

Noble Energy

Garfield County, CO

Sec. 20-T7S-R94W

Long 20-23A

Plan #1

Plan: Plan #1 Proposal

Sperry Drilling Services

Proposal Report

22 January, 2009

Well Coordinates: 589,013.27 N, 1,317,909.03 E (39° 25' 32.70" N, 107° 54' 53.48" W)

Ground Level: 7,906.00 ft

Local Coordinate Origin: Centered on Well Long 20-23A

Viewing Datum: RKB 25' @ 7931.00ft (Original Well Elev)

TVDs to System: N

North Reference: True

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 42

HALLIBURTON

Plan Report for Long 20-23A - Plan #1 Proposal

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 225.00ft										
300.00	1.50	127.26	299.99	-0.59	0.78	0.98	2.00	2.00	0.00	127.26
400.00	3.50	127.26	399.89	-3.23	4.25	5.34	2.00	2.00	0.00	0.00
455.00	4.60	127.26	454.75	-5.59	7.34	9.22	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
500.00	5.50	127.26	499.58	-7.98	10.50	13.17	2.00	2.00	0.00	0.00
600.00	7.50	127.26	598.93	-14.84	19.51	24.48	2.00	2.00	0.00	0.00
691.80	9.34	127.26	689.74	-22.97	30.20	37.90	2.00	2.00	0.00	0.00
End Build at 691.80ft										
700.00	9.34	127.26	697.83	-23.78	31.26	39.23	0.00	0.00	0.00	0.00
800.00	9.34	127.26	796.50	-33.60	44.17	55.43	0.00	0.00	0.00	0.00
900.00	9.34	127.26	895.18	-43.42	57.08	71.63	0.00	0.00	0.00	0.00
1,000.00	9.34	127.26	993.85	-53.24	70.00	87.84	0.00	0.00	0.00	0.00
1,100.00	9.34	127.26	1,092.53	-63.06	82.91	104.04	0.00	0.00	0.00	0.00
1,200.00	9.34	127.26	1,191.21	-72.88	95.82	120.24	0.00	0.00	0.00	0.00
1,300.00	9.34	127.26	1,289.88	-82.71	108.73	136.44	0.00	0.00	0.00	0.00
1,400.00	9.34	127.26	1,388.56	-92.53	121.64	152.64	0.00	0.00	0.00	0.00
1,500.00	9.34	127.26	1,487.23	-102.35	134.55	168.85	0.00	0.00	0.00	0.00
1,600.00	9.34	127.26	1,585.91	-112.17	147.47	185.05	0.00	0.00	0.00	0.00
1,700.00	9.34	127.26	1,684.58	-121.99	160.38	201.25	0.00	0.00	0.00	0.00
1,800.00	9.34	127.26	1,783.26	-131.81	173.29	217.45	0.00	0.00	0.00	0.00
1,900.00	9.34	127.26	1,881.93	-141.63	186.20	233.66	0.00	0.00	0.00	0.00
2,000.00	9.34	127.26	1,980.61	-151.45	199.11	249.86	0.00	0.00	0.00	0.00
2,100.00	9.34	127.26	2,079.28	-161.27	212.02	266.06	0.00	0.00	0.00	0.00
2,200.00	9.34	127.26	2,177.96	-171.10	224.93	282.26	0.00	0.00	0.00	0.00
2,300.00	9.34	127.26	2,276.64	-180.92	237.85	298.47	0.00	0.00	0.00	0.00
2,400.00	9.34	127.26	2,375.31	-190.74	250.76	314.67	0.00	0.00	0.00	0.00
2,500.00	9.34	127.26	2,473.99	-200.56	263.67	330.87	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,600.00	9.34	127.26	2,572.66	-210.38	276.58	347.07	0.00	0.00	0.00	0.00
2,700.00	9.34	127.26	2,671.34	-220.20	289.49	363.27	0.00	0.00	0.00	0.00
2,800.00	9.34	127.26	2,770.01	-230.02	302.40	379.48	0.00	0.00	0.00	0.00
2,900.00	9.34	127.26	2,868.69	-239.84	315.32	395.68	0.00	0.00	0.00	0.00
3,000.00	9.34	127.26	2,967.36	-249.66	328.23	411.88	0.00	0.00	0.00	0.00
3,100.00	9.34	127.26	3,066.04	-259.49	341.14	428.08	0.00	0.00	0.00	0.00
3,200.00	9.34	127.26	3,164.71	-269.31	354.05	444.29	0.00	0.00	0.00	0.00
3,300.00	9.34	127.26	3,263.39	-279.13	366.96	460.49	0.00	0.00	0.00	0.00
9.34 Inclination										
3,400.00	9.34	127.26	3,362.06	-288.95	379.87	476.69	0.00	0.00	0.00	0.00
3,500.00	9.34	127.26	3,460.74	-298.77	392.78	492.89	0.00	0.00	0.00	0.00
3,600.00	9.34	127.26	3,559.42	-308.59	405.70	509.09	0.00	0.00	0.00	0.00
3,700.00	9.34	127.26	3,658.09	-318.41	418.61	525.30	0.00	0.00	0.00	0.00
3,800.00	9.34	127.26	3,756.77	-328.23	431.52	541.50	0.00	0.00	0.00	0.00
3,900.00	9.34	127.26	3,855.44	-338.05	444.43	557.70	0.00	0.00	0.00	0.00
4,000.00	9.34	127.26	3,954.12	-347.88	457.34	573.90	0.00	0.00	0.00	0.00
4,100.00	9.34	127.26	4,052.79	-357.70	470.25	590.11	0.00	0.00	0.00	0.00
4,200.00	9.34	127.26	4,151.47	-367.52	483.17	606.31	0.00	0.00	0.00	0.00
4,300.00	9.34	127.26	4,250.14	-377.34	496.08	622.51	0.00	0.00	0.00	0.00
4,400.00	9.34	127.26	4,348.82	-387.16	508.99	638.71	0.00	0.00	0.00	0.00
4,500.00	9.34	127.26	4,447.49	-396.98	521.90	654.92	0.00	0.00	0.00	0.00
4,600.00	9.34	127.26	4,546.17	-406.80	534.81	671.12	0.00	0.00	0.00	0.00
4,700.00	9.34	127.26	4,644.85	-416.62	547.72	687.32	0.00	0.00	0.00	0.00
4,800.00	9.34	127.26	4,743.52	-426.44	560.64	703.52	0.00	0.00	0.00	0.00
4,900.00	9.34	127.26	4,842.20	-436.27	573.55	719.72	0.00	0.00	0.00	0.00

Plan Report for Long 20-23A - Plan #1 Proposal

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
5,000.00	9.34	127.26	4,940.87	-446.09	586.46	735.93	0.00	0.00	0.00	0.00
5,100.00	9.34	127.26	5,039.55	-455.91	599.37	752.13	0.00	0.00	0.00	0.00
5,200.00	9.34	127.26	5,138.22	-465.73	612.28	768.33	0.00	0.00	0.00	0.00
5,300.00	9.34	127.26	5,236.90	-475.55	625.19	784.53	0.00	0.00	0.00	0.00
5,400.00	9.34	127.26	5,335.57	-485.37	638.10	800.74	0.00	0.00	0.00	0.00
5,500.00	9.34	127.26	5,434.25	-495.19	651.02	816.94	0.00	0.00	0.00	0.00
5,600.00	9.34	127.26	5,532.92	-505.01	663.93	833.14	0.00	0.00	0.00	0.00
5,700.00	9.34	127.26	5,631.60	-514.84	676.84	849.34	0.00	0.00	0.00	0.00
5,800.00	9.34	127.26	5,730.27	-524.66	689.75	865.55	0.00	0.00	0.00	0.00
5,900.00	9.34	127.26	5,828.95	-534.48	702.66	881.75	0.00	0.00	0.00	0.00
5,918.65	9.34	127.26	5,847.35	-536.31	705.07	884.77	0.00	0.00	0.00	0.00
Begin Drop at 5918.65ft										
6,000.00	8.12	127.26	5,927.76	-543.78	714.89	897.10	1.50	-1.50	0.00	180.00
6,100.00	6.62	127.26	6,026.93	-551.54	725.10	909.90	1.50	-1.50	0.00	180.00
6,200.00	5.12	127.26	6,126.41	-557.73	733.23	920.11	1.50	-1.50	0.00	180.00
6,230.00	4.67	127.26	6,156.30	-559.28	735.27	922.66	1.50	-1.50	0.00	-180.00
Drop Rate = 1.50°/100ft										
6,300.00	3.62	127.26	6,226.11	-562.34	739.29	927.71	1.50	-1.50	0.00	180.00
6,400.00	2.12	127.26	6,325.98	-565.36	743.27	932.70	1.50	-1.50	0.00	180.00
6,500.00	0.62	127.26	6,425.95	-566.81	745.16	935.08	1.50	-1.50	0.00	180.00
6,541.05	0.00	0.00	6,467.00	-566.94	745.34	935.30	1.50	-1.50	-310.03	-180.00
End Drop at 6541.05ft - Williams Fork - Long 20-23A Plan #1 Driller's Tgt										
6,600.00	0.05	239.53	6,525.95	-566.95	745.32	935.29	0.08	0.08	-204.35	-120.47
6,700.00	0.13	239.53	6,625.95	-567.03	745.19	935.24	0.08	0.08	0.00	0.00
6,800.00	0.21	239.53	6,725.95	-567.18	744.94	935.15	0.08	0.08	0.00	0.00
6,900.00	0.29	239.53	6,825.95	-567.40	744.56	935.00	0.08	0.08	0.00	0.00
7,000.00	0.37	239.53	6,925.95	-567.69	744.07	934.81	0.08	0.08	0.00	0.00
7,100.00	0.45	239.53	7,025.95	-568.05	743.46	934.58	0.08	0.08	0.00	0.00
7,200.00	0.53	239.53	7,125.94	-568.48	742.73	934.29	0.08	0.08	0.00	0.00
7,300.00	0.61	239.53	7,225.94	-568.98	741.87	933.96	0.08	0.08	0.00	0.00
7,359.07	0.65	239.53	7,285.00	-569.31	741.31	933.75	0.08	0.08	0.00	0.00
Top of Gas										
7,400.00	0.69	239.53	7,325.93	-569.55	740.90	933.59	0.08	0.08	0.00	0.00
7,500.00	0.77	239.53	7,425.92	-570.20	739.81	933.17	0.08	0.08	0.00	0.00
7,600.00	0.85	239.53	7,525.91	-570.91	738.59	932.70	0.08	0.08	0.00	0.00
7,700.00	0.93	239.53	7,625.90	-571.69	737.26	932.18	0.08	0.08	0.00	0.00
7,800.00	1.01	239.53	7,725.89	-572.55	735.80	931.62	0.08	0.08	0.00	0.00
7,900.00	1.09	239.53	7,825.87	-573.48	734.23	931.01	0.08	0.08	0.00	0.00
8,000.00	1.17	239.53	7,925.85	-574.47	732.53	930.36	0.08	0.08	0.00	0.00
8,100.00	1.25	239.53	8,025.83	-575.54	730.72	929.66	0.08	0.08	0.00	0.00
8,200.00	1.33	239.53	8,125.80	-576.68	728.78	928.91	0.08	0.08	0.00	0.00
8,300.00	1.41	239.53	8,225.78	-577.89	726.72	928.12	0.08	0.08	0.00	0.00
8,329.37	1.43	239.53	8,255.13	-578.26	726.10	927.88	0.08	0.08	0.00	0.00
8,400.00	1.38	239.53	8,325.75	-579.14	724.60	927.30	0.07	-0.07	0.00	180.00
8,500.00	1.32	239.53	8,425.72	-580.34	722.57	926.52	0.07	-0.07	0.00	180.00
8,600.00	1.25	239.53	8,525.69	-581.47	720.64	925.77	0.07	-0.07	0.00	180.00
8,700.00	1.19	239.53	8,625.67	-582.55	718.81	925.06	0.07	-0.07	0.00	180.00
8,800.00	1.12	239.53	8,725.65	-583.57	717.07	924.39	0.07	-0.07	0.00	180.00
8,900.00	1.05	239.53	8,825.63	-584.53	715.44	923.76	0.07	-0.07	0.00	180.00
9,000.00	0.99	239.53	8,925.62	-585.43	713.90	923.17	0.07	-0.07	0.00	180.00
9,100.00	0.92	239.53	9,025.60	-586.28	712.47	922.62	0.07	-0.07	0.00	180.00
9,132.40	0.90	239.53	9,058.00	-586.54	712.03	922.45	0.07	-0.07	0.00	-180.00
Cameo										
9,200.00	0.85	239.53	9,125.59	-587.06	711.14	922.10	0.07	-0.07	0.00	180.00
9,300.00	0.79	239.53	9,225.58	-587.79	709.90	921.63	0.07	-0.07	0.00	180.00
9,400.00	0.72	239.53	9,325.57	-588.46	708.76	921.19	0.07	-0.07	0.00	180.00
9,500.00	0.66	239.53	9,425.56	-589.07	707.73	920.79	0.07	-0.07	0.00	180.00
9,592.44	0.59	239.53	9,518.00	-589.58	706.86	920.45	0.07	-0.07	0.00	180.00
Rollins										

Plan Report for Long 20-23A - Plan #1 Proposal

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
9,600.00	0.59	239.53	9,525.56	-589.62	706.79	920.43	0.07	-0.07	0.00	-180.00
9,700.00	0.52	239.53	9,625.55	-590.11	705.96	920.10	0.07	-0.07	0.00	180.00
9,800.00	0.46	239.53	9,725.55	-590.55	705.22	919.82	0.07	-0.07	0.00	180.00
9,900.00	0.39	239.53	9,825.55	-590.92	704.58	919.57	0.07	-0.07	0.00	180.00
9,931.45	0.37	239.53	9,857.00	-591.03	704.40	919.50	0.07	-0.07	0.00	-180.00
Cozette										
10,000.00	0.32	239.53	9,925.54	-591.24	704.04	919.37	0.07	-0.07	0.00	180.00
10,100.00	0.26	239.53	10,025.54	-591.50	703.60	919.20	0.07	-0.07	0.00	180.00
10,200.00	0.19	239.53	10,125.54	-591.69	703.26	919.07	0.07	-0.07	0.00	180.00
10,210.46	0.19	239.53	10,136.00	-591.71	703.23	919.05	0.07	-0.07	0.00	180.00
Corcoran										
10,300.00	0.13	239.53	10,225.54	-591.84	703.02	918.97	0.07	-0.07	0.00	-180.00
10,340.46	0.10	239.53	10,266.00	-591.88	702.96	918.95	0.07	-0.07	0.00	180.00
Mancos										
10,400.00	0.06	239.53	10,325.54	-591.92	702.88	918.92	0.07	-0.07	0.00	-180.00
10,490.46	0.00	0.00	10,416.00	-591.94	702.84	918.90	0.07	-0.07	0.00	180.00
Long 20-23A Plan #1 BH Tgt										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
455.00	454.75	-5.59	7.34	Build Rate = 2.00°/100ft
691.80	689.74	-22.97	30.20	End Build at 691.80ft
3,300.00	3,263.39	-279.13	366.96	9.34 Inclination
5,918.65	5,847.35	-536.31	705.07	Begin Drop at 5918.65ft
6,230.00	6,156.30	-559.28	735.27	Drop Rate = 1.50°/100ft
6,541.05	6,467.00	-566.94	745.34	End Drop at 6541.05ft
10,490.46	10,416.00	-591.94	702.84	Total Depth = 10490.46ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Long 20-23A Plan #1 BH Tgt	130.10	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,490.46	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,500.00	2,473.99	8 5/8" Casing Pt.	8-5/8	11

Plan Report for Long 20-23A - Plan #1 Proposal

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,541.05	6,467.00	Williams Fork		0.00	
7,359.07	7,285.00	Top of Gas		0.00	
9,132.40	9,058.00	Cameo		0.00	
9,592.44	9,518.00	Rollins		0.00	
9,931.45	9,857.00	Cozette		0.00	
10,210.46	10,136.00	Corcoran		0.00	
10,340.46	10,266.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Long 20-23A Plan #1 Driller's Tgt	6,467.00	-566.94	745.34	Rectangle
Long 20-23A E. Hardline	0.00	0.00	0.00	Polygon
Long 20-23A N. Hardline	0.00	0.00	0.00	Polygon
Long 20-23A Plan #1 Zone Tgt	7,285.00	-591.94	702.84	Rectangle
Long 20-23A Plan #1 BH Tgt	10,416.00	-591.94	702.84	Point

North Reference Sheet for Sec. 20-T7S-R94W - Long 20-23A - Plan #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 25' @ 7931.00ft (Original Well Elev). Northing and Easting are relative to Long 20-23A

Coordinate System is US State Plane 1927 (Exact solution), Colorado Central 502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99995193

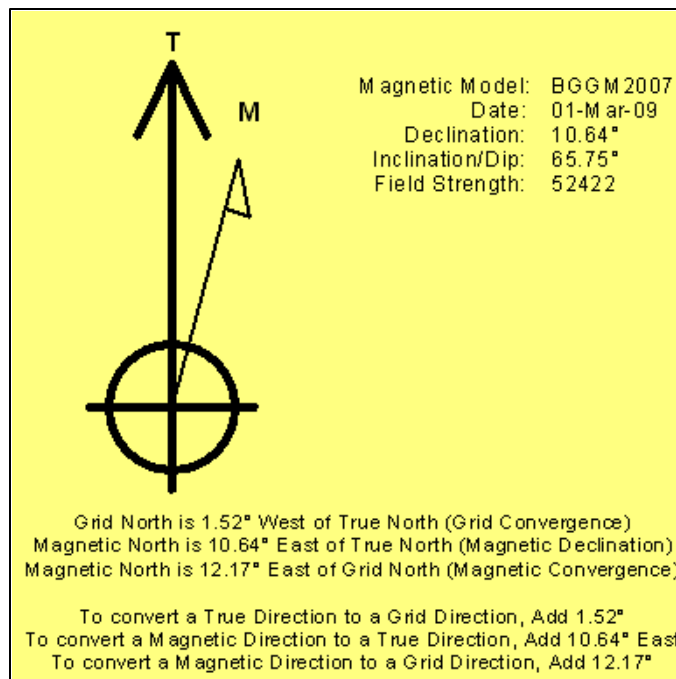
Grid Coordinates of Well: 589,013.27 ft N, 1,317,909.03 ft E

Geographical Coordinates of Well: 39° 25' 32.70" N, 107° 54' 53.48" W

Grid Convergence at Surface is: -1.52°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,490.46ft
the Bottom Hole Displacement is 918.90ft in the Direction of 130.10° (True).

Magnetic Convergence at surface is: -12.17° (1 March 2009, , BGGM2007)



Project: Garfield County, CO
 Site: Sec. 20-T7S-R94W
 Well: Long 20-23A
 Wellbore: Plan #1
 Plan: Plan #1 Proposal

Noble Energy

HALLIBURTON

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00
3	691.80	9.34	127.26	689.73	-22.97	30.20	2.00	127.26	37.90
4	5918.65	9.34	127.26	5847.35	-536.31	705.07	0.00	0.00	884.77
5	6541.05	0.00	0.00	6467.00	-566.94	745.34	1.50	180.00	935.30
6	8329.37	1.43	239.53	8255.13	-578.26	726.10	0.08	239.53	927.88
7	10490.46	0.00	0.00	10416.00	-591.94	702.84	0.07	180.00	918.90

Long 20-23A Plan #1 Driller's Tgt
 Long 20-23A Plan #1 BH Tgt

WELL DETAILS: Long 20-23A

Ground Level:	7906.00		
Northing	Easting	Latitude	Longitude
589013.27	1317909.03	39°25' 32.697 N	107°54' 53.481 W

WELLBORE TARGET DETAILS

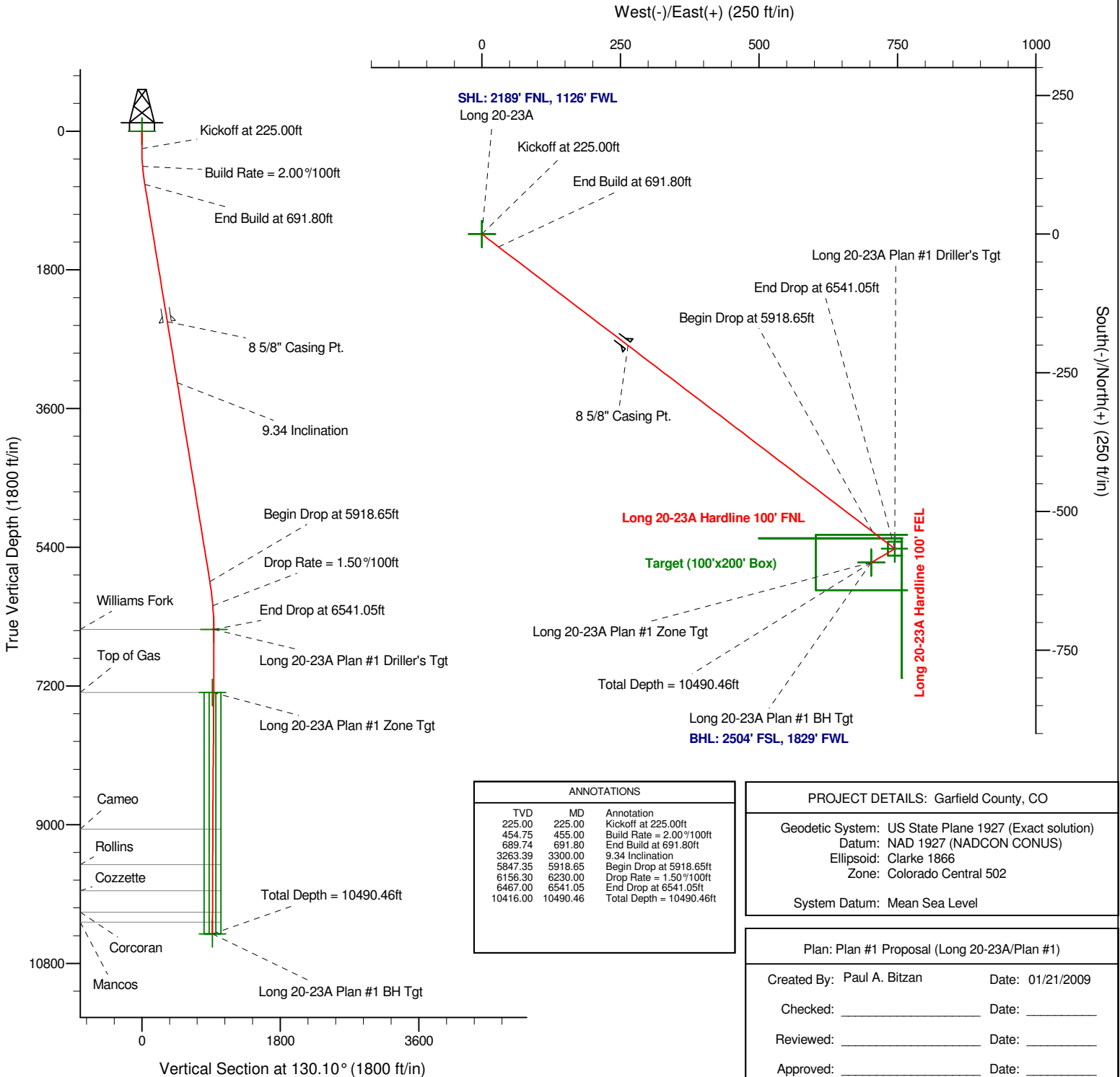
Name	TVD	+N/-S	+E/-W	Shape
Long 20-23A E. Hardline	0.00	0.00	0.00	Polygon
Long 20-23A N. Hardline	0.00	0.00	0.00	Polygon
Long 20-23A Plan #1 Driller's Tgt	6467.00	-566.94	745.34	Rectangle (Sides: L25.00 W25.00)
Long 20-23A Plan #1 Zone Tgt	7285.00	-591.94	702.84	Rectangle (Sides: L100.00 W200.00)
Long 20-23A Plan #1 BH Tgt	10416.00	-591.94	702.84	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6467.00	6541.05	Williams Fork
7285.00	7359.07	Top of Gas
9058.00	9132.40	Cameo
9518.00	9592.44	Rollins
9857.00	9931.45	Cozzette
10136.00	10210.46	Corcoran
10266.00	10340.46	Mancos



Azimuths to True North
 Magnetic North: 10.64°
 Magnetic Field
 Strength: 52422.0snT
 Dip Angle: 65.75°
 Date: 3/1/2009
 Model: BGGM2007



ANNOTATIONS		
TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
454.75	455.00	Build Rate = 2.00%/100ft
689.74	691.80	End Build at 691.80ft
3263.39	3300.00	9.34 Inclination
5847.35	5918.65	Begin Drop at 5918.65ft
6156.30	6230.00	Drop Rate = 1.50%/100ft
6467.00	6541.05	End Drop at 6541.05ft
10416.00	10490.46	Total Depth = 10490.46ft

PROJECT DETAILS: Garfield County, CO	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	Colorado Central 502
System Datum:	Mean Sea Level

Plan: Plan #1 Proposal (Long 20-23A/Plan #1)	
Created By:	Paul A. Bitzan
Date:	01/21/2009
Checked:	_____
Date:	_____
Reviewed:	_____
Date:	_____
Approved:	_____
Date:	_____