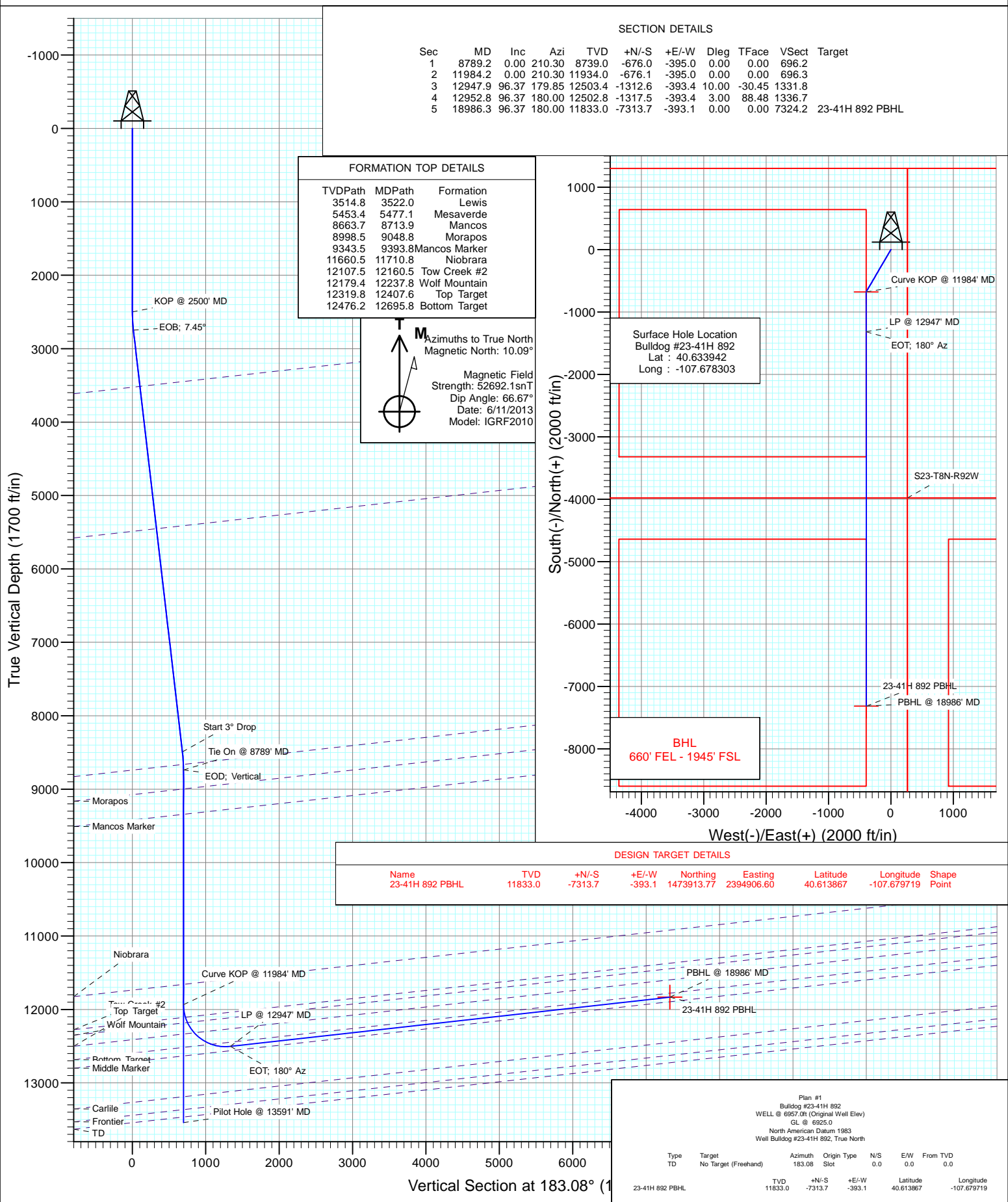




Project: Moffat County, CO
Site: SEC 23-T8N-R92W
Well: Bulldog #23-41H 892
Wellbore: HZ
Design: Plan #1



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:	HZ		
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	HZ				
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:	8,789.2
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	183.08

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
8,789.2	0.00	210.30	8,739.0	-676.0	-395.0	0.00	0.00	0.00	0.00	
11,984.2	0.00	210.30	11,934.0	-676.1	-395.0	0.00	0.00	0.00	0.00	
12,947.9	96.37	179.85	12,503.4	-1,312.6	-393.4	10.00	10.00	-3.16	-30.45	
12,952.8	96.37	180.00	12,502.8	-1,317.5	-393.4	3.00	0.08	3.02	88.48	
18,986.3	96.37	180.00	11,833.0	-7,313.7	-393.1	0.00	0.00	0.00	0.00	23-41H 892 PBHL

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:	HZ		
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
8,789.2	0.00	210.30	8,739.0	-676.0	-395.0	696.2	0.00	0.00	Tie On @ 8789' MD
8,800.0	0.00	210.30	8,749.8	-676.0	-395.0	696.2	0.00	0.00	
8,900.0	0.00	210.30	8,849.8	-676.0	-395.0	696.2	0.00	0.00	
9,000.0	0.00	210.30	8,949.8	-676.0	-395.0	696.2	0.00	0.00	
9,048.8	0.00	210.30	8,998.5	-676.0	-395.0	696.2	0.00	0.00	Morapos
9,100.0	0.00	210.30	9,049.8	-676.0	-395.0	696.2	0.00	0.00	
9,200.0	0.00	210.30	9,149.8	-676.0	-395.0	696.2	0.00	0.00	
9,300.0	0.00	210.30	9,249.8	-676.0	-395.0	696.2	0.00	0.00	
9,393.8	0.00	210.30	9,343.5	-676.0	-395.0	696.2	0.00	0.00	Mancos Marker
9,400.0	0.00	210.30	9,349.8	-676.0	-395.0	696.2	0.00	0.00	
9,500.0	0.00	210.30	9,449.8	-676.0	-395.0	696.2	0.00	0.00	
9,600.0	0.00	210.30	9,549.8	-676.0	-395.0	696.2	0.00	0.00	
9,700.0	0.00	210.30	9,649.8	-676.0	-395.0	696.2	0.00	0.00	
9,800.0	0.00	210.30	9,749.8	-676.0	-395.0	696.2	0.00	0.00	
9,900.0	0.00	210.30	9,849.8	-676.0	-395.0	696.3	0.00	0.00	
10,000.0	0.00	210.30	9,949.8	-676.0	-395.0	696.3	0.00	0.00	
10,100.0	0.00	210.30	10,049.8	-676.0	-395.0	696.3	0.00	0.00	
10,200.0	0.00	210.30	10,149.8	-676.0	-395.0	696.3	0.00	0.00	
10,300.0	0.00	210.30	10,249.8	-676.0	-395.0	696.3	0.00	0.00	
10,400.0	0.00	210.30	10,349.8	-676.0	-395.0	696.3	0.00	0.00	
10,500.0	0.00	210.30	10,449.8	-676.0	-395.0	696.3	0.00	0.00	
10,600.0	0.00	210.30	10,549.8	-676.0	-395.0	696.3	0.00	0.00	
10,700.0	0.00	210.30	10,649.8	-676.0	-395.0	696.3	0.00	0.00	
10,800.0	0.00	210.30	10,749.8	-676.0	-395.0	696.3	0.00	0.00	
10,900.0	0.00	210.30	10,849.8	-676.0	-395.0	696.3	0.00	0.00	
11,000.0	0.00	210.30	10,949.8	-676.0	-395.0	696.3	0.00	0.00	
11,100.0	0.00	210.30	11,049.8	-676.1	-395.0	696.3	0.00	0.00	
11,200.0	0.00	210.30	11,149.8	-676.1	-395.0	696.3	0.00	0.00	
11,300.0	0.00	210.30	11,249.8	-676.1	-395.0	696.3	0.00	0.00	
11,400.0	0.00	210.30	11,349.8	-676.1	-395.0	696.3	0.00	0.00	
11,500.0	0.00	210.30	11,449.8	-676.1	-395.0	696.3	0.00	0.00	
11,600.0	0.00	210.30	11,549.8	-676.1	-395.0	696.3	0.00	0.00	
11,700.0	0.00	210.30	11,649.8	-676.1	-395.0	696.3	0.00	0.00	
11,710.8	0.00	210.30	11,660.5	-676.1	-395.0	696.3	0.00	0.00	Niobrara
11,800.0	0.00	210.30	11,749.8	-676.1	-395.0	696.3	0.00	0.00	
11,900.0	0.00	210.30	11,849.8	-676.1	-395.0	696.3	0.00	0.00	
11,984.2	0.00	210.30	11,934.0	-676.1	-395.0	696.3	0.00	0.00	Curve KOP @ 11984' MD
12,000.0	1.58	179.88	11,949.7	-676.3	-395.0	696.5	10.00	10.00	
12,100.0	11.58	179.85	12,049.0	-687.7	-395.0	707.9	10.00	10.00	
12,160.5	17.64	179.85	12,107.5	-703.0	-395.0	723.2	10.00	10.00	Tow Creek #2
12,200.0	21.58	179.85	12,144.7	-716.2	-394.9	736.4	10.00	10.00	
12,237.8	25.36	179.85	12,179.4	-731.3	-394.9	751.4	10.00	10.00	Wolf Mountain
12,300.0	31.58	179.85	12,234.0	-760.9	-394.8	781.0	10.00	10.00	
12,400.0	41.58	179.85	12,314.2	-820.4	-394.7	840.4	10.00	10.00	
12,407.6	42.34	179.85	12,319.8	-825.5	-394.7	845.5	10.00	10.00	Top Target
12,500.0	51.58	179.85	12,382.8	-893.0	-394.5	912.9	10.00	10.00	
12,600.0	61.58	179.85	12,437.9	-976.3	-394.3	996.1	10.00	10.00	
12,695.8	71.16	179.85	12,476.2	-1,064.0	-394.0	1,083.7	10.00	10.00	Bottom Target
12,700.0	71.58	179.85	12,477.5	-1,068.0	-394.0	1,087.6	10.00	10.00	
12,800.0	81.58	179.85	12,500.7	-1,165.1	-393.8	1,184.6	10.00	10.00	
12,900.0	91.58	179.85	12,506.7	-1,264.8	-393.5	1,284.1	10.00	10.00	
12,947.9	96.37	179.85	12,503.4	-1,312.6	-393.4	1,331.8	10.00	10.00	LP @ 12947' 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:	HZ		
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
12,952.8	96.37	180.00	12,502.8	-1,317.5	-393.4	1,336.7	3.00	0.08	EOT; 180° Az
13,000.0	96.37	180.00	12,497.6	-1,364.4	-393.4	1,383.5	0.00	0.00	
13,100.0	96.37	180.00	12,486.5	-1,463.8	-393.4	1,482.8	0.00	0.00	
13,200.0	96.37	180.00	12,475.4	-1,563.1	-393.4	1,582.0	0.00	0.00	
13,300.0	96.37	180.00	12,464.3	-1,662.5	-393.4	1,681.2	0.00	0.00	
13,400.0	96.37	180.00	12,453.2	-1,761.9	-393.4	1,780.5	0.00	0.00	
13,500.0	96.37	180.00	12,442.1	-1,861.3	-393.4	1,879.7	0.00	0.00	
13,600.0	96.37	180.00	12,431.0	-1,960.7	-393.3	1,979.0	0.00	0.00	
13,700.0	96.37	180.00	12,419.9	-2,060.1	-393.3	2,078.2	0.00	0.00	
13,800.0	96.37	180.00	12,408.8	-2,159.4	-393.3	2,177.4	0.00	0.00	
13,900.0	96.37	180.00	12,397.7	-2,258.8	-393.3	2,276.7	0.00	0.00	
14,000.0	96.37	180.00	12,386.6	-2,358.2	-393.3	2,375.9	0.00	0.00	
14,100.0	96.37	180.00	12,375.5	-2,457.6	-393.3	2,475.2	0.00	0.00	
14,200.0	96.37	180.00	12,364.4	-2,557.0	-393.3	2,574.4	0.00	0.00	
14,300.0	96.37	180.00	12,353.3	-2,656.3	-393.3	2,673.6	0.00	0.00	
14,400.0	96.37	180.00	12,342.2	-2,755.7	-393.3	2,772.9	0.00	0.00	
14,500.0	96.37	180.00	12,331.1	-2,855.1	-393.3	2,872.1	0.00	0.00	
14,600.0	96.37	180.00	12,319.9	-2,954.5	-393.3	2,971.3	0.00	0.00	
14,700.0	96.37	180.00	12,308.8	-3,053.9	-393.3	3,070.6	0.00	0.00	
14,800.0	96.37	180.00	12,297.7	-3,153.3	-393.3	3,169.8	0.00	0.00	
14,900.0	96.37	180.00	12,286.6	-3,252.6	-393.3	3,269.1	0.00	0.00	
15,000.0	96.37	180.00	12,275.5	-3,352.0	-393.3	3,368.3	0.00	0.00	
15,100.0	96.37	180.00	12,264.4	-3,451.4	-393.3	3,467.5	0.00	0.00	
15,200.0	96.37	180.00	12,253.3	-3,550.8	-393.3	3,566.8	0.00	0.00	
15,300.0	96.37	180.00	12,242.2	-3,650.2	-393.3	3,666.0	0.00	0.00	
15,400.0	96.37	180.00	12,231.1	-3,749.5	-393.3	3,765.3	0.00	0.00	
15,500.0	96.37	180.00	12,220.0	-3,848.9	-393.3	3,864.5	0.00	0.00	
15,600.0	96.37	180.00	12,208.9	-3,948.3	-393.3	3,963.7	0.00	0.00	
15,700.0	96.37	180.00	12,197.8	-4,047.7	-393.3	4,063.0	0.00	0.00	
15,800.0	96.37	180.00	12,186.7	-4,147.1	-393.3	4,162.2	0.00	0.00	
15,900.0	96.37	180.00	12,175.6	-4,246.5	-393.3	4,261.4	0.00	0.00	
16,000.0	96.37	180.00	12,164.5	-4,345.8	-393.3	4,360.7	0.00	0.00	
16,100.0	96.37	180.00	12,153.4	-4,445.2	-393.2	4,459.9	0.00	0.00	
16,200.0	96.37	180.00	12,142.3	-4,544.6	-393.2	4,559.2	0.00	0.00	
16,300.0	96.37	180.00	12,131.2	-4,644.0	-393.2	4,658.4	0.00	0.00	
16,400.0	96.37	180.00	12,120.1	-4,743.4	-393.2	4,757.6	0.00	0.00	
16,500.0	96.37	180.00	12,109.0	-4,842.7	-393.2	4,856.9	0.00	0.00	
16,600.0	96.37	180.00	12,097.9	-4,942.1	-393.2	4,956.1	0.00	0.00	
16,700.0	96.37	180.00	12,086.8	-5,041.5	-393.2	5,055.4	0.00	0.00	
16,800.0	96.37	180.00	12,075.7	-5,140.9	-393.2	5,154.6	0.00	0.00	
16,900.0	96.37	180.00	12,064.6	-5,240.3	-393.2	5,253.8	0.00	0.00	
17,000.0	96.37	180.00	12,053.5	-5,339.7	-393.2	5,353.1	0.00	0.00	
17,100.0	96.37	180.00	12,042.4	-5,439.0	-393.2	5,452.3	0.00	0.00	
17,200.0	96.37	180.00	12,031.3	-5,538.4	-393.2	5,551.5	0.00	0.00	
17,300.0	96.37	180.00	12,020.2	-5,637.8	-393.2	5,650.8	0.00	0.00	
17,400.0	96.37	180.00	12,009.1	-5,737.2	-393.2	5,750.0	0.00	0.00	
17,500.0	96.37	180.00	11,998.0	-5,836.6	-393.2	5,849.3	0.00	0.00	
17,600.0	96.37	180.00	11,986.9	-5,936.0	-393.2	5,948.5	0.00	0.00	
17,700.0	96.37	180.00	11,975.8	-6,035.3	-393.2	6,047.7	0.00	0.00	
17,800.0	96.37	180.00	11,964.7	-6,134.7	-393.2	6,147.0	0.00	0.00	
17,900.0	96.37	180.00	11,953.6	-6,234.1	-393.2	6,246.2	0.00	0.00	
18,000.0	96.37	180.00	11,942.5	-6,333.5	-393.2	6,345.5	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:	HZ		
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
18,100.0	96.37	180.00	11,931.4	-6,432.9	-393.2	6,444.7	0.00	0.00	
18,200.0	96.37	180.00	11,920.3	-6,532.2	-393.2	6,543.9	0.00	0.00	
18,300.0	96.37	180.00	11,909.2	-6,631.6	-393.2	6,643.2	0.00	0.00	
18,400.0	96.37	180.00	11,898.1	-6,731.0	-393.2	6,742.4	0.00	0.00	
18,500.0	96.37	180.00	11,887.0	-6,830.4	-393.1	6,841.6	0.00	0.00	
18,600.0	96.37	180.00	11,875.9	-6,929.8	-393.1	6,940.9	0.00	0.00	
18,700.0	96.37	180.00	11,864.8	-7,029.2	-393.1	7,040.1	0.00	0.00	
18,800.0	96.37	180.00	11,853.7	-7,128.5	-393.1	7,139.4	0.00	0.00	
18,900.0	96.37	180.00	11,842.6	-7,227.9	-393.1	7,238.6	0.00	0.00	
18,986.3	96.37	180.00	11,833.0	-7,313.7	-393.1	7,324.2	0.00	0.00	PBHL @ 18986' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
23-41H 892 PBHL - plan hits target center - Point	0.00	0.00	11,833.0	-7,313.7	-393.1	1,473,913.77	2,394,906.60	40.613867	-107.679719

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
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
12,160.5	12,186.0	Tow Creek #2		-6.37	180.00
12,237.8	12,261.0	Wolf Mountain		-6.37	180.00
12,407.6	12,412.0	Top Target		-6.37	180.00
12,695.8	12,595.0	Bottom Target		-6.37	180.00

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
8,789.2	8,739.0	-676.0	-395.0	Tie On @ 8789' MD
11,984.2	11,934.0	-676.1	-395.0	Curve KOP @ 11984' MD
12,947.9	12,503.4	-1,312.6	-393.4	LP @ 12947' MD
12,952.8	12,502.8	-1,317.5	-393.4	EOT; 180° Az
18,986.3	11,833.0	-7,313.7	-393.1	PBHL @ 18986' MD