

Noble Energy

Garfield County, CO

Sec. 20-T7S-R94W

Long 20-12C

Plan #1

Plan: Plan #1 Proposal

Sperry Drilling Services

Proposal Report

21 January, 2009

Well Coordinates: 589,022.77 N, 1,317,856.53 E (39° 25' 32.78" N, 107° 54' 54.15" W)

Ground Level: 7,906.00 ft

Local Coordinate Origin:	Centered on Well Long 20-12C
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 20-12C - 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	286.75	299.99	0.28	-0.94	0.98	2.00	2.00	0.00	286.75
360.00	2.70	286.75	359.95	0.92	-3.05	3.16	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
388.41	3.27	286.75	388.32	1.34	-4.46	4.64	2.00	2.00	0.00	0.00
End Build at 388.41ft										
400.00	3.27	286.75	399.89	1.53	-5.09	5.29	0.00	0.00	0.00	0.00
500.00	3.27	286.75	499.73	3.18	-10.55	10.97	0.00	0.00	0.00	0.00
600.00	3.27	286.75	599.57	4.82	-16.01	16.64	0.00	0.00	0.00	0.00
700.00	3.27	286.75	699.40	6.46	-21.47	22.31	0.00	0.00	0.00	0.00
800.00	3.27	286.75	799.24	8.10	-26.93	27.99	0.00	0.00	0.00	0.00
900.00	3.27	286.75	899.08	9.75	-32.39	33.66	0.00	0.00	0.00	0.00
1,000.00	3.27	286.75	998.92	11.39	-37.85	39.33	0.00	0.00	0.00	0.00
1,100.00	3.27	286.75	1,098.75	13.03	-43.31	45.00	0.00	0.00	0.00	0.00
1,200.00	3.27	286.75	1,198.59	14.68	-48.77	50.68	0.00	0.00	0.00	0.00
1,300.00	3.27	286.75	1,298.43	16.32	-54.23	56.35	0.00	0.00	0.00	0.00
1,400.00	3.27	286.75	1,398.27	17.96	-59.69	62.02	0.00	0.00	0.00	0.00
1,500.00	3.27	286.75	1,498.10	19.60	-65.15	67.70	0.00	0.00	0.00	0.00
1,600.00	3.27	286.75	1,597.94	21.25	-70.61	73.37	0.00	0.00	0.00	0.00
1,700.00	3.27	286.75	1,697.78	22.89	-76.07	79.04	0.00	0.00	0.00	0.00
1,800.00	3.27	286.75	1,797.62	24.53	-81.52	84.72	0.00	0.00	0.00	0.00
1,900.00	3.27	286.75	1,897.45	26.17	-86.98	90.39	0.00	0.00	0.00	0.00
2,000.00	3.27	286.75	1,997.29	27.82	-92.44	96.06	0.00	0.00	0.00	0.00
2,100.00	3.27	286.75	2,097.13	29.46	-97.90	101.74	0.00	0.00	0.00	0.00
2,200.00	3.27	286.75	2,196.96	31.10	-103.36	107.41	0.00	0.00	0.00	0.00
2,300.00	3.27	286.75	2,296.80	32.75	-108.82	113.08	0.00	0.00	0.00	0.00
2,400.00	3.27	286.75	2,396.64	34.39	-114.28	118.75	0.00	0.00	0.00	0.00
2,500.00	3.27	286.75	2,496.48	36.03	-119.74	124.43	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,600.00	3.27	286.75	2,596.31	37.67	-125.20	130.10	0.00	0.00	0.00	0.00
2,700.00	3.27	286.75	2,696.15	39.32	-130.66	135.77	0.00	0.00	0.00	0.00
2,800.00	3.27	286.75	2,795.99	40.96	-136.12	141.45	0.00	0.00	0.00	0.00
2,900.00	3.27	286.75	2,895.83	42.60	-141.58	147.12	0.00	0.00	0.00	0.00
3,000.00	3.27	286.75	2,995.66	44.25	-147.04	152.79	0.00	0.00	0.00	0.00
3,100.00	3.27	286.75	3,095.50	45.89	-152.50	158.47	0.00	0.00	0.00	0.00
3,200.00	3.27	286.75	3,195.34	47.53	-157.95	164.14	0.00	0.00	0.00	0.00
3,300.00	3.27	286.75	3,295.18	49.17	-163.41	169.81	0.00	0.00	0.00	0.00
3.27 Inclination										
3,400.00	3.27	286.75	3,395.01	50.82	-168.87	175.48	0.00	0.00	0.00	0.00
3,500.00	3.27	286.75	3,494.85	52.46	-174.33	181.16	0.00	0.00	0.00	0.00
3,600.00	3.27	286.75	3,594.69	54.10	-179.79	186.83	0.00	0.00	0.00	0.00
3,700.00	3.27	286.75	3,694.53	55.74	-185.25	192.50	0.00	0.00	0.00	0.00
3,800.00	3.27	286.75	3,794.36	57.39	-190.71	198.18	0.00	0.00	0.00	0.00
3,900.00	3.27	286.75	3,894.20	59.03	-196.17	203.85	0.00	0.00	0.00	0.00
4,000.00	3.27	286.75	3,994.04	60.67	-201.63	209.52	0.00	0.00	0.00	0.00
4,100.00	3.27	286.75	4,093.87	62.32	-207.09	215.20	0.00	0.00	0.00	0.00
4,200.00	3.27	286.75	4,193.71	63.96	-212.55	220.87	0.00	0.00	0.00	0.00
4,300.00	3.27	286.75	4,293.55	65.60	-218.01	226.54	0.00	0.00	0.00	0.00
4,400.00	3.27	286.75	4,393.39	67.24	-223.47	232.21	0.00	0.00	0.00	0.00
4,500.00	3.27	286.75	4,493.22	68.89	-228.93	237.89	0.00	0.00	0.00	0.00
4,600.00	3.27	286.75	4,593.06	70.53	-234.39	243.56	0.00	0.00	0.00	0.00
4,700.00	3.27	286.75	4,692.90	72.17	-239.84	249.23	0.00	0.00	0.00	0.00
4,800.00	3.27	286.75	4,792.74	73.82	-245.30	254.91	0.00	0.00	0.00	0.00
4,900.00	3.27	286.75	4,892.57	75.46	-250.76	260.58	0.00	0.00	0.00	0.00

Plan Report for Long 20-12C - 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	3.27	286.75	4,992.41	77.10	-256.22	266.25	0.00	0.00	0.00	0.00
5,100.00	3.27	286.75	5,092.25	78.74	-261.68	271.93	0.00	0.00	0.00	0.00
5,200.00	3.27	286.75	5,192.09	80.39	-267.14	277.60	0.00	0.00	0.00	0.00
5,300.00	3.27	286.75	5,291.92	82.03	-272.60	283.27	0.00	0.00	0.00	0.00
5,400.00	3.27	286.75	5,391.76	83.67	-278.06	288.94	0.00	0.00	0.00	0.00
5,500.00	3.27	286.75	5,491.60	85.31	-283.52	294.62	0.00	0.00	0.00	0.00
5,600.00	3.27	286.75	5,591.43	86.96	-288.98	300.29	0.00	0.00	0.00	0.00
5,700.00	3.27	286.75	5,691.27	88.60	-294.44	305.96	0.00	0.00	0.00	0.00
5,800.00	3.27	286.75	5,791.11	90.24	-299.90	311.64	0.00	0.00	0.00	0.00
5,900.00	3.27	286.75	5,890.95	91.89	-305.36	317.31	0.00	0.00	0.00	0.00
6,000.00	3.27	286.75	5,990.78	93.53	-310.82	322.98	0.00	0.00	0.00	0.00
6,100.00	3.27	286.75	6,090.62	95.17	-316.27	328.66	0.00	0.00	0.00	0.00
6,200.00	3.27	286.75	6,190.46	96.81	-321.73	334.33	0.00	0.00	0.00	0.00
6,233.83	3.27	286.75	6,224.23	97.37	-323.58	336.25	0.00	0.00	0.00	0.00
Begin Drop at 6233.83ft										
6,300.00	2.28	286.75	6,290.33	98.29	-326.65	339.43	1.50	-1.50	0.00	180.00
6,340.00	1.68	286.75	6,330.30	98.69	-327.97	340.80	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,400.00	0.78	286.75	6,390.29	99.06	-329.19	342.08	1.50	-1.50	0.00	-180.00
6,451.71	0.00	0.00	6,442.00	99.16	-329.53	342.43	1.50	-1.50	141.65	180.00
End Drop at 6451.71ft - Williams Fork - Long 20-12C Plan #1 Driller's Tgt										
6,500.00	0.04	243.44	6,490.29	99.15	-329.54	342.44	0.08	0.08	-241.40	-116.56
6,600.00	0.12	243.44	6,590.29	99.09	-329.67	342.55	0.08	0.08	0.00	0.00
6,700.00	0.20	243.44	6,690.29	98.97	-329.91	342.77	0.08	0.08	0.00	0.00
6,800.00	0.28	243.44	6,790.28	98.78	-330.29	343.10	0.08	0.08	0.00	0.00
6,900.00	0.36	243.44	6,890.28	98.53	-330.78	343.54	0.08	0.08	0.00	0.00
7,000.00	0.44	243.44	6,990.28	98.22	-331.41	344.09	0.08	0.08	0.00	0.00
7,100.00	0.52	243.44	7,090.28	97.85	-332.15	344.75	0.08	0.08	0.00	0.00
7,200.00	0.60	243.44	7,190.27	97.41	-333.03	345.53	0.08	0.08	0.00	0.00
7,269.73	0.65	243.44	7,260.00	97.07	-333.71	346.13	0.08	0.08	0.00	0.00
Top of Gas										
7,300.00	0.68	243.44	7,290.27	96.91	-334.02	346.41	0.08	0.08	0.00	0.00
7,400.00	0.76	243.44	7,390.26	96.35	-335.15	347.40	0.08	0.08	0.00	0.00
7,500.00	0.84	243.44	7,490.25	95.73	-336.39	348.51	0.08	0.08	0.00	0.00
7,600.00	0.92	243.44	7,590.24	95.04	-337.76	349.72	0.08	0.08	0.00	0.00
7,700.00	1.00	243.44	7,690.22	94.30	-339.26	351.05	0.08	0.08	0.00	0.00
7,800.00	1.08	243.44	7,790.21	93.49	-340.88	352.48	0.08	0.08	0.00	0.00
7,900.00	1.16	243.44	7,890.19	92.61	-342.63	354.03	0.08	0.08	0.00	0.00
8,000.00	1.24	243.44	7,990.17	91.68	-344.50	355.69	0.08	0.08	0.00	0.00
8,100.00	1.32	243.44	8,090.14	90.68	-346.49	357.45	0.08	0.08	0.00	0.00
8,200.00	1.40	243.44	8,190.11	89.62	-348.62	359.33	0.08	0.08	0.00	0.00
8,300.00	1.48	243.44	8,290.08	88.50	-350.86	361.32	0.08	0.08	0.00	0.00
8,400.00	1.56	243.44	8,390.05	87.31	-353.23	363.42	0.08	0.08	0.00	0.00
8,479.26	1.62	243.44	8,469.27	86.33	-355.20	365.16	0.08	0.08	0.00	0.00
8,500.00	1.60	243.44	8,490.01	86.07	-355.72	365.62	0.08	-0.08	0.00	-180.00
8,600.00	1.52	243.44	8,589.97	84.85	-358.16	367.78	0.08	-0.08	0.00	180.00
8,700.00	1.44	243.44	8,689.94	83.69	-360.47	369.83	0.08	-0.08	0.00	-180.00
8,800.00	1.35	243.44	8,789.91	82.61	-362.64	371.75	0.08	-0.08	0.00	180.00
8,900.00	1.27	243.44	8,889.88	81.59	-364.69	373.56	0.08	-0.08	0.00	-180.00
9,000.00	1.18	243.44	8,989.86	80.63	-366.60	375.26	0.08	-0.08	0.00	180.00
9,043.15	1.15	243.44	9,033.00	80.24	-367.38	375.95	0.08	-0.08	0.00	180.00
Cameo										
9,100.00	1.10	243.44	9,089.84	79.74	-368.38	376.83	0.08	-0.08	0.00	-180.00
9,200.00	1.01	243.44	9,189.82	78.92	-370.03	378.29	0.08	-0.08	0.00	180.00
9,300.00	0.93	243.44	9,289.81	78.16	-371.54	379.64	0.08	-0.08	0.00	180.00
9,400.00	0.84	243.44	9,389.79	77.47	-372.93	380.86	0.08	-0.08	0.00	180.00
9,500.00	0.76	243.44	9,489.78	76.84	-374.18	381.97	0.08	-0.08	0.00	180.00
9,503.22	0.76	243.44	9,493.00	76.82	-374.22	382.01	0.08	-0.08	0.00	-180.00
Rollins										

Plan Report for Long 20-12C - 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	0.68	243.44	9,589.78	76.28	-375.30	382.96	0.08	-0.08	0.00	180.00
9,700.00	0.59	243.44	9,689.77	75.78	-376.29	383.84	0.08	-0.08	0.00	180.00
9,800.00	0.51	243.44	9,789.77	75.35	-377.15	384.60	0.08	-0.08	0.00	180.00
9,842.24	0.47	243.44	9,832.00	75.19	-377.47	384.89	0.08	-0.08	0.00	-180.00
Cozzette										
9,900.00	0.42	243.44	9,889.76	74.99	-377.88	385.24	0.08	-0.08	0.00	180.00
10,000.00	0.34	243.44	9,989.76	74.69	-378.47	385.77	0.08	-0.08	0.00	180.00
10,100.00	0.25	243.44	10,089.76	74.46	-378.93	386.18	0.08	-0.08	0.00	180.00
10,121.24	0.24	243.44	10,111.00	74.42	-379.02	386.25	0.08	-0.08	0.00	-180.00
Corcoran										
10,200.00	0.17	243.44	10,189.76	74.30	-379.26	386.47	0.08	-0.08	0.00	180.00
10,251.24	0.13	243.44	10,241.00	74.24	-379.38	386.58	0.08	-0.08	0.00	180.00
Mancos										
10,300.00	0.09	243.44	10,289.76	74.20	-379.46	386.65	0.08	-0.08	0.00	-180.00
10,400.00	0.00	243.44	10,389.76	74.16	-379.53	386.71	0.08	-0.08	0.00	-180.00
10,401.24	0.00	0.00	10,391.00	74.16	-379.53	386.71	0.08	-0.08	0.00	180.00
Total Depth = 10401.24ft - Long 20-12C Plan #1 BH Tgt										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
360.00	359.95	0.92	-3.05	Build Rate = 2.00°/100ft
388.41	388.32	1.34	-4.46	End Build at 388.41ft
3,300.00	3,295.18	49.17	-163.41	3.27 Inclination
6,233.83	6,224.23	97.37	-323.58	Begin Drop at 6233.83ft
6,340.00	6,330.30	98.69	-327.97	Drop Rate = 1.50°/100ft
6,451.71	6,442.00	99.16	-329.53	End Drop at 6451.71ft
10,401.24	10,391.00	74.16	-379.53	Total Depth = 10401.24ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Long 20-12C Plan #1 BH Tgt	281.06	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,401.12	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,500.00	2,496.48	8 5/8" Casing Pt.	8-5/8	11

Plan Report for Long 20-12C - Plan #1 Proposal

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,451.71	6,442.00	Williams Fork		0.00	
7,269.73	7,260.00	Top of Gas		0.00	
9,043.15	9,033.00	Cameo		0.00	
9,503.22	9,493.00	Rollins		0.00	
9,842.24	9,832.00	Cozzette		0.00	
10,121.24	10,111.00	Corcoran		0.00	
10,251.24	10,241.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Long 20-12C Plan #1 Zone Tgt	7,260.00	74.16	-379.53	Rectangle
Long 20-12C Plan #1 BH Tgt	10,391.00	74.16	-379.53	Point
Long 20-12C Plan #1 Driller's Tgt	6,442.00	99.16	-329.53	Rectangle

North Reference Sheet for Sec. 20-T7S-R94W - Long 20-12C - 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 20-12C

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: 589,022.77 ft N, 1,317,856.53 ft E

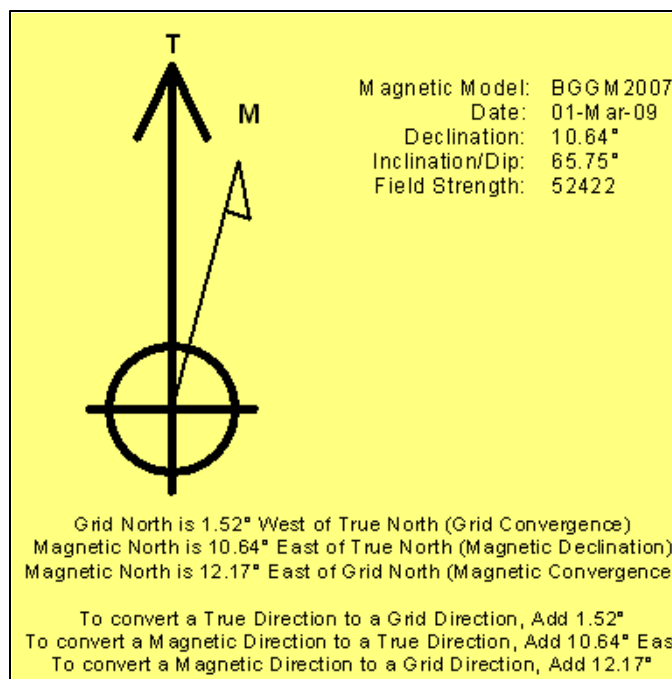
Geographical Coordinates of Well: 39° 25' 32.78" N, 107° 54' 54.15" W

Grid Convergence at Surface is: -1.52°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,401.24ft

the Bottom Hole Displacement is 386.71ft in the Direction of 281.06° (True).

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



Project: Garfield County, CO
 Site: Sec. 20-T7S-R94W
 Well: Long 20-12C
 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	388.41	3.27	286.75	388.32	1.34	-4.46	2.00	286.75	4.64	
4	6233.83	3.27	286.75	6224.23	97.37	-323.58	0.00	0.00	336.25	Long 20-12C Plan #1 Driller's Tgt
5	6451.71	0.00	0.00	6442.00	99.16	-329.53	1.50	180.00	342.43	
6	8479.26	1.62	243.44	8469.27	86.33	-355.20	0.08	243.44	365.16	
7	10401.24	0.00	0.00	10391.00	74.16	-379.53	0.08	180.00	386.71	Long 20-12C Plan #1 BH Tgt

WELL DETAILS: Long 20-12C

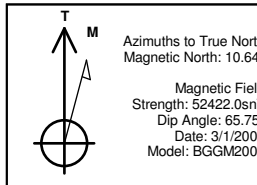
Ground Level:	7906.00	Longitude	
Northing	Easting	Latitude	Longitude
589022.77	1317856.53	39° 25' 32.777 N	107° 54' 54.153 W

WELLBORE TARGET DETAILS

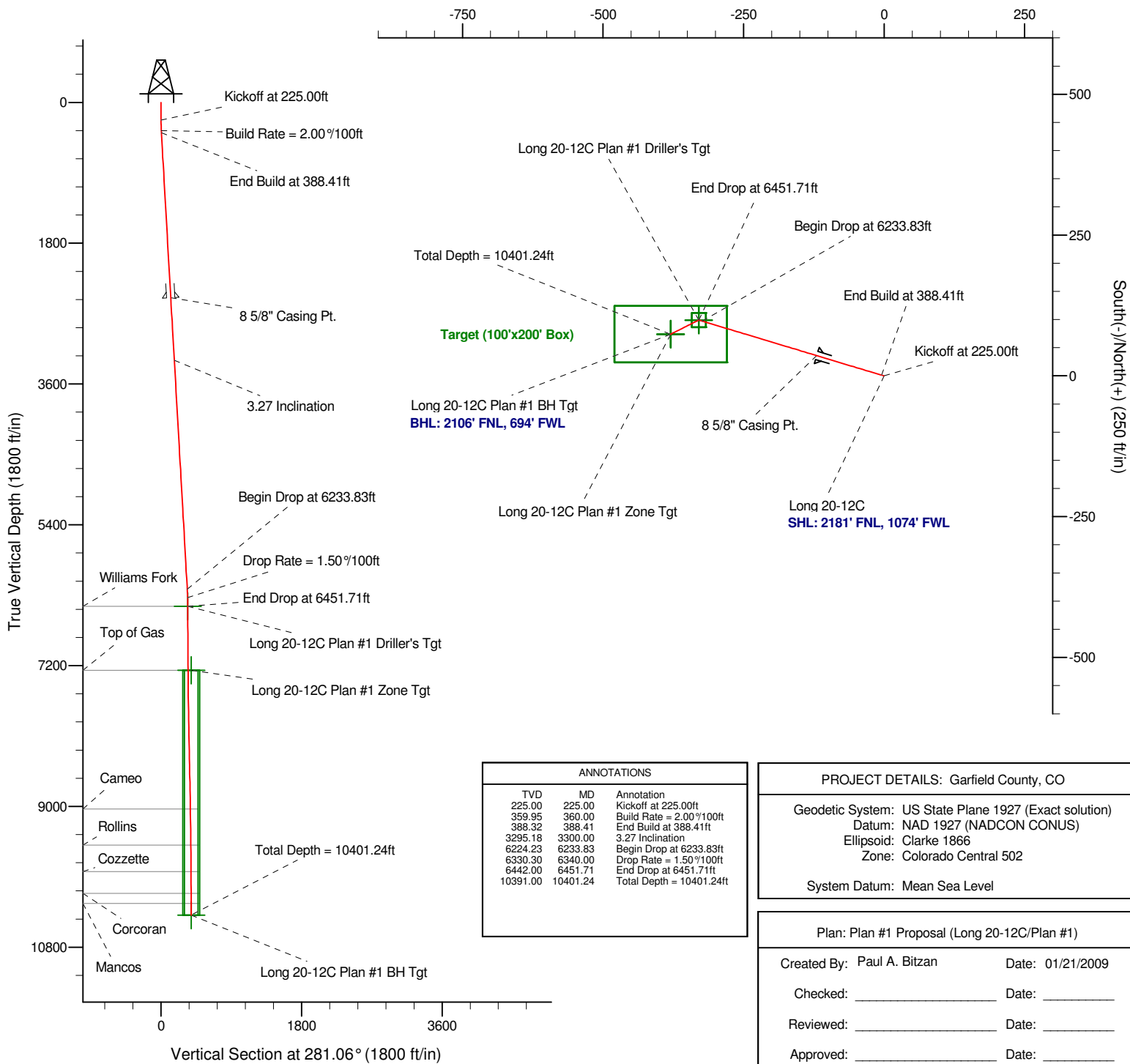
Name	TVD	+N/-S	+E/-W	Shape
Long 20-12C Plan #1 Driller's Tgt	6442.00	99.16	-329.53	Rectangle (Sides: L25.00 W25.00)
Long 20-12C Plan #1 Zone Tgt	7260.00	74.16	-379.53	Rectangle (Sides: L100.00 W200.00)
Long 20-12C Plan #1 BH Tgt	10391.00	74.16	-379.53	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6442.00	6451.71	Williams Fork
7260.00	7269.73	Top of Gas
9033.00	9043.15	Cameo
9493.00	9503.22	Rollins
9832.00	9842.24	Cozzette
10111.00	10121.24	Corcoran
10241.00	10251.24	Mancos



West(-)/East(+) (250 ft/in)



ANNOTATIONS		
TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
359.95	360.00	Build Rate = 2.00%/100ft
388.32	388.41	End Build at 388.41ft
3295.18	3300.00	3.27 Inclination
6224.23	6233.83	Begin Drop at 6233.83ft
6330.30	6340.00	Drop Rate = 1.50%/100ft
6442.00	6451.71	End Drop at 6451.71ft
10391.00	10401.24	Total Depth = 10401.24ft

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 20-12C/Plan #1)

Created By: Paul A. Bitzan Date: 01/21/2009

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____