600.0	10.94	229.94	4,575.4	-173.1	-205.9	269.0	0.00	0.00	
4,700.0	10.94	229.94	4,673.6	-185.4	-220.5	288.0	0.00	0.00	
4,800.0	10.94	229.94	4,771.7	-197.6	-235.0	307.0	0.00	0.00	
4,900.0	10.94	229.94	4,869.9	-209.8	-249.5	326.0	0.00	0.00	
5,000.0	10.94	229.94	4,968.1	-222.0	-264.0	344.9	0.00	0.00	

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<b>Project:</b>	Moffat County, CO	<b>MD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Site:</b>	SEC 30-T8N-R91W	<b>North Reference:</b>	True
<b>Well:</b>	Bulldog #30-21H 891	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot Hole		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,100.0	10.94	229.94	5,066.3	-234.2	-278.5	363.9	0.00	0.00	
5,200.0	10.94	229.94	5,164.5	-246.4	-293.1	382.9	0.00	0.00	
5,300.0	10.94	229.94	5,262.7	-258.6	-307.6	401.8	0.00	0.00	
5,400.0	10.94	229.94	5,360.8	-270.8	-322.1	420.8	0.00	0.00	
5,500.0	10.94	229.94	5,459.0	-283.0	-336.6	439.8	0.00	0.00	
5,600.0	10.94	229.94	5,557.2	-295.2	-351.1	458.7	0.00	0.00	
5,700.0	10.94	229.94	5,655.4	-307.4	-365.6	477.7	0.00	0.00	
5,800.0	10.94	229.94	5,753.6	-319.6	-380.2	496.7	0.00	0.00	
5,900.0	10.94	229.94	5,851.8	-331.8	-394.7	515.7	0.00	0.00	
6,000.0	10.94	229.94	5,949.9	-344.1	-409.2	534.6	0.00	0.00	
6,100.0	10.94	229.94	6,048.1	-356.3	-423.7	553.6	0.00	0.00	
6,200.0	10.94	229.94	6,146.3	-368.5	-438.2	572.6	0.00	0.00	
6,300.0	10.94	229.94	6,244.5	-380.7	-452.8	591.5	0.00	0.00	
6,400.0	10.94	229.94	6,342.7	-392.9	-467.3	610.5	0.00	0.00	
6,500.0	10.94	229.94	6,440.9	-405.1	-481.8	629.5	0.00	0.00	
6,600.0	10.94	229.94	6,539.1	-417.3	-496.3	648.4	0.00	0.00	
6,700.0	10.94	229.94	6,637.2	-429.5	-510.8	667.4	0.00	0.00	
6,800.0	10.94	229.94	6,735.4	-441.7	-525.4	686.4	0.00	0.00	
6,900.0	10.94	229.94	6,833.6	-453.9	-539.9	705.4	0.00	0.00	
7,000.0	10.94	229.94	6,931.8	-466.1	-554.4	724.3	0.00	0.00	
7,100.0	10.94	229.94	7,030.0	-478.3	-568.9	743.3	0.00	0.00	
7,200.0	10.94	229.94	7,128.2	-490.5	-583.4	762.3	0.00	0.00	
7,300.0	10.94	229.94	7,226.3	-502.8	-598.0	781.2	0.00	0.00	
7,400.0	10.94	229.94	7,324.5	-515.0	-612.5	800.2	0.00	0.00	
7,500.0	10.94	229.94	7,422.7	-527.2	-627.0	819.2	0.00	0.00	
7,600.0	10.94	229.94	7,520.9	-539.4	-641.5	838.1	0.00	0.00	
7,700.0	10.94	229.94	7,619.1	-551.6	-656.0	857.1	0.00	0.00	
7,800.0	10.94	229.94	7,717.3	-563.8	-670.6	876.1	0.00	0.00	
7,900.0	10.94	229.94	7,815.5	-576.0	-685.1	895.1	0.00	0.00	
8,000.0	10.94	229.94	7,913.6	-588.2	-699.6	914.0	0.00	0.00	
8,100.0	10.94	229.94	8,011.8	-600.4	-714.1	933.0	0.00	0.00	
8,200.0	10.94	229.94	8,110.0	-612.6	-728.6	952.0	0.00	0.00	
8,300.0	10.94	229.94	8,208.2	-624.8	-743.2	970.9	0.00	0.00	
8,400.0	10.94	229.94	8,306.4	-637.0	-757.7	989.9	0.00	0.00	
8,500.0	10.94	229.94	8,404.6	-649.2	-772.2	1,008.9	0.00	0.00	
8,600.0	10.94	229.94	8,502.7	-661.5	-786.7	1,027.8	0.00	0.00	
8,700.0	10.94	229.94	8,600.9	-673.7	-801.2	1,046.8	0.00	0.00	
8,800.0	10.94	229.94	8,699.1	-685.9	-815.8	1,065.8	0.00	0.00	
8,900.0	10.94	229.94	8,797.3	-698.1	-830.3	1,084.7	0.00	0.00	
9,000.0	10.94	229.94	8,895.5	-710.3	-844.8	1,103.7	0.00	0.00	
9,011.4	10.94	229.94	8,906.7	-711.7	-846.5	1,105.9	0.00	0.00	Start 3° Drop
9,100.0	8.28	229.94	8,994.0	-721.2	-857.8	1,120.7	3.00	-3.00	
9,200.0	5.28	229.94	9,093.3	-728.8	-866.8	1,132.5	3.00	-3.00	
9,300.0	2.28	229.94	9,193.1	-733.0	-871.8	1,139.1	3.00	-3.00	
9,376.0	0.00	0.00	9,269.0	-734.0	-873.0	1,140.6	3.00	-3.00	EOD; Vertical
9,400.0	0.00	0.00	9,293.1	-734.0	-873.0	1,140.6	0.00	0.00	
9,500.0	0.00	0.00	9,393.1	-734.0	-873.0	1,140.6	0.00	0.00	
9,600.0	0.00	0.00	9,493.1	-734.0	-873.0	1,140.6	0.00	0.00	
9,700.0	0.00	0.00	9,593.1	-734.0	-873.0	1,140.6	0.00	0.00	
9,800.0	0.00	0.00	9,693.1	-734.0	-873.0	1,140.6	0.00	0.00	
9,900.0	0.00	0.00	9,793.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,000.0	0.00	0.00	9,893.1	-734.0	-873.0	1,140.6	0.00	0.00	

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<b>Company:</b>	Axia Energy	<b>TVD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Project:</b>	Moffat County, CO	<b>MD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Site:</b>	SEC 30-T8N-R91W	<b>North Reference:</b>	True
<b>Well:</b>	Bulldog #30-21H 891	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot Hole		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
10,100.0	0.00	0.00	9,993.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,200.0	0.00	0.00	10,093.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,300.0	0.00	0.00	10,193.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,400.0	0.00	0.00	10,293.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,500.0	0.00	0.00	10,393.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,600.0	0.00	0.00	10,493.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,700.0	0.00	0.00	10,593.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,800.0	0.00	0.00	10,693.1	-734.0	-873.0	1,140.6	0.00	0.00	
10,900.0	0.00	0.00	10,793.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,000.0	0.00	0.00	10,893.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,100.0	0.00	0.00	10,993.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,200.0	0.00	0.00	11,093.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,300.0	0.00	0.00	11,193.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,400.0	0.00	0.00	11,293.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,500.0	0.00	0.00	11,393.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,600.0	0.00	0.00	11,493.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,700.0	0.00	0.00	11,593.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,800.0	0.00	0.00	11,693.1	-734.0	-873.0	1,140.6	0.00	0.00	
11,900.0	0.00	0.00	11,793.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,000.0	0.00	0.00	11,893.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,100.0	0.00	0.00	11,993.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,200.0	0.00	0.00	12,093.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,300.0	0.00	0.00	12,193.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,400.0	0.00	0.00	12,293.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,500.0	0.00	0.00	12,393.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,600.0	0.00	0.00	12,493.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,700.0	0.00	0.00	12,593.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,800.0	0.00	0.00	12,693.1	-734.0	-873.0	1,140.6	0.00	0.00	
12,900.0	0.00	0.00	12,793.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,000.0	0.00	0.00	12,893.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,100.0	0.00	0.00	12,993.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,200.0	0.00	0.00	13,093.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,300.0	0.00	0.00	13,193.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,400.0	0.00	0.00	13,293.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,500.0	0.00	0.00	13,393.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,600.0	0.00	0.00	13,493.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,700.0	0.00	0.00	13,593.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,800.0	0.00	0.00	13,693.1	-734.0	-873.0	1,140.6	0.00	0.00	
13,900.0	0.00	0.00	13,793.1	-734.0	-873.0	1,140.6	0.00	0.00	
14,000.0	0.00	0.00	13,893.1	-734.0	-873.0	1,140.6	0.00	0.00	
14,076.0	0.00	0.00	13,969.0	-734.0	-873.0	1,140.6	0.00	0.00	PBHL @ 14076' MD

Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
30-21H 891 Vert Tgt	0.00	0.00	9,269.0	-734.0	-873.0	1,477,651.28	2,402,924.09	40.624660	-107.651176
- plan hits target center									
- Point									

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bulldog #30-21H 891
<b>Company:</b>	Axia Energy	<b>TVD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Project:</b>	Moffat County, CO	<b>MD Reference:</b>	WELL @ 6704.0ft (Original Well Elev)
<b>Site:</b>	SEC 30-T8N-R91W	<b>North Reference:</b>	True
<b>Well:</b>	Bulldog #30-21H 891	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot Hole		
<b>Design:</b>	Plan #1		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,000.0	3,000.0	0.0	0.0	KOP @ 3000' MD
3,364.5	3,362.3	-22.3	-26.5	EOB; 10.94°
9,011.4	8,906.7	-711.7	-846.5	Start 3° Drop
9,376.0	9,269.0	-734.0	-873.0	EOD; Vertical
14,076.0	13,969.0	-734.0	-873.0	PBHL @ 14076' MD