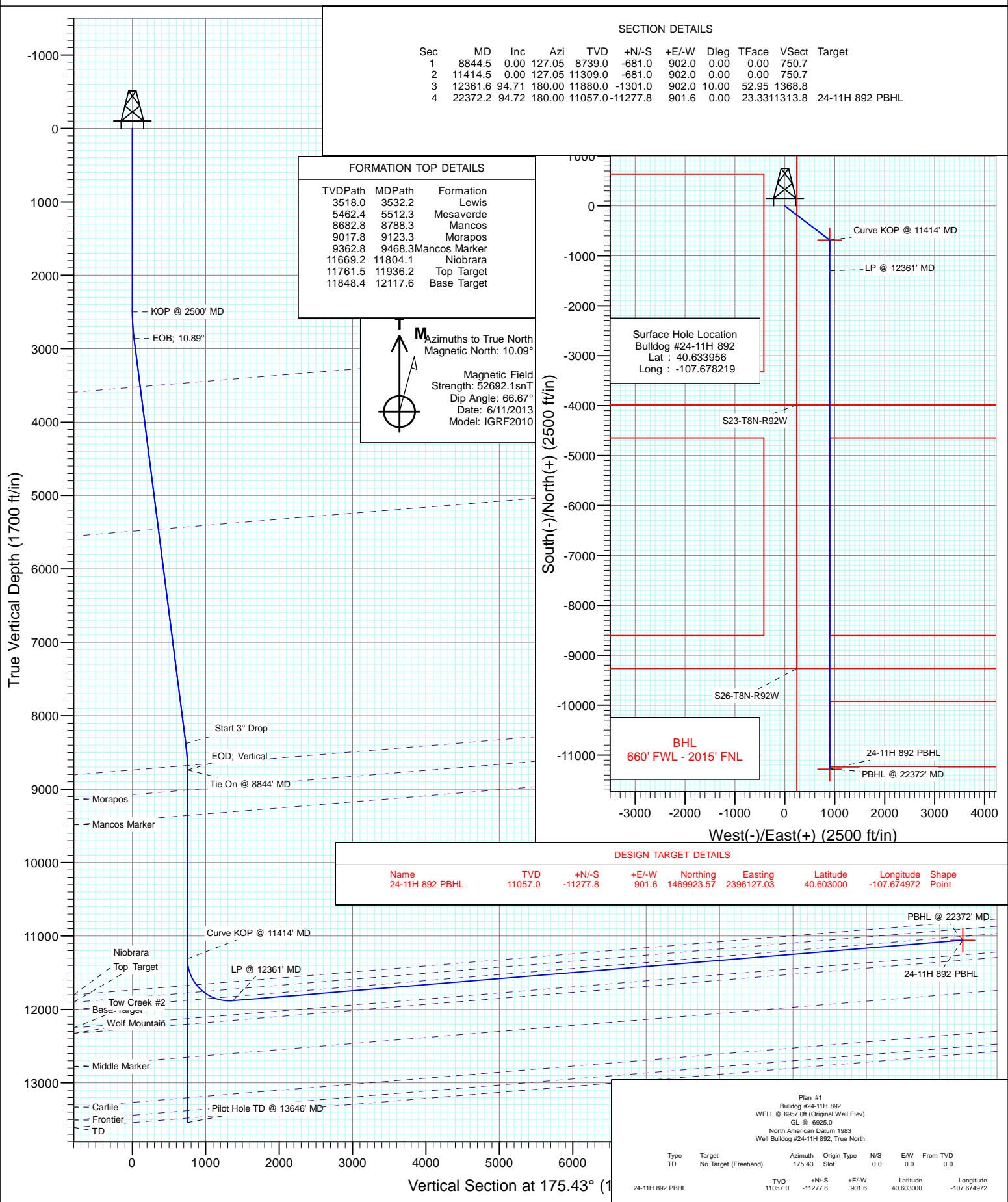




Project: Moffat County, CO
Site: SEC 23-T8N-R92W
Well: Bulldog #24-11H 892
Wellbore: HZ
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #24-11H 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 #24-11H 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 #24-11H 892					
Well Position	+N/-S	0.0 ft	Northing:	1,481,220.11 ft	Latitude:	40.633956
	+E/-W	0.0 ft	Easting:	2,395,502.68 ft	Longitude:	-107.678219
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:	8,844.5
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	175.43

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
8,844.5	0.00	127.05	8,739.0	-681.0	902.0	0.00	0.00	0.00	0.00	
11,414.5	0.00	127.05	11,309.0	-681.0	902.0	0.00	0.00	0.00	0.00	
12,361.6	94.71	180.00	11,880.0	-1,301.0	902.0	10.00	10.00	5.59	52.95	
22,372.2	94.72	180.00	11,057.0	-11,277.8	901.6	0.00	0.00	0.00	23.33	24-11H 892 PBHL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #24-11H 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 #24-11H 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
8,844.5	0.00	127.05	8,739.0	-681.0	902.0	750.7	0.00	0.00	Tie On @ 8844' MD
8,900.0	0.00	127.05	8,794.5	-681.0	902.0	750.7	0.00	0.00	
9,000.0	0.00	127.05	8,894.5	-681.0	902.0	750.7	0.00	0.00	
9,100.0	0.00	127.05	8,994.5	-681.0	902.0	750.7	0.00	0.00	
9,123.3	0.00	127.05	9,017.8	-681.0	902.0	750.7	0.00	0.00	Morapos
9,200.0	0.00	127.05	9,094.5	-681.0	902.0	750.7	0.00	0.00	
9,300.0	0.00	127.05	9,194.5	-681.0	902.0	750.7	0.00	0.00	
9,400.0	0.00	127.05	9,294.5	-681.0	902.0	750.7	0.00	0.00	
9,468.3	0.00	127.05	9,362.8	-681.0	902.0	750.7	0.00	0.00	Mancos Marker
9,500.0	0.00	127.05	9,394.5	-681.0	902.0	750.7	0.00	0.00	
9,600.0	0.00	127.05	9,494.5	-681.0	902.0	750.7	0.00	0.00	
9,700.0	0.00	127.05	9,594.5	-681.0	902.0	750.7	0.00	0.00	
9,800.0	0.00	127.05	9,694.5	-681.0	902.0	750.7	0.00	0.00	
9,900.0	0.00	127.05	9,794.5	-681.0	902.0	750.7	0.00	0.00	
10,000.0	0.00	127.05	9,894.5	-681.0	902.0	750.7	0.00	0.00	
10,100.0	0.00	127.05	9,994.5	-681.0	902.0	750.7	0.00	0.00	
10,200.0	0.00	127.05	10,094.5	-681.0	902.0	750.7	0.00	0.00	
10,300.0	0.00	127.05	10,194.5	-681.0	902.0	750.7	0.00	0.00	
10,400.0	0.00	127.05	10,294.5	-681.0	902.0	750.7	0.00	0.00	
10,500.0	0.00	127.05	10,394.5	-681.0	902.0	750.7	0.00	0.00	
10,600.0	0.00	127.05	10,494.5	-681.0	902.0	750.7	0.00	0.00	
10,700.0	0.00	127.05	10,594.5	-681.0	902.0	750.7	0.00	0.00	
10,800.0	0.00	127.05	10,694.5	-681.0	902.0	750.7	0.00	0.00	
10,900.0	0.00	127.05	10,794.5	-681.0	902.0	750.7	0.00	0.00	
11,000.0	0.00	127.05	10,894.5	-681.0	902.0	750.7	0.00	0.00	
11,100.0	0.00	127.05	10,994.5	-681.0	902.0	750.7	0.00	0.00	
11,200.0	0.00	127.05	11,094.5	-681.0	902.0	750.7	0.00	0.00	
11,300.0	0.00	127.05	11,194.5	-681.0	902.0	750.7	0.00	0.00	
11,400.0	0.00	127.05	11,294.5	-681.0	902.0	750.7	0.00	0.00	
11,414.5	0.00	127.05	11,309.0	-681.0	902.0	750.7	0.00	0.00	Curve KOP @ 11414' MD
11,500.0	8.55	179.99	11,394.2	-687.4	902.0	757.1	10.00	10.00	
11,600.0	18.55	180.00	11,491.2	-710.8	902.0	780.4	10.00	10.00	
11,700.0	28.55	180.00	11,582.8	-750.7	902.0	820.2	10.00	10.00	
11,800.0	38.55	180.00	11,666.0	-805.9	902.0	875.2	10.00	10.00	
11,804.1	38.96	180.00	11,669.2	-808.5	902.0	877.8	10.00	10.00	Niobrara
11,900.0	48.55	180.00	11,738.4	-874.7	902.0	943.8	10.00	10.00	
11,936.2	52.17	180.00	11,761.5	-902.5	902.0	971.6	10.00	10.00	Top Target
12,000.0	58.55	180.00	11,797.8	-955.0	902.0	1,023.9	10.00	10.00	
12,100.0	68.55	180.00	11,842.2	-1,044.5	902.0	1,113.0	10.00	10.00	
12,117.6	70.31	180.00	11,848.4	-1,060.9	902.0	1,129.4	10.00	10.00	Base Target
12,200.0	78.55	180.00	11,870.5	-1,140.3	902.0	1,208.5	10.00	10.00	
12,300.0	88.55	180.00	11,881.7	-1,239.5	902.0	1,307.4	10.00	10.00	
12,361.6	94.71	180.00	11,880.0	-1,301.0	902.0	1,368.8	10.00	10.00	LP @ 12361' MD
12,400.0	94.71	180.00	11,876.8	-1,339.3	902.0	1,406.9	0.00	0.00	
12,500.0	94.71	180.00	11,868.6	-1,439.0	902.0	1,506.3	0.00	0.00	
12,600.0	94.71	180.00	11,860.4	-1,538.6	902.0	1,605.6	0.00	0.00	
12,700.0	94.71	180.00	11,852.2	-1,638.3	902.0	1,705.0	0.00	0.00	
12,800.0	94.71	180.00	11,844.0	-1,738.0	902.0	1,804.3	0.00	0.00	
12,900.0	94.71	180.00	11,835.8	-1,837.6	902.0	1,903.7	0.00	0.00	
13,000.0	94.71	180.00	11,827.6	-1,937.3	902.0	2,003.0	0.00	0.00	
13,100.0	94.71	180.00	11,819.3	-2,036.9	902.0	2,102.4	0.00	0.00	
13,200.0	94.71	180.00	11,811.1	-2,136.6	902.0	2,201.7	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #24-11H 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 #24-11H 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
13,300.0	94.71	180.00	11,802.9	-2,236.3	902.0	2,301.0	0.00	0.00	
13,400.0	94.71	180.00	11,794.7	-2,335.9	902.0	2,400.4	0.00	0.00	
13,500.0	94.71	180.00	11,786.5	-2,435.6	902.0	2,499.7	0.00	0.00	
13,600.0	94.71	180.00	11,778.3	-2,535.3	902.0	2,599.1	0.00	0.00	
13,700.0	94.71	180.00	11,770.1	-2,634.9	902.0	2,698.4	0.00	0.00	
13,800.0	94.71	180.00	11,761.9	-2,734.6	902.0	2,797.8	0.00	0.00	
13,900.0	94.71	180.00	11,753.6	-2,834.2	902.0	2,897.1	0.00	0.00	
14,000.0	94.71	180.00	11,745.4	-2,933.9	902.0	2,996.5	0.00	0.00	
14,100.0	94.71	180.00	11,737.2	-3,033.6	902.0	3,095.8	0.00	0.00	
14,200.0	94.71	180.00	11,729.0	-3,133.2	902.0	3,195.1	0.00	0.00	
14,300.0	94.71	180.00	11,720.8	-3,232.9	902.0	3,294.5	0.00	0.00	
14,400.0	94.71	180.00	11,712.6	-3,332.6	902.0	3,393.8	0.00	0.00	
14,500.0	94.71	180.00	11,704.3	-3,432.2	902.0	3,493.2	0.00	0.00	
14,600.0	94.71	180.00	11,696.1	-3,531.9	902.0	3,592.5	0.00	0.00	
14,700.0	94.71	180.00	11,687.9	-3,631.5	902.0	3,691.9	0.00	0.00	
14,800.0	94.71	180.00	11,679.7	-3,731.2	902.0	3,791.2	0.00	0.00	
14,900.0	94.71	180.00	11,671.5	-3,830.9	902.0	3,890.6	0.00	0.00	
15,000.0	94.71	180.00	11,663.3	-3,930.5	902.0	3,989.9	0.00	0.00	
15,100.0	94.71	180.00	11,655.1	-4,030.2	902.0	4,089.2	0.00	0.00	
15,200.0	94.71	180.00	11,646.8	-4,129.8	902.0	4,188.6	0.00	0.00	
15,300.0	94.71	180.00	11,638.6	-4,229.5	902.0	4,287.9	0.00	0.00	
15,400.0	94.71	180.00	11,630.4	-4,329.2	902.0	4,387.3	0.00	0.00	
15,500.0	94.71	180.00	11,622.2	-4,428.8	902.0	4,486.6	0.00	0.00	
15,600.0	94.71	180.00	11,614.0	-4,528.5	902.0	4,586.0	0.00	0.00	
15,700.0	94.71	180.00	11,605.8	-4,628.2	902.0	4,685.3	0.00	0.00	
15,800.0	94.71	180.00	11,597.5	-4,727.8	902.0	4,784.7	0.00	0.00	
15,900.0	94.71	180.00	11,589.3	-4,827.5	902.0	4,884.0	0.00	0.00	
16,000.0	94.71	180.00	11,581.1	-4,927.1	902.0	4,983.4	0.00	0.00	
16,100.0	94.71	180.00	11,572.9	-5,026.8	902.0	5,082.7	0.00	0.00	
16,200.0	94.71	180.00	11,564.7	-5,126.5	902.0	5,182.0	0.00	0.00	
16,300.0	94.71	180.00	11,556.4	-5,226.1	902.0	5,281.4	0.00	0.00	
16,400.0	94.71	180.00	11,548.2	-5,325.8	902.0	5,380.7	0.00	0.00	
16,500.0	94.71	180.00	11,540.0	-5,425.4	902.0	5,480.1	0.00	0.00	
16,600.0	94.71	180.00	11,531.8	-5,525.1	902.0	5,579.4	0.00	0.00	
16,700.0	94.71	180.00	11,523.6	-5,624.8	902.0	5,678.8	0.00	0.00	
16,800.0	94.72	180.00	11,515.3	-5,724.4	902.0	5,778.1	0.00	0.00	
16,900.0	94.72	180.00	11,507.1	-5,824.1	902.0	5,877.4	0.00	0.00	
17,000.0	94.72	180.00	11,498.9	-5,923.8	902.0	5,976.8	0.00	0.00	
17,100.0	94.72	180.00	11,490.7	-6,023.4	901.9	6,076.1	0.00	0.00	
17,200.0	94.72	180.00	11,482.5	-6,123.1	901.9	6,175.5	0.00	0.00	
17,300.0	94.72	180.00	11,474.2	-6,222.7	901.9	6,274.8	0.00	0.00	
17,400.0	94.72	180.00	11,466.0	-6,322.4	901.9	6,374.2	0.00	0.00	
17,500.0	94.72	180.00	11,457.8	-6,422.1	901.9	6,473.5	0.00	0.00	
17,600.0	94.72	180.00	11,449.6	-6,521.7	901.9	6,572.9	0.00	0.00	
17,700.0	94.72	180.00	11,441.4	-6,621.4	901.9	6,672.2	0.00	0.00	
17,800.0	94.72	180.00	11,433.1	-6,721.0	901.9	6,771.5	0.00	0.00	
17,900.0	94.72	180.00	11,424.9	-6,820.7	901.9	6,870.9	0.00	0.00	
18,000.0	94.72	180.00	11,416.7	-6,920.4	901.9	6,970.2	0.00	0.00	
18,100.0	94.72	180.00	11,408.5	-7,020.0	901.9	7,069.6	0.00	0.00	
18,200.0	94.72	180.00	11,400.2	-7,119.7	901.9	7,168.9	0.00	0.00	
18,300.0	94.72	180.00	11,392.0	-7,219.4	901.9	7,268.3	0.00	0.00	
18,400.0	94.72	180.00	11,383.8	-7,319.0	901.9	7,367.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #24-11H 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 #24-11H 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
18,500.0	94.72	180.00	11,375.6	-7,418.7	901.9	7,467.0	0.00	0.00	
18,600.0	94.72	180.00	11,367.4	-7,518.3	901.9	7,566.3	0.00	0.00	
18,700.0	94.72	180.00	11,359.1	-7,618.0	901.9	7,665.6	0.00	0.00	
18,800.0	94.72	180.00	11,350.9	-7,717.7	901.9	7,765.0	0.00	0.00	
18,900.0	94.72	180.00	11,342.7	-7,817.3	901.9	7,864.3	0.00	0.00	
19,000.0	94.72	180.00	11,334.5	-7,917.0	901.9	7,963.7	0.00	0.00	
19,100.0	94.72	180.00	11,326.2	-8,016.6	901.9	8,063.0	0.00	0.00	
19,200.0	94.72	180.00	11,318.0	-8,116.3	901.8	8,162.4	0.00	0.00	
19,300.0	94.72	180.00	11,309.8	-8,216.0	901.8	8,261.7	0.00	0.00	
19,400.0	94.72	180.00	11,301.6	-8,315.6	901.8	8,361.0	0.00	0.00	
19,500.0	94.72	180.00	11,293.3	-8,415.3	901.8	8,460.4	0.00	0.00	
19,600.0	94.72	180.00	11,285.1	-8,515.0	901.8	8,559.7	0.00	0.00	
19,700.0	94.72	180.00	11,276.9	-8,614.6	901.8	8,659.1	0.00	0.00	
19,800.0	94.72	180.00	11,268.7	-8,714.3	901.8	8,758.4	0.00	0.00	
19,900.0	94.72	180.00	11,260.4	-8,813.9	901.8	8,857.8	0.00	0.00	
20,000.0	94.72	180.00	11,252.2	-8,913.6	901.8	8,957.1	0.00	0.00	
20,100.0	94.72	180.00	11,244.0	-9,013.3	901.8	9,056.5	0.00	0.00	
20,200.0	94.72	180.00	11,235.7	-9,112.9	901.8	9,155.8	0.00	0.00	
20,300.0	94.72	180.00	11,227.5	-9,212.6	901.8	9,255.1	0.00	0.00	
20,400.0	94.72	180.00	11,219.3	-9,312.2	901.8	9,354.5	0.00	0.00	
20,500.0	94.72	180.00	11,211.1	-9,411.9	901.8	9,453.8	0.00	0.00	
20,600.0	94.72	180.00	11,202.8	-9,511.6	901.8	9,553.2	0.00	0.00	
20,700.0	94.72	180.00	11,194.6	-9,611.2	901.7	9,652.5	0.00	0.00	
20,800.0	94.72	180.00	11,186.4	-9,710.9	901.7	9,751.9	0.00	0.00	
20,900.0	94.72	180.00	11,178.2	-9,810.5	901.7	9,851.2	0.00	0.00	
21,000.0	94.72	180.00	11,169.9	-9,910.2	901.7	9,950.5	0.00	0.00	
21,100.0	94.72	180.00	11,161.7	-10,009.9	901.7	10,049.9	0.00	0.00	
21,200.0	94.72	180.00	11,153.5	-10,109.5	901.7	10,149.2	0.00	0.00	
21,300.0	94.72	180.00	11,145.2	-10,209.2	901.7	10,248.6	0.00	0.00	
21,400.0	94.72	180.00	11,137.0	-10,308.8	901.7	10,347.9	0.00	0.00	
21,500.0	94.72	180.00	11,128.8	-10,408.5	901.7	10,447.3	0.00	0.00	
21,600.0	94.72	180.00	11,120.6	-10,508.2	901.7	10,546.6	0.00	0.00	
21,700.0	94.72	180.00	11,112.3	-10,607.8	901.7	10,645.9	0.00	0.00	
21,800.0	94.72	180.00	11,104.1	-10,707.5	901.7	10,745.3	0.00	0.00	
21,900.0	94.72	180.00	11,095.9	-10,807.2	901.7	10,844.6	0.00	0.00	
22,000.0	94.72	180.00	11,087.6	-10,906.8	901.6	10,944.0	0.00	0.00	
22,100.0	94.72	180.00	11,079.4	-11,006.5	901.6	11,043.3	0.00	0.00	
22,200.0	94.72	180.00	11,071.2	-11,106.1	901.6	11,142.7	0.00	0.00	
22,300.0	94.72	180.00	11,062.9	-11,205.8	901.6	11,242.0	0.00	0.00	
22,372.2	94.72	180.00	11,057.0	-11,277.8	901.6	11,313.8	0.00	0.00	PBHL @ 22372' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
24-11H 892 PBHL	0.00	0.00	11,057.0	-11,277.8	901.6	1,469,923.57	2,396,127.03	40.603000	-107.674972
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #24-11H 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 #24-11H 892	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,532.2	3,526.0	Lewis		-4.72	180.00
5,512.3	5,489.0	Mesaverde		-4.72	180.00
8,788.3	8,739.0	Mancos		-4.72	180.00
9,123.3	9,074.0	Morapos		-4.72	180.00
9,468.3	9,419.0	Mancos Marker		-4.72	180.00
11,804.1	11,736.0	Niobrara		-4.72	180.00
11,936.2	11,836.0	Top Target		-4.72	180.00
12,117.6	11,936.0	Base Target		-4.72	180.00

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,844.5	8,739.0	-681.0	902.0	Tie On @ 8844' MD
11,414.5	11,309.0	-681.0	902.0	Curve KOP @ 11414' MD
12,361.6	11,880.0	-1,301.0	902.0	LP @ 12361' MD
22,372.2	11,057.0	-11,277.8	901.6	PBHL @ 22372' MD