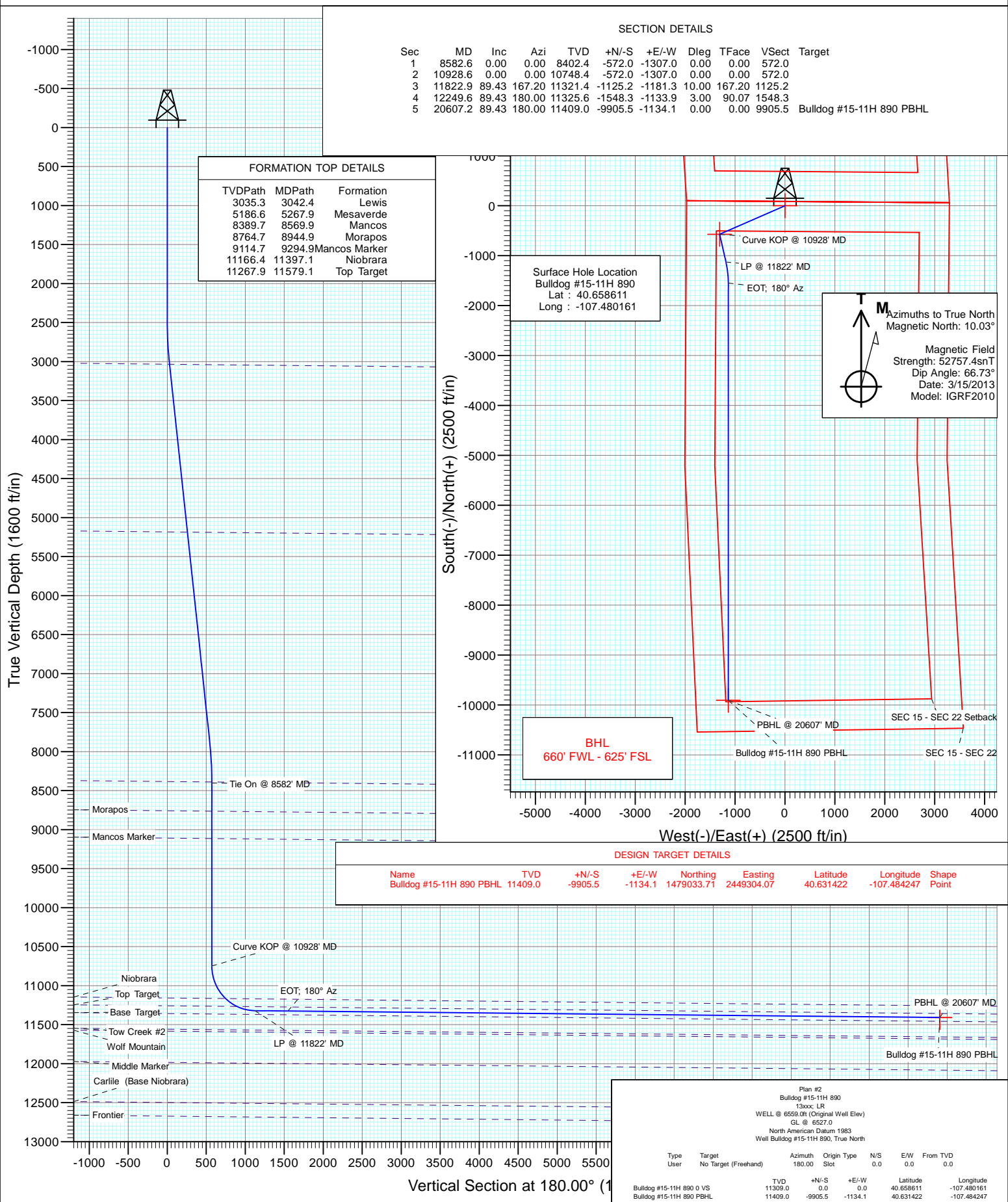




Project: Moffat County, CO
Site: SEC 15-T8N-R90W
Well: Bulldog #15-11H 890
Wellbore: Hz
Design: Plan #2



Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bulldog #15-11H 890
Company:	Axia Energy	TVD Reference:	WELL @ 6559.0ft (Original Well Elev)
Project:	Moffat County, CO	MD Reference:	WELL @ 6559.0ft (Original Well Elev)
Site:	SEC 15-T8N-R90W	North Reference:	True
Well:	Bulldog #15-11H 890	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

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 15-T8N-R90W			
Site Position:		Northing:	1,488,924.54 ft	Latitude:	40.658650
From:	Lat/Long	Easting:	2,450,707.10 ft	Longitude:	-107.479989
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.28 °

Well	Bulldog #15-11H 890					
Well Position	+N/-S	0.0 ft	Northing:	1,488,911.39 ft	Latitude:	40.658611
	+E/-W	0.0 ft	Easting:	2,450,659.07 ft	Longitude:	-107.480161
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,527.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/15/2013	10.03	66.73	52,757

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	8,582.6
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.00

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
8,582.6	0.00	0.00	8,402.4	-572.0	-1,307.0	0.00	0.00	0.00	0.00	
10,928.6	0.00	0.00	10,748.4	-572.0	-1,307.0	0.00	0.00	0.00	0.00	
11,822.9	89.43	167.20	11,321.4	-1,125.2	-1,181.3	10.00	10.00	0.00	167.20	
12,249.6	89.43	180.00	11,325.6	-1,548.3	-1,133.9	3.00	0.00	3.00	90.07	
20,607.2	89.43	180.00	11,409.0	-9,905.5	-1,134.1	0.00	0.00	0.00	0.00	Bulldog #15-11H 890

Database: USA EDM 5000 Multi Users DB
Company: Axia Energy
Project: Moffat County, CO
Site: SEC 15-T8N-R90W
Well: Bulldog #15-11H 890
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Bulldog #15-11H 890
TVD Reference: WELL @ 6559.0ft (Original Well Elev)
MD Reference: WELL @ 6559.0ft (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
8,582.6	0.00	0.00	8,402.4	-572.0	-1,307.0	572.0	0.00	0.00	Tie On @ 8582' MD
8,600.0	0.00	0.00	8,419.8	-572.0	-1,307.0	572.0	0.00	0.00	
8,700.0	0.00	0.00	8,519.8	-572.0	-1,307.0	572.0	0.00	0.00	
8,800.0	0.00	0.00	8,619.8	-572.0	-1,307.0	572.0	0.00	0.00	
8,900.0	0.00	0.00	8,719.8	-572.0	-1,307.0	572.0	0.00	0.00	
8,944.9	0.00	0.00	8,764.7	-572.0	-1,307.0	572.0	0.00	0.00	Morapos
9,000.0	0.00	0.00	8,819.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,100.0	0.00	0.00	8,919.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,200.0	0.00	0.00	9,019.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,294.9	0.00	0.00	9,114.7	-572.0	-1,307.0	572.0	0.00	0.00	Mancos Marker
9,300.0	0.00	0.00	9,119.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,400.0	0.00	0.00	9,219.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,500.0	0.00	0.00	9,319.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,600.0	0.00	0.00	9,419.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,700.0	0.00	0.00	9,519.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,800.0	0.00	0.00	9,619.8	-572.0	-1,307.0	572.0	0.00	0.00	
9,900.0	0.00	0.00	9,719.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,000.0	0.00	0.00	9,819.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,100.0	0.00	0.00	9,919.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,200.0	0.00	0.00	10,019.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,300.0	0.00	0.00	10,119.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,400.0	0.00	0.00	10,219.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,500.0	0.00	0.00	10,319.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,600.0	0.00	0.00	10,419.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,700.0	0.00	0.00	10,519.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,800.0	0.00	0.00	10,619.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,900.0	0.00	0.00	10,719.8	-572.0	-1,307.0	572.0	0.00	0.00	
10,928.6	0.00	0.00	10,748.4	-572.0	-1,307.0	572.0	0.00	0.00	Curve KOP @ 10928' MD
11,000.0	7.14	167.20	10,819.6	-576.3	-1,306.0	576.3	10.00	10.00	
11,100.0	17.14	167.20	10,917.3	-596.8	-1,301.4	596.8	10.00	10.00	
11,200.0	27.14	167.20	11,009.8	-633.5	-1,293.0	633.5	10.00	10.00	
11,300.0	37.14	167.20	11,094.4	-685.3	-1,281.3	685.3	10.00	10.00	
11,397.1	46.85	167.20	11,166.4	-748.6	-1,266.9	748.6	10.00	10.00	Niobrara
11,400.0	47.14	167.20	11,168.4	-750.7	-1,266.4	750.7	10.00	10.00	
11,500.0	57.14	167.20	11,229.7	-827.6	-1,248.9	827.6	10.00	10.00	
11,579.1	65.05	167.20	11,267.9	-895.0	-1,233.6	895.0	10.00	10.00	Top Target
11,600.0	67.14	167.20	11,276.4	-913.7	-1,229.4	913.7	10.00	10.00	
11,700.0	77.14	167.20	11,307.0	-1,006.4	-1,208.3	1,006.4	10.00	10.00	
11,800.0	87.14	167.20	11,320.7	-1,102.8	-1,186.4	1,102.8	10.00	10.00	
11,822.9	89.43	167.20	11,321.4	-1,125.2	-1,181.3	1,125.2	10.00	10.00	LP @ 11822' MD
11,900.0	89.43	169.51	11,322.1	-1,200.7	-1,165.8	1,200.7	3.00	0.00	
12,000.0	89.43	172.51	11,323.1	-1,299.4	-1,150.1	1,299.4	3.00	0.00	
12,100.0	89.43	175.51	11,324.1	-1,398.9	-1,139.7	1,398.9	3.00	0.00	
12,200.0	89.43	178.51	11,325.1	-1,498.7	-1,134.5	1,498.7	3.00	0.00	
12,249.6	89.43	180.00	11,325.6	-1,548.3	-1,133.9	1,548.3	3.00	0.00	EOT; 180° Az
12,300.0	89.43	180.00	11,326.1	-1,598.7	-1,133.9	1,598.7	0.00	0.00	
12,400.0	89.43	180.00	11,327.1	-1,698.7	-1,133.9	1,698.7	0.00	0.00	
12,500.0	89.43	180.00	11,328.1	-1,798.7	-1,133.9	1,798.7	0.00	0.00	
12,600.0	89.43	180.00	11,329.1	-1,898.7	-1,133.9	1,898.7	0.00	0.00	
12,700.0	89.43	180.00	11,330.1	-1,998.7	-1,133.9	1,998.7	0.00	0.00	
12,800.0	89.43	180.00	11,331.1	-2,098.7	-1,133.9	2,098.7	0.00	0.00	
12,900.0	89.43	180.00	11,332.1	-2,198.7	-1,133.9	2,198.7	0.00	0.00	

Database: USA EDM 5000 Multi Users DB
Company: Axia Energy
Project: Moffat County, CO
Site: SEC 15-T8N-R90W
Well: Bulldog #15-11H 890
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Bulldog #15-11H 890
TVD Reference: WELL @ 6559.0ft (Original Well Elev)
MD Reference: WELL @ 6559.0ft (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
13,000.0	89.43	180.00	11,333.1	-2,298.7	-1,133.9	2,298.7	0.00	0.00	
13,100.0	89.43	180.00	11,334.1	-2,398.7	-1,133.9	2,398.7	0.00	0.00	
13,200.0	89.43	180.00	11,335.1	-2,498.7	-1,133.9	2,498.7	0.00	0.00	
13,300.0	89.43	180.00	11,336.1	-2,598.6	-1,133.9	2,598.6	0.00	0.00	
13,400.0	89.43	180.00	11,337.1	-2,698.6	-1,133.9	2,698.6	0.00	0.00	
13,500.0	89.43	180.00	11,338.1	-2,798.6	-1,133.9	2,798.6	0.00	0.00	
13,600.0	89.43	180.00	11,339.1	-2,898.6	-1,133.9	2,898.6	0.00	0.00	
13,700.0	89.43	180.00	11,340.1	-2,998.6	-1,133.9	2,998.6	0.00	0.00	
13,800.0	89.43	180.00	11,341.1	-3,098.6	-1,133.9	3,098.6	0.00	0.00	
13,900.0	89.43	180.00	11,342.1	-3,198.6	-1,133.9	3,198.6	0.00	0.00	
14,000.0	89.43	180.00	11,343.1	-3,298.6	-1,133.9	3,298.6	0.00	0.00	
14,100.0	89.43	180.00	11,344.1	-3,398.6	-1,133.9	3,398.6	0.00	0.00	
14,200.0	89.43	180.00	11,345.1	-3,498.6	-1,133.9	3,498.6	0.00	0.00	
14,300.0	89.43	180.00	11,346.1	-3,598.6	-1,133.9	3,598.6	0.00	0.00	
14,400.0	89.43	180.00	11,347.1	-3,698.6	-1,133.9	3,698.6	0.00	0.00	
14,500.0	89.43	180.00	11,348.1	-3,798.6	-1,133.9	3,798.6	0.00	0.00	
14,600.0	89.43	180.00	11,349.1	-3,898.6	-1,133.9	3,898.6	0.00	0.00	
14,700.0	89.43	180.00	11,350.1	-3,998.6	-1,133.9	3,998.6	0.00	0.00	
14,800.0	89.43	180.00	11,351.1	-4,098.6	-1,133.9	4,098.6	0.00	0.00	
14,900.0	89.43	180.00	11,352.1	-4,198.6	-1,133.9	4,198.6	0.00	0.00	
15,000.0	89.43	180.00	11,353.1	-4,298.6	-1,133.9	4,298.6	0.00	0.00	
15,100.0	89.43	180.00	11,354.1	-4,398.6	-1,134.0	4,398.6	0.00	0.00	
15,200.0	89.43	180.00	11,355.1	-4,498.6	-1,134.0	4,498.6	0.00	0.00	
15,300.0	89.43	180.00	11,356.1	-4,598.5	-1,134.0	4,598.5	0.00	0.00	
15,400.0	89.43	180.00	11,357.1	-4,698.5	-1,134.0	4,698.5	0.00	0.00	
15,500.0	89.43	180.00	11,358.1	-4,798.5	-1,134.0	4,798.5	0.00	0.00	
15,600.0	89.43	180.00	11,359.1	-4,898.5	-1,134.0	4,898.5	0.00	0.00	
15,700.0	89.43	180.00	11,360.0	-4,998.5	-1,134.0	4,998.5	0.00	0.00	
15,800.0	89.43	180.00	11,361.0	-5,098.5	-1,134.0	5,098.5	0.00	0.00	
15,900.0	89.43	180.00	11,362.0	-5,198.5	-1,134.0	5,198.5	0.00	0.00	
16,000.0	89.43	180.00	11,363.0	-5,298.5	-1,134.0	5,298.5	0.00	0.00	
16,100.0	89.43	180.00	11,364.0	-5,398.5	-1,134.0	5,398.5	0.00	0.00	
16,200.0	89.43	180.00	11,365.0	-5,498.5	-1,134.0	5,498.5	0.00	0.00	
16,300.0	89.43	180.00	11,366.0	-5,598.5	-1,134.0	5,598.5	0.00	0.00	
16,400.0	89.43	180.00	11,367.0	-5,698.5	-1,134.0	5,698.5	0.00	0.00	
16,500.0	89.43	180.00	11,368.0	-5,798.5	-1,134.0	5,798.5	0.00	0.00	
16,600.0	89.43	180.00	11,369.0	-5,898.5	-1,134.0	5,898.5	0.00	0.00	
16,700.0	89.43	180.00	11,370.0	-5,998.5	-1,134.0	5,998.5	0.00	0.00	
16,800.0	89.43	180.00	11,371.0	-6,098.5	-1,134.0	6,098.5	0.00	0.00	
16,900.0	89.43	180.00	11,372.0	-6,198.5	-1,134.0	6,198.5	0.00	0.00	
17,000.0	89.43	180.00	11,373.0	-6,298.5	-1,134.0	6,298.5	0.00	0.00	
17,100.0	89.43	180.00	11,374.0	-6,398.5	-1,134.0	6,398.5	0.00	0.00	
17,200.0	89.43	180.00	11,375.0	-6,498.5	-1,134.0	6,498.5	0.00	0.00	
17,300.0	89.43	180.00	11,376.0	-6,598.4	-1,134.0	6,598.4	0.00	0.00	
17,400.0	89.43	180.00	11,377.0	-6,698.4	-1,134.0	6,698.4	0.00	0.00	
17,500.0	89.43	180.00	11,378.0	-6,798.4	-1,134.0	6,798.4	0.00	0.00	
17,600.0	89.43	180.00	11,379.0	-6,898.4	-1,134.0	6,898.4	0.00	0.00	
17,700.0	89.43	180.00	11,380.0	-6,998.4	-1,134.0	6,998.4	0.00	0.00	
17,800.0	89.43	180.00	11,381.0	-7,098.4	-1,134.0	7,098.4	0.00	0.00	
17,900.0	89.43	180.00	11,382.0	-7,198.4	-1,134.0	7,198.4	0.00	0.00	
18,000.0	89.43	180.00	11,383.0	-7,298.4	-1,134.0	7,298.4	0.00	0.00	
18,100.0	89.43	180.00	11,384.0	-7,398.4	-1,134.0	7,398.4	0.00	0.00	

Database: USA EDM 5000 Multi Users DB
Company: Axia Energy
Project: Moffat County, CO
Site: SEC 15-T8N-R90W
Well: Bulldog #15-11H 890
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Bulldog #15-11H 890
TVD Reference: WELL @ 6559.0ft (Original Well Elev)
MD Reference: WELL @ 6559.0ft (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
18,200.0	89.43	180.00	11,385.0	-7,498.4	-1,134.0	7,498.4	0.00	0.00	
18,300.0	89.43	180.00	11,386.0	-7,598.4	-1,134.0	7,598.4	0.00	0.00	
18,400.0	89.43	180.00	11,387.0	-7,698.4	-1,134.0	7,698.4	0.00	0.00	
18,500.0	89.43	180.00	11,388.0	-7,798.4	-1,134.0	7,798.4	0.00	0.00	
18,600.0	89.43	180.00	11,389.0	-7,898.4	-1,134.1	7,898.4	0.00	0.00	
18,700.0	89.43	180.00	11,390.0	-7,998.4	-1,134.1	7,998.4	0.00	0.00	
18,800.0	89.43	180.00	11,391.0	-8,098.4	-1,134.1	8,098.4	0.00	0.00	
18,900.0	89.43	180.00	11,392.0	-8,198.4	-1,134.1	8,198.4	0.00	0.00	
19,000.0	89.43	180.00	11,393.0	-8,298.4	-1,134.1	8,298.4	0.00	0.00	
19,100.0	89.43	180.00	11,394.0	-8,398.4	-1,134.1	8,398.4	0.00	0.00	
19,200.0	89.43	180.00	11,395.0	-8,498.4	-1,134.1	8,498.4	0.00	0.00	
19,300.0	89.43	180.00	11,396.0	-8,598.3	-1,134.1	8,598.3	0.00	0.00	
19,400.0	89.43	180.00	11,397.0	-8,698.3	-1,134.1	8,698.3	0.00	0.00	
19,500.0	89.43	180.00	11,398.0	-8,798.3	-1,134.1	8,798.3	0.00	0.00	
19,600.0	89.43	180.00	11,399.0	-8,898.3	-1,134.1	8,898.3	0.00	0.00	
19,700.0	89.43	180.00	11,400.0	-8,998.3	-1,134.1	8,998.3	0.00	0.00	
19,800.0	89.43	180.00	11,400.9	-9,098.3	-1,134.1	9,098.3	0.00	0.00	
19,900.0	89.43	180.00	11,401.9	-9,198.3	-1,134.1	9,198.3	0.00	0.00	
20,000.0	89.43	180.00	11,402.9	-9,298.3	-1,134.1	9,298.3	0.00	0.00	
20,100.0	89.43	180.00	11,403.9	-9,398.3	-1,134.1	9,398.3	0.00	0.00	
20,200.0	89.43	180.00	11,404.9	-9,498.3	-1,134.1	9,498.3	0.00	0.00	
20,300.0	89.43	180.00	11,405.9	-9,598.3	-1,134.1	9,598.3	0.00	0.00	
20,400.0	89.43	180.00	11,406.9	-9,698.3	-1,134.1	9,698.3	0.00	0.00	
20,500.0	89.43	180.00	11,407.9	-9,798.3	-1,134.1	9,798.3	0.00	0.00	
20,600.0	89.43	180.00	11,408.9	-9,898.3	-1,134.1	9,898.3	0.00	0.00	
20,607.2	89.43	180.00	11,409.0	-9,905.5	-1,134.1	9,905.5	0.00	0.00	PBHL @ 20607' 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
Bulldog #15-11H 890 PE - plan hits target center - Point	0.00	0.00	11,409.0	-9,905.5	-1,134.1	1,479,033.71	2,449,304.07	40.631422	-107.484247
Bulldog #15-11H 890 0 \	0.00	0.00	11,309.0	0.0	0.0	1,488,911.39	2,450,659.07	40.658611	-107.480161
- plan misses target center by 1468.2ft at 11277.2ft MD (11075.9 TVD, -672.3 N, -1284.2 E) - Point									

Database: USA EDM 5000 Multi Users DB
Company: Axia Energy
Project: Moffat County, CO
Site: SEC 15-T8N-R90W
Well: Bulldog #15-11H 890
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Bulldog #15-11H 890
TVD Reference: WELL @ 6559.0ft (Original Well Elev)
MD Reference: WELL @ 6559.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,042.4	3,035.0	Lewis		0.57	180.00
5,267.9	5,184.0	Mesaverde		0.57	180.00
8,569.9	8,384.0	Mancos		0.57	180.00
8,944.9	8,759.0	Morapos		0.57	180.00
9,294.9	9,109.0	Mancos Marker		0.57	180.00
11,397.1	11,159.0	Niobrara		0.57	180.00
11,579.1	11,259.0	Top Target		0.57	180.00

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,582.6	8,402.4	-572.0	-1,307.0	Tie On @ 8582' MD
10,928.6	10,748.4	-572.0	-1,307.0	Curve KOP @ 10928' MD
11,822.9	11,321.4	-1,125.2	-1,181.3	LP @ 11822' MD
12,249.6	11,325.6	-1,548.3	-1,133.9	EOT; 180° Az
20,607.2	11,409.0	-9,905.5	-1,134.1	PBHL @ 20607' MD