

# Noble Energy (Rockies)

Garfield County, CO

Sec. 7-T8S-R95W (SGV 7K PAD)

Federal 7-34C (7O PAD) - B 2

Wellbore #1

Plan: Plan #1 Proposal

## Sperry Drilling Services

### Proposal Report

10 August, 2009

Well Coordinates: 571,809.60 N, 1,282,889.42 E (39° 22' 33.29" N, 108° 02' 13.47" W)

Ground Level: 6,503.00 ft

Local Coordinate Origin: Centered on Well Federal 7-34C (7O PAD) - Slot B 2

Viewing Datum: RKB - 24' @ 6527.00ft (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: 43I

**HALLIBURTON**



Plan Report for Federal 7-34C (7O PAD) - 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
<b>Kickoff at 225.00ft</b>										
300.00	1.50	150.98	299.99	-0.86	0.48	0.98	2.00	2.00	0.00	150.98
400.00	3.50	150.98	399.89	-4.67	2.59	5.34	2.00	2.00	0.00	0.00
500.00	5.50	150.98	499.58	-11.53	6.40	13.18	2.00	2.00	0.00	0.00
600.00	7.50	150.98	598.93	-21.43	11.89	24.49	2.00	2.00	0.00	0.00
700.00	9.50	150.98	697.83	-34.36	19.06	39.27	2.00	2.00	0.00	0.00
800.00	11.50	150.98	796.15	-50.29	27.90	57.48	2.00	2.00	0.00	0.00
900.00	13.50	150.98	893.77	-69.22	38.39	79.11	2.00	2.00	0.00	0.00
950.00	14.50	150.98	942.29	-79.80	44.26	91.20	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
1,000.00	15.50	150.98	990.58	-91.11	50.54	104.13	2.00	2.00	0.00	0.00
1,100.00	17.50	150.98	1,086.46	-115.95	64.32	132.51	2.00	2.00	0.00	0.00
1,200.00	19.50	150.98	1,181.29	-143.69	79.71	164.22	2.00	2.00	0.00	0.00
1,300.00	21.50	150.98	1,274.95	-174.32	96.69	199.22	2.00	2.00	0.00	0.00
1,400.00	23.50	150.98	1,367.33	-207.78	115.25	237.46	2.00	2.00	0.00	0.00
1,500.00	25.50	150.98	1,458.32	-244.04	135.37	278.90	2.00	2.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	27.50	150.98	1,547.81	-283.06	157.01	323.49	2.00	2.00	0.00	0.00
1,674.20	28.98	150.98	1,613.18	-313.76	174.04	358.58	2.00	2.00	0.00	0.00
<b>End Build at 1674.20ft</b>										
1,700.00	28.98	150.98	1,635.75	-324.70	180.11	371.08	0.00	0.00	0.00	0.00
1,800.00	28.98	150.98	1,723.22	-367.07	203.61	419.51	0.00	0.00	0.00	0.00
1,900.00	28.98	150.98	1,810.70	-409.44	227.11	467.93	0.00	0.00	0.00	0.00
2,000.00	28.98	150.98	1,898.17	-451.82	250.62	516.36	0.00	0.00	0.00	0.00
2,100.00	28.98	150.98	1,985.65	-494.19	274.12	564.79	0.00	0.00	0.00	0.00
2,200.00	28.98	150.98	2,073.12	-536.57	297.63	613.21	0.00	0.00	0.00	0.00
2,300.00	28.98	150.98	2,160.60	-578.94	321.13	661.64	0.00	0.00	0.00	0.00
2,400.00	28.98	150.98	2,248.07	-621.32	344.64	710.07	0.00	0.00	0.00	0.00
2,471.00	28.98	150.98	2,310.18	-651.40	361.33	744.45	0.00	0.00	0.00	0.00
<b>28.98 Inclination</b>										
2,500.00	28.98	150.98	2,335.55	-663.69	368.14	758.50	0.00	0.00	0.00	0.00
2,600.00	28.98	150.98	2,423.03	-706.06	391.65	806.92	0.00	0.00	0.00	0.00
2,700.00	28.98	150.98	2,510.50	-748.44	415.15	855.35	0.00	0.00	0.00	0.00
2,800.00	28.98	150.98	2,597.98	-790.81	438.66	903.78	0.00	0.00	0.00	0.00
2,900.00	28.98	150.98	2,685.45	-833.19	462.16	952.21	0.00	0.00	0.00	0.00
3,000.00	28.98	150.98	2,772.93	-875.56	485.67	1,000.63	0.00	0.00	0.00	0.00
3,100.00	28.98	150.98	2,860.40	-917.93	509.17	1,049.06	0.00	0.00	0.00	0.00
3,200.00	28.98	150.98	2,947.88	-960.31	532.67	1,097.49	0.00	0.00	0.00	0.00
3,268.84	28.98	150.98	3,008.10	-989.48	548.85	1,130.83	0.00	0.00	0.00	0.00
<b>Begin Drop at 3268.84ft</b>										
3,300.00	28.52	150.98	3,035.42	-1,002.59	556.12	1,145.80	1.50	-1.50	0.00	180.00
3,400.00	27.02	150.98	3,123.90	-1,043.32	578.72	1,192.36	1.50	-1.50	0.00	180.00
3,500.00	25.52	150.98	3,213.57	-1,082.02	600.19	1,236.59	1.50	-1.50	0.00	180.00
3,600.00	24.02	150.98	3,304.37	-1,118.66	620.51	1,278.45	1.50	-1.50	0.00	180.00
3,700.00	22.52	150.98	3,396.23	-1,153.20	639.67	1,317.93	1.50	-1.50	0.00	180.00
3,800.00	21.02	150.98	3,489.10	-1,185.62	657.65	1,354.99	1.50	-1.50	0.00	180.00
3,900.00	19.52	150.98	3,582.91	-1,215.91	674.46	1,389.61	1.50	-1.50	0.00	180.00
4,000.00	18.02	150.98	3,677.59	-1,244.05	690.06	1,421.76	1.50	-1.50	0.00	180.00
4,042.42	17.38	150.98	3,718.00	-1,255.32	696.32	1,434.65	1.50	-1.50	0.00	180.00
<b>Williams Fork</b>										
4,100.00	16.52	150.98	3,773.08	-1,270.00	704.46	1,451.42	1.50	-1.50	0.00	-180.00
4,200.00	15.02	150.98	3,869.32	-1,293.76	717.64	1,478.58	1.50	-1.50	0.00	-180.00
4,234.00	14.51	150.98	3,902.19	-1,301.34	721.84	1,487.23	1.50	-1.50	0.00	-180.00
<b>Drop Rate = 1.50°/100ft</b>										



Plan Report for Federal 7-34C (7O PAD) - 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 (°)
4,300.00	13.52	150.98	3,966.23	-1,315.31	729.59	1,503.20	1.50	-1.50	0.00	180.00
4,400.00	12.02	150.98	4,063.75	-1,334.64	740.31	1,525.29	1.50	-1.50	0.00	180.00
4,500.00	10.52	150.98	4,161.82	-1,351.72	749.79	1,544.81	1.50	-1.50	0.00	180.00
4,600.00	9.02	150.98	4,260.37	-1,366.55	758.01	1,561.77	1.50	-1.50	0.00	180.00
4,700.00	7.52	150.98	4,359.33	-1,379.13	764.99	1,576.13	1.50	-1.50	0.00	180.00
4,800.00	6.02	150.98	4,458.63	-1,389.43	770.70	1,587.91	1.50	-1.50	0.00	180.00
4,900.00	4.52	150.98	4,558.21	-1,397.46	775.16	1,597.08	1.50	-1.50	0.00	180.00
5,000.00	3.02	150.98	4,657.99	-1,403.20	778.34	1,603.65	1.50	-1.50	0.00	180.00
5,100.00	1.52	150.98	4,757.91	-1,406.66	780.26	1,607.60	1.50	-1.50	0.00	180.00
5,200.00	0.02	150.98	4,857.89	-1,407.83	780.91	1,608.94	1.50	-1.50	0.00	180.00
5,201.11	0.00	0.00	4,859.00	-1,407.83	780.91	1,608.94	1.50	-1.50	-13,642.59	-179.92
<b>End Drop at 5201.11ft - Federal 7-34C Plan #1 Driller's Tgt</b>										
5,201.20	0.00	243.44	4,859.09	-1,407.83	780.91	1,608.94	0.09	0.00	-126,417.72	-148.28
<b>Federal 7-34C Plan #1 Zone Tgt</b>										
5,291.11	0.19	243.44	4,949.00	-1,407.90	780.78	1,608.94	0.21	0.21	0.00	0.00
<b>Top of Gas</b>										
5,300.00	0.21	243.44	4,957.89	-1,407.91	780.75	1,608.94	0.21	0.21	0.00	0.00
5,400.00	0.42	243.44	5,057.89	-1,408.15	780.26	1,608.93	0.21	0.21	0.00	0.00
5,500.00	0.63	243.44	5,157.89	-1,408.56	779.45	1,608.92	0.21	0.21	0.00	0.00
5,600.00	0.84	243.44	5,257.88	-1,409.13	778.30	1,608.91	0.21	0.21	0.00	0.00
5,700.00	1.05	243.44	5,357.87	-1,409.87	776.83	1,608.90	0.21	0.21	0.00	0.00
5,800.00	1.26	243.44	5,457.85	-1,410.77	775.03	1,608.88	0.21	0.21	0.00	0.00
5,900.00	1.47	243.44	5,557.82	-1,411.83	772.90	1,608.87	0.21	0.21	0.00	0.00
6,000.00	1.68	243.44	5,657.78	-1,413.06	770.45	1,608.84	0.21	0.21	0.00	0.00
6,100.00	1.89	243.44	5,757.73	-1,414.45	767.67	1,608.82	0.21	0.21	0.00	0.00
6,200.00	2.10	243.44	5,857.67	-1,416.01	764.56	1,608.79	0.21	0.21	0.00	0.00
6,300.00	2.31	243.44	5,957.60	-1,417.72	761.12	1,608.76	0.21	0.21	0.00	0.00
6,400.00	2.52	243.44	6,057.51	-1,419.61	757.35	1,608.72	0.21	0.21	0.00	0.00
6,435.93	2.59	243.44	6,093.40	-1,420.32	755.92	1,608.71	0.21	0.21	0.00	0.00
6,500.00	2.46	243.44	6,157.41	-1,421.59	753.39	1,608.69	0.21	-0.21	0.00	180.00
6,546.63	2.36	243.44	6,204.00	-1,422.46	751.64	1,608.67	0.21	-0.21	0.00	180.00
<b>Cameo</b>										
6,600.00	2.25	243.44	6,257.33	-1,423.42	749.72	1,608.66	0.21	-0.21	0.00	-180.00
6,700.00	2.04	243.44	6,357.26	-1,425.10	746.38	1,608.62	0.21	-0.21	0.00	180.00
6,800.00	1.83	243.44	6,457.20	-1,426.60	743.36	1,608.60	0.21	-0.21	0.00	180.00
6,878.84	1.66	243.44	6,536.00	-1,427.68	741.21	1,608.58	0.21	-0.21	0.00	180.00
<b>Rollins</b>										
6,900.00	1.62	243.44	6,557.15	-1,427.95	740.66	1,608.57	0.21	-0.21	0.00	-180.00
7,000.00	1.41	243.44	6,657.12	-1,429.13	738.30	1,608.55	0.21	-0.21	0.00	180.00
7,100.00	1.20	243.44	6,757.09	-1,430.15	736.26	1,608.53	0.21	-0.21	0.00	180.00
7,200.00	0.99	243.44	6,857.07	-1,431.01	734.55	1,608.52	0.21	-0.21	0.00	180.00
7,300.00	0.78	243.44	6,957.06	-1,431.70	733.17	1,608.51	0.21	-0.21	0.00	180.00
7,400.00	0.57	243.44	7,057.05	-1,432.22	732.12	1,608.50	0.21	-0.21	0.00	180.00
7,500.00	0.36	243.44	7,157.05	-1,432.59	731.39	1,608.49	0.21	-0.21	0.00	180.00
7,600.00	0.15	243.44	7,257.05	-1,432.79	730.99	1,608.49	0.21	-0.21	0.00	180.00
7,671.95	0.00	0.00	7,329.00	-1,432.83	730.91	1,608.48	0.21	-0.21	162.01	180.00
<b>Total Depth = 7671.95ft - Federal 7-34C Plan #1 BH Tgt</b>										

**Plan Report for Federal 7-34C (7O PAD) - Plan #1 Proposal****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
950.00	942.29	-79.80	44.26	Build Rate = 2.00°/100ft
1,674.20	1,613.18	-313.76	174.04	End Build at 1674.20ft
2,471.00	2,310.18	-651.40	361.33	28.98 Inclination
3,268.84	3,008.10	-989.48	548.85	Begin Drop at 3268.84ft
4,234.00	3,902.19	-1,301.34	721.84	Drop Rate = 1.50°/100ft
5,201.11	4,859.00	-1,407.83	780.91	End Drop at 5201.11ft
7,671.95	7,329.00	-1,432.83	730.91	Total Depth = 7671.95ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	Federal 7-34C Plan #1 BH Tgt	152.97	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,671.95	Plan #1 Proposal	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,458.32	8 5/8" Casing Pt.	8-5/8	11

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,042.42	3,718.00	Williams Fork		0.00	
5,291.11	4,949.00	Top of Gas		0.00	
6,546.63	6,204.00	Cameo		0.00	
6,878.84	6,536.00	Rollins		0.00	

**Targets associated with this wellbore**

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Federal 7-34C Plan #1 BH Tgt	7,329.00	-1,432.83	730.91	Point
Federal 7-34C Plan #1 Zone Tgt	4,859.00	-1,432.83	730.91	Rectangle
Federal 7-34C Plan #1 Driller's Tgt	4,859.00	-1,407.83	780.91	Rectangle

**HALLIBURTON****North Reference Sheet for Sec. 7-T8S-R95W (SGV 7K PAD) - Federal 7-34C (70 PAD) - Wellbore #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 - 24' @ 6527.00ft (Original Well Elev). Northing and Easting are relative to Federal 7-34C (70 PAD) - Slot B 2

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: 0.99994739

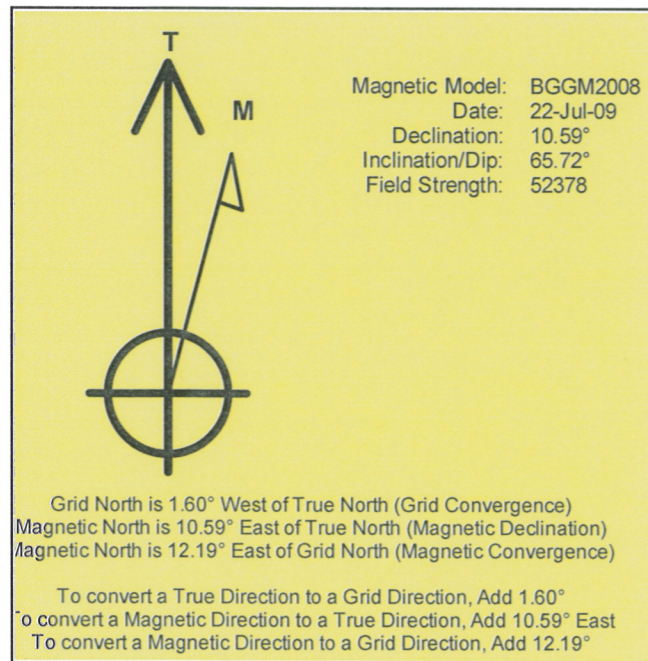
Grid Coordinates of Well: 571,809.60 ft N, 1,282,889.42 ft E

Geographical Coordinates of Well: 39° 22' 33.29" N, 108° 02' 13.47" W

Grid Convergence at Surface is: -1.60°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,671.95ft the Bottom Hole Displacement is 1,608.48ft in the Direction of 152.97° (True).

Magnetic Convergence at surface is: -12.19° (22 July 2009, , BGGM2008)



Project: Garfield County, CO  
 Site: Sec. 7-T8S-R95W (SGV 7K PAD)  
 Well: Federal 7-34C (7O PAD)  
 Wellbore: Wellbore #1  
 Plan: Plan #1 Proposal

# Noble Energy (Rockies)

**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	1674.20	28.98	150.98	1613.18	-313.76	174.04	2.00	150.98	358.58
4	3268.84	28.98	150.98	3008.10	-989.48	548.85	0.00	0.00	1130.83
5	5201.11	0.00	0.00	4859.00	-1407.83	780.91	1.50	180.00	1608.94
6	6435.93	2.59	243.44	6093.40	-1420.32	755.92	0.21	243.44	1608.71
7	7671.95	0.00	0.00	7329.00	-1432.83	730.91	0.21	180.00	1608.48

### WELL DETAILS: Federal 7-34C (7O PAD)

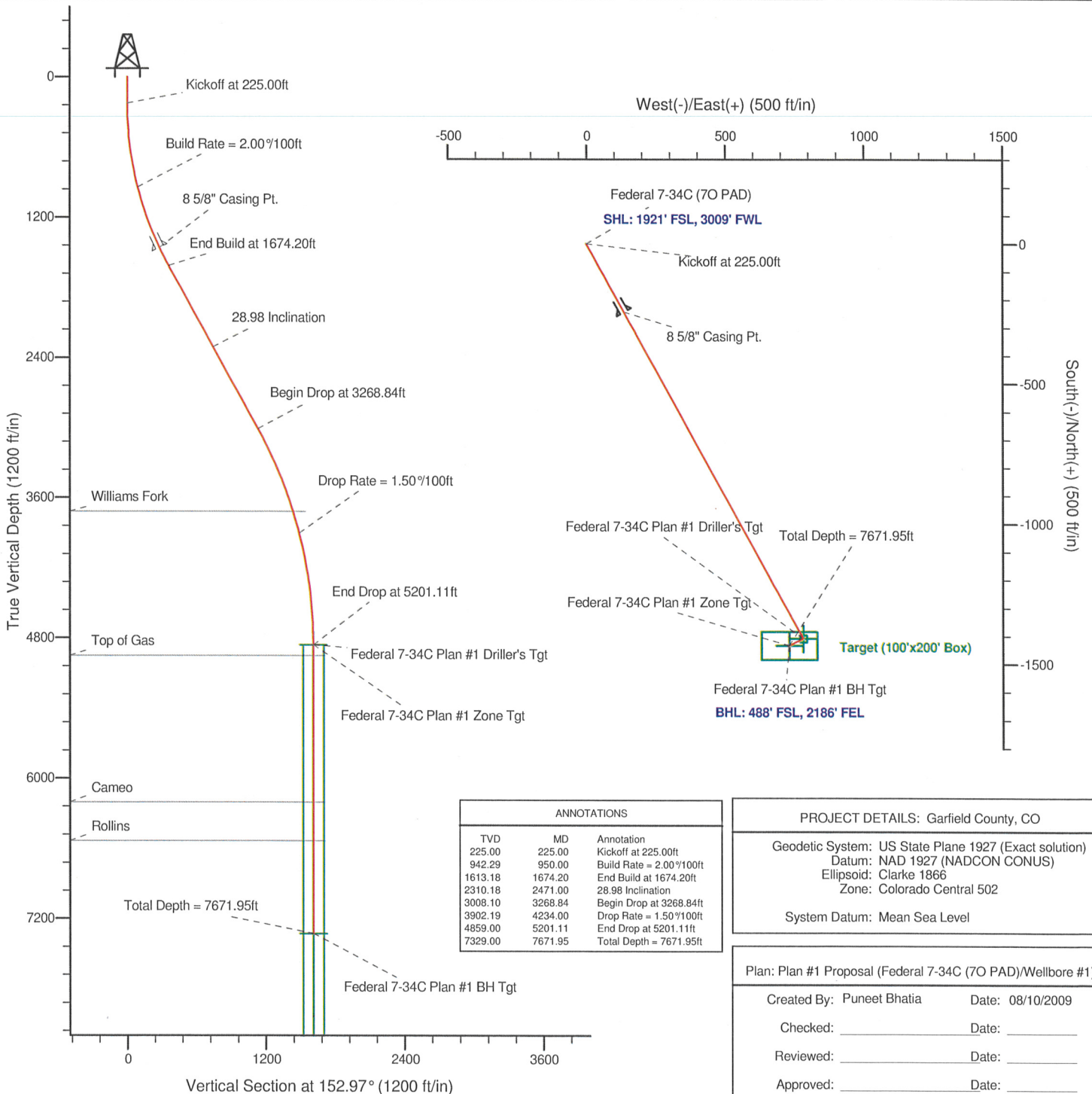
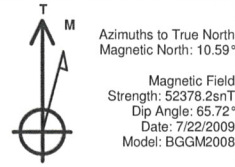
Ground Level:	6503.00		
Northing	Easting	Latitude	Longitude
	571809.60	1282889.42	39° 22' 33.2868" N 103° 13.469' W

### WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Federal 7-34C Plan #1 Driller's Tgt	4859.00	-1407.83	780.91	Rectangle (Sides: L25.00 W25.00)
Federal 7-34C Plan #1 Zone Tgt	4859.00	-1432.83	730.91	Rectangle (Sides: L100.00 W200.00)
Federal 7-34C Plan #1 BH Tgt	7329.00	-1432.83	730.91	Point

### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3718.00	4042.42	Williams Fork
4949.00	5291.11	Top of Gas
6204.00	6546.63	Cameo
6536.00	6878.84	Rollins



### ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
942.29	950.00	Build Rate = 2.00%/100ft
1613.18	1674.20	End Build at 1674.20ft
2310.18	2471.00	28.98 Inclination
3008.10	3268.84	Begin Drop at 3268.84ft
3902.19	4234.00	Drop Rate = 1.50%/100ft
4859.00	5201.11	End Drop at 5201.11ft
7329.00	7671.95	Total Depth = 7671.95ft

### 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 (Federal 7-34C (7O PAD)/Wellbore #1)

Created By: Puneet Bhatia      Date: 08/10/2009

Checked: \_\_\_\_\_      Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_      Date: \_\_\_\_\_

Approved: \_\_\_\_\_      Date: \_\_\_\_\_