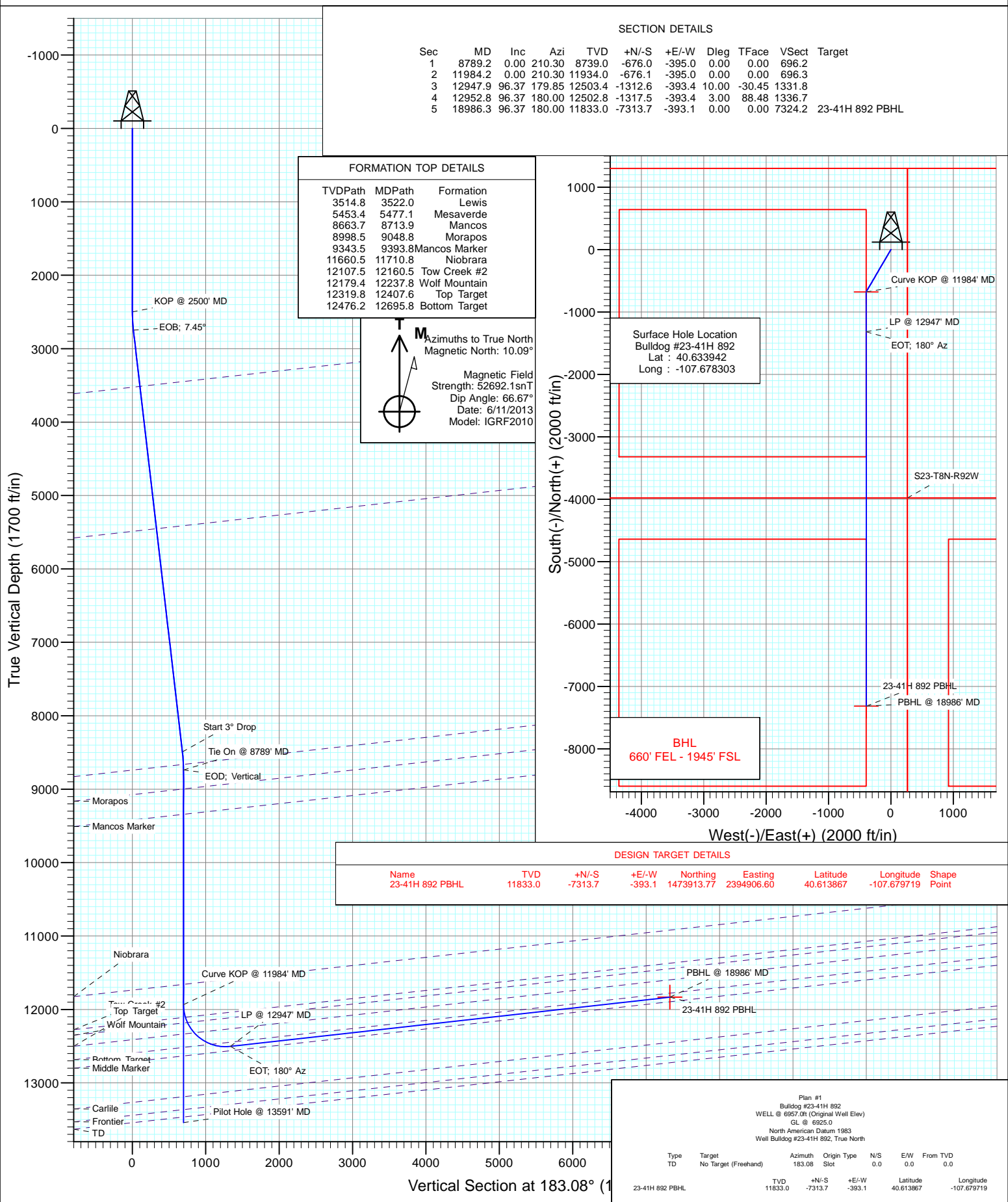




Project: Moffat County, CO
Site: SEC 23-T8N-R92W
Well: Bulldog #23-41H 892
Wellbore: HZ
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #23-41H 892
Company:	Axia Energy	TVD Reference:	WELL @ 6957.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6957.0ft (Original Well Elev)
Site:	SEC 23-T8N-R92W	North Reference:	True
Well:	Bulldog #23-41H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	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 23-T8N-R92W			
Site Position:		Northing:	1,481,215.59 ft	Latitude:	40.633942
From:	Lat/Long	Easting:	2,395,479.25 ft	Longitude:	-107.678303
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.41 °

Well	Bulldog #23-41H 892					
Well Position	+N/-S	0.0 ft	Northing:	1,481,215.58 ft	Latitude:	40.633942
	+E/-W	0.0 ft	Easting:	2,395,479.25 ft	Longitude:	-107.678303
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,925.0 ft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/11/2013	10.09	66.67	52,692

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	210.30

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	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,748.2	7.45	210.30	2,747.5	-13.9	-8.1	3.00	3.00	0.00	210.30	
8,541.0	7.45	210.30	8,491.5	-662.1	-386.9	0.00	0.00	0.00	0.00	
8,789.2	0.00	0.00	8,739.0	-676.0	-395.0	3.00	-3.00	0.00	180.00	23-41H 892 Vert Tgt
13,591.2	0.00	0.00	13,541.0	-676.0	-395.0	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	Axia Energy	TVD Reference:	WELL @ 6957.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6957.0ft (Original Well Elev)
Site:	SEC 23-T8N-R92W	North Reference:	True
Well:	Bulldog #23-41H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	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
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	KOP @ 2500' MD
2,600.0	3.00	210.30	2,600.0	-2.3	-1.3	2.6	3.00	3.00	
2,700.0	6.00	210.30	2,699.6	-9.0	-5.3	10.5	3.00	3.00	
2,748.2	7.45	210.30	2,747.5	-13.9	-8.1	16.1	3.00	3.00	EOB; 7.45°
2,800.0	7.45	210.30	2,798.9	-19.7	-11.5	22.8	0.00	0.00	
2,900.0	7.45	210.30	2,898.0	-30.9	-18.1	35.8	0.00	0.00	
3,000.0	7.45	210.30	2,997.2	-42.1	-24.6	48.7	0.00	0.00	
3,100.0	7.45	210.30	3,096.3	-53.3	-31.1	61.7	0.00	0.00	
3,200.0	7.45	210.30	3,195.5	-64.5	-37.7	74.7	0.00	0.00	
3,300.0	7.45	210.30	3,294.6	-75.6	-44.2	87.6	0.00	0.00	
3,400.0	7.45	210.30	3,393.8	-86.8	-50.7	100.6	0.00	0.00	
3,500.0	7.45	210.30	3,493.0	-98.0	-57.3	113.5	0.00	0.00	
3,522.0	7.45	210.30	3,514.8	-100.5	-58.7	116.4	0.00	0.00	Lewis
3,600.0	7.45	210.30	3,592.1	-109.2	-63.8	126.5	0.00	0.00	
3,700.0	7.45	210.30	3,691.3	-120.4	-70.4	139.5	0.00	0.00	
3,800.0	7.45	210.30	3,790.4	-131.6	-76.9	152.4	0.00	0.00	
3,900.0	7.45	210.30	3,889.6	-142.8	-83.4	165.4	0.00	0.00	
4,000.0	7.45	210.30	3,988.7	-154.0	-90.0	178.3	0.00	0.00	
4,100.0	7.45	210.30	4,087.9	-165.2	-96.5	191.3	0.00	0.00	
4,200.0	7.45	210.30	4,187.1	-176.4	-103.0	204.3	0.00	0.00	
4,300.0	7.45	210.30	4,286.2	-187.5	-109.6	217.2	0.00	0.00	
4,400.0	7.45	210.30	4,385.4	-198.7	-116.1	230.2	0.00	0.00	
4,500.0	7.45	210.30	4,484.5	-209.9	-122.7	243.1	0.00	0.00	
4,600.0	7.45	210.30	4,583.7	-221.1	-129.2	256.1	0.00	0.00	
4,700.0	7.45	210.30	4,682.8	-232.3	-135.7	269.1	0.00	0.00	
4,800.0	7.45	210.30	4,782.0	-243.5	-142.3	282.0	0.00	0.00	
4,900.0	7.45	210.30	4,881.2	-254.7	-148.8	295.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #23-41H 892
Company:	Axia Energy	TVD Reference:	WELL @ 6957.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6957.0ft (Original Well Elev)
Site:	SEC 23-T8N-R92W	North Reference:	True
Well:	Bulldog #23-41H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	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
5,000.0	7.45	210.30	4,980.3	-265.9	-155.4	307.9	0.00	0.00	
5,100.0	7.45	210.30	5,079.5	-277.1	-161.9	320.9	0.00	0.00	
5,200.0	7.45	210.30	5,178.6	-288.2	-168.4	333.9	0.00	0.00	
5,300.0	7.45	210.30	5,277.8	-299.4	-175.0	346.8	0.00	0.00	
5,400.0	7.45	210.30	5,376.9	-310.6	-181.5	359.8	0.00	0.00	
5,477.1	7.45	210.30	5,453.4	-319.3	-186.5	369.8	0.00	0.00	Mesaverde
5,500.0	7.45	210.30	5,476.1	-321.8	-188.0	372.7	0.00	0.00	
5,600.0	7.45	210.30	5,575.3	-333.0	-194.6	385.7	0.00	0.00	
5,700.0	7.45	210.30	5,674.4	-344.2	-201.1	398.6	0.00	0.00	
5,800.0	7.45	210.30	5,773.6	-355.4	-207.7	411.6	0.00	0.00	
5,900.0	7.45	210.30	5,872.7	-366.6	-214.2	424.6	0.00	0.00	
6,000.0	7.45	210.30	5,971.9	-377.8	-220.7	437.5	0.00	0.00	
6,100.0	7.45	210.30	6,071.0	-389.0	-227.3	450.5	0.00	0.00	
6,200.0	7.45	210.30	6,170.2	-400.1	-233.8	463.4	0.00	0.00	
6,300.0	7.45	210.30	6,269.3	-411.3	-240.3	476.4	0.00	0.00	
6,400.0	7.45	210.30	6,368.5	-422.5	-246.9	489.4	0.00	0.00	
6,500.0	7.45	210.30	6,467.7	-433.7	-253.4	502.3	0.00	0.00	
6,600.0	7.45	210.30	6,566.8	-444.9	-260.0	515.3	0.00	0.00	
6,700.0	7.45	210.30	6,666.0	-456.1	-266.5	528.2	0.00	0.00	
6,800.0	7.45	210.30	6,765.1	-467.3	-273.0	541.2	0.00	0.00	
6,900.0	7.45	210.30	6,864.3	-478.5	-279.6	554.2	0.00	0.00	
7,000.0	7.45	210.30	6,963.4	-489.7	-286.1	567.1	0.00	0.00	
7,100.0	7.45	210.30	7,062.6	-500.8	-292.7	580.1	0.00	0.00	
7,200.0	7.45	210.30	7,161.8	-512.0	-299.2	593.0	0.00	0.00	
7,300.0	7.45	210.30	7,260.9	-523.2	-305.7	606.0	0.00	0.00	
7,400.0	7.45	210.30	7,360.1	-534.4	-312.3	619.0	0.00	0.00	
7,500.0	7.45	210.30	7,459.2	-545.6	-318.8	631.9	0.00	0.00	
7,600.0	7.45	210.30	7,558.4	-556.8	-325.3	644.9	0.00	0.00	
7,700.0	7.45	210.30	7,657.5	-568.0	-331.9	657.8	0.00	0.00	
7,800.0	7.45	210.30	7,756.7	-579.2	-338.4	670.8	0.00	0.00	
7,900.0	7.45	210.30	7,855.9	-590.4	-345.0	683.8	0.00	0.00	
8,000.0	7.45	210.30	7,955.0	-601.6	-351.5	696.7	0.00	0.00	
8,100.0	7.45	210.30	8,054.2	-612.7	-358.0	709.7	0.00	0.00	
8,200.0	7.45	210.30	8,153.3	-623.9	-364.6	722.6	0.00	0.00	
8,300.0	7.45	210.30	8,252.5	-635.1	-371.1	735.6	0.00	0.00	
8,400.0	7.45	210.30	8,351.6	-646.3	-377.7	748.6	0.00	0.00	
8,500.0	7.45	210.30	8,450.8	-657.5	-384.2	761.5	0.00	0.00	
8,541.0	7.45	210.30	8,491.5	-662.1	-386.9	766.8	0.00	0.00	Start 3° Drop
8,600.0	5.68	210.30	8,550.1	-667.9	-390.3	773.6	3.00	-3.00	
8,700.0	2.68	210.30	8,649.8	-674.2	-393.9	780.9	3.00	-3.00	
8,713.9	2.26	210.30	8,663.7	-674.7	-394.3	781.5	3.00	-3.00	Mancos
8,789.2	0.00	0.00	8,739.0	-676.0	-395.0	782.9	3.00	-3.00	EOD; Vertical
8,800.0	0.00	0.00	8,749.8	-676.0	-395.0	782.9	0.00	0.00	
8,900.0	0.00	0.00	8,849.8	-676.0	-395.0	782.9	0.00	0.00	
9,000.0	0.00	0.00	8,949.8	-676.0	-395.0	782.9	0.00	0.00	
9,048.8	0.00	0.00	8,998.5	-676.0	-395.0	782.9	0.00	0.00	Morapops
9,100.0	0.00	0.00	9,049.8	-676.0	-395.0	782.9	0.00	0.00	
9,200.0	0.00	0.00	9,149.8	-676.0	-395.0	782.9	0.00	0.00	
9,300.0	0.00	0.00	9,249.8	-676.0	-395.0	782.9	0.00	0.00	
9,393.8	0.00	0.00	9,343.5	-676.0	-395.0	782.9	0.00	0.00	Mancos Marker
9,400.0	0.00	0.00	9,349.8	-676.0	-395.0	782.9	0.00	0.00	
9,500.0	0.00	0.00	9,449.8	-676.0	-395.0	782.9	0.00	0.00	

Cathedral Energy Services

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Company:	Axia Energy	TVD Reference:	WELL @ 6957.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6957.0ft (Original Well Elev)
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Well:	Bulldog #23-41H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	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
9,600.0	0.00	0.00	9,549.8	-676.0	-395.0	782.9	0.00	0.00	
9,700.0	0.00	0.00	9,649.8	-676.0	-395.0	782.9	0.00	0.00	
9,800.0	0.00	0.00	9,749.8	-676.0	-395.0	782.9	0.00	0.00	
9,900.0	0.00	0.00	9,849.8	-676.0	-395.0	782.9	0.00	0.00	
10,000.0	0.00	0.00	9,949.8	-676.0	-395.0	782.9	0.00	0.00	
10,100.0	0.00	0.00	10,049.8	-676.0	-395.0	782.9	0.00	0.00	
10,200.0	0.00	0.00	10,149.8	-676.0	-395.0	782.9	0.00	0.00	
10,300.0	0.00	0.00	10,249.8	-676.0	-395.0	782.9	0.00	0.00	
10,400.0	0.00	0.00	10,349.8	-676.0	-395.0	782.9	0.00	0.00	
10,500.0	0.00	0.00	10,449.8	-676.0	-395.0	782.9	0.00	0.00	
10,600.0	0.00	0.00	10,549.8	-676.0	-395.0	782.9	0.00	0.00	
10,700.0	0.00	0.00	10,649.8	-676.0	-395.0	782.9	0.00	0.00	
10,800.0	0.00	0.00	10,749.8	-676.0	-395.0	782.9	0.00	0.00	
10,900.0	0.00	0.00	10,849.8	-676.0	-395.0	782.9	0.00	0.00	
11,000.0	0.00	0.00	10,949.8	-676.0	-395.0	782.9	0.00	0.00	
11,100.0	0.00	0.00	11,049.8	-676.0	-395.0	782.9	0.00	0.00	
11,200.0	0.00	0.00	11,149.8	-676.0	-395.0	782.9	0.00	0.00	
11,300.0	0.00	0.00	11,249.8	-676.0	-395.0	782.9	0.00	0.00	
11,400.0	0.00	0.00	11,349.8	-676.0	-395.0	782.9	0.00	0.00	
11,500.0	0.00	0.00	11,449.8	-676.0	-395.0	782.9	0.00	0.00	
11,600.0	0.00	0.00	11,549.8	-676.0	-395.0	782.9	0.00	0.00	
11,700.0	0.00	0.00	11,649.8	-676.0	-395.0	782.9	0.00	0.00	
11,710.8	0.00	0.00	11,660.5	-676.0	-395.0	782.9	0.00	0.00	Niobrara
11,800.0	0.00	0.00	11,749.8	-676.0	-395.0	782.9	0.00	0.00	
11,900.0	0.00	0.00	11,849.8	-676.0	-395.0	782.9	0.00	0.00	
12,000.0	0.00	0.00	11,949.8	-676.0	-395.0	782.9	0.00	0.00	
12,100.0	0.00	0.00	12,049.8	-676.0	-395.0	782.9	0.00	0.00	
12,160.8	0.00	0.00	12,110.5	-676.0	-395.0	782.9	0.00	0.00	Tow Creek #2
12,200.0	0.00	0.00	12,149.8	-676.0	-395.0	782.9	0.00	0.00	
12,235.8	0.00	0.00	12,185.5	-676.0	-395.0	782.9	0.00	0.00	Wolf Mountain
12,300.0	0.00	0.00	12,249.8	-676.0	-395.0	782.9	0.00	0.00	
12,386.8	0.00	0.00	12,336.5	-676.0	-395.0	782.9	0.00	0.00	Top Target
12,400.0	0.00	0.00	12,349.8	-676.0	-395.0	782.9	0.00	0.00	
12,500.0	0.00	0.00	12,449.8	-676.0	-395.0	782.9	0.00	0.00	
12,569.8	0.00	0.00	12,519.5	-676.0	-395.0	782.9	0.00	0.00	Bottom Target
12,600.0	0.00	0.00	12,549.8	-676.0	-395.0	782.9	0.00	0.00	
12,685.8	0.00	0.00	12,635.5	-676.0	-395.0	782.9	0.00	0.00	Middle Marker
12,700.0	0.00	0.00	12,649.8	-676.0	-395.0	782.9	0.00	0.00	
12,800.0	0.00	0.00	12,749.8	-676.0	-395.0	782.9	0.00	0.00	
12,900.0	0.00	0.00	12,849.8	-676.0	-395.0	782.9	0.00	0.00	
13,000.0	0.00	0.00	12,949.8	-676.0	-395.0	782.9	0.00	0.00	
13,100.0	0.00	0.00	13,049.8	-676.0	-395.0	782.9	0.00	0.00	
13,200.0	0.00	0.00	13,149.8	-676.0	-395.0	782.9	0.00	0.00	
13,240.8	0.00	0.00	13,190.5	-676.0	-395.0	782.9	0.00	0.00	Carlile
13,300.0	0.00	0.00	13,249.8	-676.0	-395.0	782.9	0.00	0.00	
13,400.0	0.00	0.00	13,349.8	-676.0	-395.0	782.9	0.00	0.00	
13,415.8	0.00	0.00	13,365.5	-676.0	-395.0	782.9	0.00	0.00	Frontier
13,500.0	0.00	0.00	13,449.8	-676.0	-395.0	782.9	0.00	0.00	
13,515.8	0.00	0.00	13,465.5	-676.0	-395.0	782.9	0.00	0.00	TD
13,591.2	0.00	0.00	13,541.0	-676.0	-395.0	782.9	0.00	0.00	Pilot Hole @ 13591' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #23-41H 892
Company:	Axia Energy	TVD Reference:	WELL @ 6957.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6957.0ft (Original Well Elev)
Site:	SEC 23-T8N-R92W	North Reference:	True
Well:	Bulldog #23-41H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot Hole		
Design:	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
23-41H 892 Vert Tgt	0.00	0.00	8,739.0	-676.0	-395.0	1,480,549.49	2,395,067.77	40.632086	-107.679726
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
3,522.0	3,526.0	Lewis		-6.37	180.00	
5,477.1	5,489.0	Mesaverde		-6.37	180.00	
8,713.9	8,739.0	Mancos		-6.37	180.00	
9,048.8	9,074.0	Morapos		-6.37	180.00	
9,393.8	9,419.0	Mancos Marker		-6.37	180.00	
11,710.8	11,736.0	Niobrara		-6.37	180.00	
12,160.8	12,186.0	Tow Creek #2		-6.37	180.00	
12,235.8	12,261.0	Wolf Mountain		-6.37	180.00	
12,386.8	12,412.0	Top Target		-6.37	180.00	
12,569.8	12,595.0	Bottom Target		-6.37	180.00	
12,685.8	12,711.0	Middle Marker		-6.37	180.00	
13,240.8	13,266.0	Carlile		-6.37	180.00	
13,415.8	13,441.0	Frontier		-6.37	180.00	
13,515.8	13,541.0	TD		-6.37	180.00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
2,500.0	2,500.0	0.0	0.0	KOP @ 2500' MD	
2,748.2	2,747.5	-13.9	-8.1	EOB; 7.45°	
8,541.0	8,491.5	-662.1	-386.9	Start 3° Drop	
8,789.2	8,739.0	-676.0	-395.0	EOD; Vertical	
13,591.2	13,541.0	-676.0	-395.0	Pilot Hole @ 13591' MD	