

Noble Energy (Rockies)

Garfield County, CO

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

Federal 7-43C (7O PAD) - A10

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services

Proposal Report

10 August, 2009

Well Coordinates: 571,869.69 N, 1,282,898.92 E (39° 22' 33.88" N, 108° 02' 13.37" W)

Ground Level: 6,503.00 ft

Local Coordinate Origin: Centered on Well Federal 7-43C (7O PAD) - Slot A10

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: 431

HALLIBURTON



Plan Report for Federal 7-43C (70 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
Kickoff at 225.00ft										
300.00	3.00	93.36	299.97	-0.12	1.96	1.96	4.00	4.00	0.00	93.36
400.00	7.00	93.36	399.56	-0.63	10.66	10.68	4.00	4.00	0.00	0.00
500.00	11.00	93.36	498.31	-1.54	26.27	26.32	4.00	4.00	0.00	0.00
598.00	14.92	93.36	593.80	-2.83	48.21	48.29	4.00	4.00	0.00	0.00
Build Rate = 4.00°/100ft										
600.00	15.00	93.36	595.73	-2.86	48.72	48.80	4.00	4.00	0.00	0.00
700.00	19.00	93.36	691.34	-4.57	77.90	78.03	4.00	4.00	0.00	0.00
800.00	23.00	93.36	784.68	-6.67	113.67	113.86	4.00	4.00	0.00	0.00
900.00	27.00	93.36	875.29	-9.15	155.85	156.11	4.00	4.00	0.00	0.00
971.70	29.87	93.36	938.34	-11.15	189.93	190.24	4.00	4.00	0.00	0.00
End Build at 971.70ft										
1,000.00	29.87	93.36	962.88	-11.98	204.00	204.34	0.00	0.00	0.00	0.00
1,100.00	29.87	93.36	1,049.60	-14.89	253.71	254.13	0.00	0.00	0.00	0.00
1,200.00	29.87	93.36	1,136.31	-17.81	303.43	303.93	0.00	0.00	0.00	0.00
1,300.00	29.87	93.36	1,223.03	-20.73	353.14	353.72	0.00	0.00	0.00	0.00
1,400.00	29.87	93.36	1,309.75	-23.65	402.86	403.52	0.00	0.00	0.00	0.00
1,500.00	29.87	93.36	1,396.47	-26.57	452.57	453.32	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
1,600.00	29.87	93.36	1,483.18	-29.49	502.29	503.11	0.00	0.00	0.00	0.00
1,700.00	29.87	93.36	1,569.90	-32.40	552.00	552.91	0.00	0.00	0.00	0.00
1,800.00	29.87	93.36	1,656.62	-35.32	601.72	602.71	0.00	0.00	0.00	0.00
1,900.00	29.87	93.36	1,743.34	-38.24	651.43	652.50	0.00	0.00	0.00	0.00
2,000.00	29.87	93.36	1,830.05	-41.16	701.15	702.30	0.00	0.00	0.00	0.00
2,100.00	29.87	93.36	1,916.77	-44.08	750.86	752.10	0.00	0.00	0.00	0.00
2,200.00	29.87	93.36	2,003.49	-47.00	800.58	801.89	0.00	0.00	0.00	0.00
2,300.00	29.87	93.36	2,090.21	-49.91	850.29	851.69	0.00	0.00	0.00	0.00
2,400.00	29.87	93.36	2,176.92	-52.83	900.01	901.48	0.00	0.00	0.00	0.00
2,500.00	29.87	93.36	2,263.64	-55.75	949.72	951.28	0.00	0.00	0.00	0.00
2,600.00	29.87	93.36	2,350.36	-58.67	999.44	1,001.08	0.00	0.00	0.00	0.00
2,700.00	29.87	93.36	2,437.08	-61.59	1,049.15	1,050.87	0.00	0.00	0.00	0.00
2,800.00	29.87	93.36	2,523.79	-64.51	1,098.87	1,100.67	0.00	0.00	0.00	0.00
2,862.00	29.87	93.36	2,577.56	-66.32	1,129.69	1,131.54	0.00	0.00	0.00	0.00
29.87 Inclination										
2,900.00	29.87	93.36	2,610.51	-67.42	1,148.58	1,150.47	0.00	0.00	0.00	0.00
3,000.00	29.87	93.36	2,697.23	-70.34	1,198.30	1,200.26	0.00	0.00	0.00	0.00
3,100.00	29.87	93.36	2,783.95	-73.26	1,248.01	1,250.06	0.00	0.00	0.00	0.00
3,200.00	29.87	93.36	2,870.66	-76.18	1,297.72	1,299.86	0.00	0.00	0.00	0.00
3,300.00	29.87	93.36	2,957.38	-79.10	1,347.44	1,349.65	0.00	0.00	0.00	0.00
3,400.00	29.87	93.36	3,044.10	-82.02	1,397.15	1,399.45	0.00	0.00	0.00	0.00
3,500.00	29.87	93.36	3,130.82	-84.93	1,446.87	1,449.25	0.00	0.00	0.00	0.00
3,600.00	29.87	93.36	3,217.53	-87.85	1,496.58	1,499.04	0.00	0.00	0.00	0.00
3,700.00	29.87	93.36	3,304.25	-90.77	1,546.30	1,548.84	0.00	0.00	0.00	0.00
3,800.00	29.87	93.36	3,390.97	-93.69	1,596.01	1,598.63	0.00	0.00	0.00	0.00
3,900.00	29.87	93.36	3,477.69	-96.61	1,645.73	1,648.43	0.00	0.00	0.00	0.00
4,000.00	29.87	93.36	3,564.40	-99.53	1,695.44	1,698.23	0.00	0.00	0.00	0.00
4,100.00	29.87	93.36	3,651.12	-102.45	1,745.16	1,748.02	0.00	0.00	0.00	0.00
4,177.12	29.87	93.36	3,718.00	-104.70	1,783.50	1,786.43	0.00	0.00	0.00	0.00
Williams Fork										
4,200.00	29.87	93.36	3,737.84	-105.36	1,794.87	1,797.82	0.00	0.00	0.00	0.00
4,300.00	29.87	93.36	3,824.56	-108.28	1,844.59	1,847.62	0.00	0.00	0.00	0.00
4,400.00	29.87	93.36	3,911.27	-111.20	1,894.30	1,897.41	0.00	0.00	0.00	0.00
4,500.00	29.87	93.36	3,997.99	-114.12	1,944.02	1,947.21	0.00	0.00	0.00	0.00
4,600.00	29.87	93.36	4,084.71	-117.04	1,993.73	1,997.01	0.00	0.00	0.00	0.00



Plan Report for Federal 7-43C (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)	Tooface Azimuth (°)
4,700.00	29.87	93.36	4,171.43	-119.96	2,043.45	2,046.80	0.00	0.00	0.00	0.00
4,762.54	29.87	93.36	4,225.66	-121.78	2,074.54	2,077.94	0.00	0.00	0.00	0.00
Begin Drop at 4762.54ft										
4,800.00	28.37	93.36	4,258.38	-122.85	2,092.73	2,096.17	4.00	-4.00	0.00	180.00
4,900.00	24.37	93.36	4,347.96	-125.45	2,137.07	2,140.58	4.00	-4.00	0.00	180.00
5,000.00	20.37	93.36	4,440.42	-127.68	2,175.05	2,178.62	4.00	-4.00	0.00	180.00
5,100.00	16.37	93.36	4,535.30	-129.53	2,206.50	2,210.13	4.00	-4.00	0.00	180.00
5,125.00	15.37	93.36	4,559.35	-129.93	2,213.33	2,216.96	4.00	-4.00	0.00	-180.00
Drop Rate = 4.00°/100ft										
5,200.00	12.37	93.36	4,632.15	-130.98	2,231.27	2,234.94	4.00	-4.00	0.00	180.00
5,300.00	8.37	93.36	4,730.50	-132.04	2,249.24	2,252.93	4.00	-4.00	0.00	180.00
5,400.00	4.37	93.36	4,829.86	-132.69	2,260.31	2,264.03	4.00	-4.00	0.00	180.00
5,500.00	0.37	93.36	4,929.76	-132.93	2,264.44	2,268.16	4.00	-4.00	0.00	-180.00
5,509.09	0.01	93.36	4,938.84	-132.93	2,264.47	2,268.19	4.00	-4.00	0.00	-180.00
Federal 7-43C Plan #1 Zone Tgt										
5,509.24	0.00	93.36	4,939.00	-132.93	2,264.47	2,268.19	4.00	-4.00	0.00	-180.00
End Drop at 5509.24ft - Federal 7-43C Plan #1 Driller's Tgt										
5,519.24	0.02	243.44	4,949.00	-132.93	2,264.47	2,268.19	0.21	0.21	1,500.77	150.27
Top of Gas										
5,600.00	0.19	243.44	5,029.76	-133.00	2,264.33	2,268.06	0.21	0.21	0.00	0.00
5,700.00	0.40	243.44	5,129.75	-133.23	2,263.87	2,267.62	0.21	0.21	0.00	0.00
5,800.00	0.61	243.44	5,229.75	-133.62	2,263.08	2,266.86	0.21	0.21	0.00	0.00
5,900.00	0.82	243.44	5,329.74	-134.18	2,261.97	2,265.78	0.21	0.21	0.00	0.00
6,000.00	1.03	243.44	5,429.73	-134.90	2,260.52	2,264.39	0.21	0.21	0.00	0.00
6,100.00	1.24	243.44	5,529.71	-135.79	2,258.75	2,262.69	0.21	0.21	0.00	0.00
6,200.00	1.45	243.44	5,629.68	-136.84	2,256.65	2,260.67	0.21	0.21	0.00	0.00
6,300.00	1.66	243.44	5,729.65	-138.05	2,254.22	2,258.33	0.21	0.21	0.00	0.00
6,400.00	1.87	243.44	5,829.60	-139.43	2,251.47	2,255.68	0.21	0.21	0.00	0.00
6,500.00	2.08	243.44	5,929.54	-140.97	2,248.38	2,252.71	0.21	0.21	0.00	0.00
6,600.00	2.29	243.44	6,029.47	-142.68	2,244.97	2,249.43	0.21	0.21	0.00	0.00
6,700.00	2.50	243.44	6,129.38	-144.55	2,241.23	2,245.84	0.21	0.21	0.00	0.00
6,744.01	2.59	243.44	6,173.34	-145.42	2,239.48	2,244.15	0.21	0.21	0.00	0.00
6,774.70	2.53	243.44	6,204.00	-146.04	2,238.26	2,242.97	0.21	-0.21	0.00	180.00
Cameo										
6,800.00	2.48	243.44	6,229.28	-146.53	2,237.27	2,242.02	0.21	-0.21	0.00	-180.00
6,900.00	2.27	243.44	6,329.19	-148.38	2,233.57	2,238.47	0.21	-0.21	0.00	180.00
7,000.00	2.06	243.44	6,429.12	-150.07	2,230.20	2,235.22	0.21	-0.21	0.00	180.00
7,100.00	1.85	243.44	6,529.07	-151.59	2,227.15	2,232.29	0.21	-0.21	0.00	180.00
7,106.94	1.83	243.44	6,536.00	-151.69	2,226.95	2,232.10	0.21	-0.21	0.00	-180.00
Rollins										
7,200.00	1.64	243.44	6,629.02	-152.95	2,224.43	2,229.68	0.21	-0.21	0.00	180.00
7,300.00	1.43	243.44	6,728.98	-154.14	2,222.04	2,227.38	0.21	-0.21	0.00	180.00
7,400.00	1.22	243.44	6,828.96	-155.17	2,219.98	2,225.39	0.21	-0.21	0.00	180.00
7,500.00	1.01	243.44	6,928.94	-156.04	2,218.24	2,223.72	0.21	-0.21	0.00	180.00
7,600.00	0.80	243.44	7,028.93	-156.75	2,216.83	2,222.37	0.21	-0.21	0.00	180.00
7,700.00	0.59	243.44	7,128.92	-157.29	2,215.75	2,221.33	0.21	-0.21	0.00	180.00
7,800.00	0.38	243.44	7,228.91	-157.66	2,215.00	2,220.60	0.21	-0.21	0.00	180.00
7,900.00	0.17	243.44	7,328.91	-157.88	2,214.57	2,220.19	0.21	-0.21	0.00	180.00
7,980.09	0.00	0.00	7,409.00	-157.93	2,214.47	2,220.09	0.21	-0.21	0.00	180.00
Federal 7-43C Plan #1 BH Tgt										

Plan Report for Federal 7-43C (70 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
598.00	593.80	-2.83	48.21	Build Rate = 4.00°/100ft
971.70	938.34	-11.15	189.93	End Build at 971.70ft
2,862.00	2,577.56	-66.32	1,129.69	29.87 Inclination
4,762.54	4,225.66	-121.78	2,074.54	Begin Drop at 4762.54ft
5,125.00	4,559.35	-129.93	2,213.33	Drop Rate = 4.00°/100ft
5,509.24	4,939.00	-132.93	2,264.47	End Drop at 5509.24ft
7,980.09	7,409.00	-157.93	2,214.47	Total Depth = 7980.09ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Federal 7-43C Plan #1 BH Tgt	94.08	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,980.09	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,396.47	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,177.12	3,718.00	Williams Fork		0.00	
5,519.24	4,949.00	Top of Gas		0.00	
6,774.70	6,204.00	Cameo		0.00	
7,106.94	6,536.00	Rollins		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Federal 7-43C Plan #1 Driller's Tgt	4,939.00	-132.93	2,264.47	Rectangle
Federal 7-43C Plan #1 BH Tgt	7,409.00	-157.93	2,214.47	Point
Federal 7-43C Plan #1 Zone Tgt	4,939.00	-157.93	2,214.47	Rectangle

North Reference Sheet for Sec. 7-T8S-R95W (SGV 7K PAD) - Federal 7-43C (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 7-43C (70 PAD) - Slot A10

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: 0.99994740

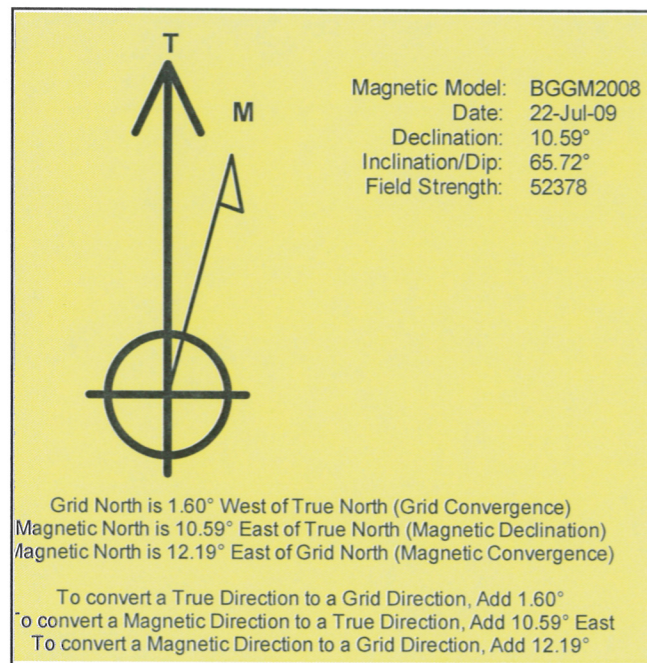
Grid Coordinates of Well: 571,869.69 ft N, 1,282,898.92 ft E

Geographical Coordinates of Well: 39° 22' 33.88" N, 108° 02' 13.37" W

Grid Convergence at Surface is: -1.60°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,980.09ft the Bottom Hole Displacement is 2,220.09ft in the Direction of 94.08° (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 7-43C (70 PAD)
 Wellbore: Wellbore #1
 Plan: Plan #1 Proposal

Noble Energy (Rockies)



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	971.70	29.87	93.36	938.34	-11.15	189.93	4.00	93.36	190.24
4	4762.54	29.87	93.36	4225.66	-121.78	2074.54	0.00	0.00	2077.95
5	5509.24	0.00	0.00	4939.00	-132.93	2264.47	4.00	180.00	2268.19
6	6744.01	2.59	243.44	6173.34	-145.42	2239.48	0.21	243.44	2244.15
7	7980.09	0.00	0.00	7409.00	-157.93	2214.47	0.21	180.00	2220.09

Federal 7-43C Plan #1 Driller's Tgt
 Federal 7-43C Plan #1 BH Tgt

WELL DETAILS: Federal 7-43C (70 PAD)

Ground Level: 6503.00	
Northing	Longitude
571869.69	39° 22' 33.8800" 2' 13.370 W
Easting	A10
1282898.92	

WELLBORE TARGET DETAILS

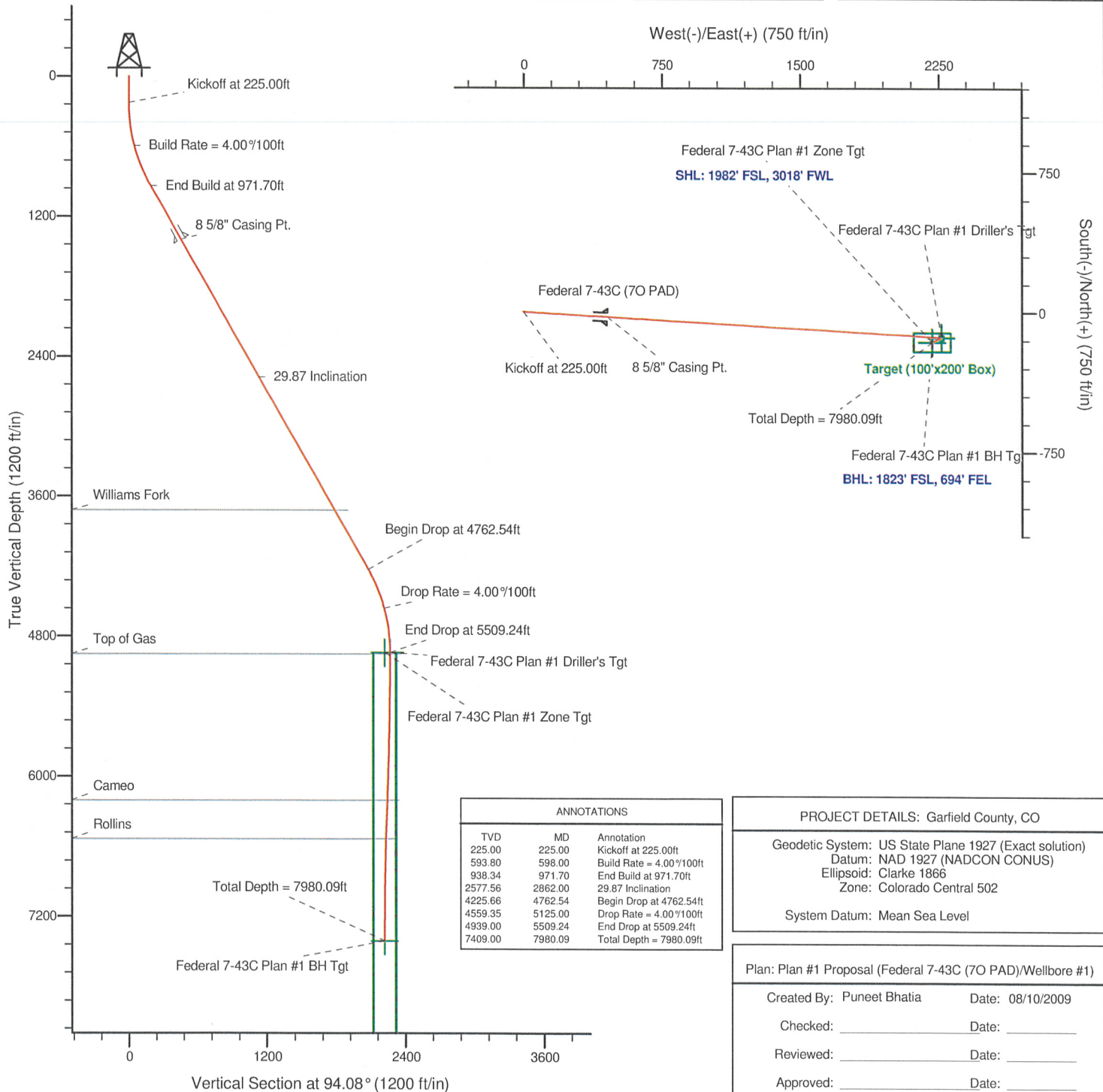
Name	TVD	+N/-S	+E/-W	Shape
Federal 7-43C Plan #1 Driller's Tgt	4939.00	-132.93	2264.47	Rectangle (Sides: L25.00 W25.00)
Federal 7-43C Plan #1 Zone Tgt	4939.00	-157.93	2214.47	Rectangle (Sides: L100.00 W200.00)
Federal 7-43C Plan #1 BH Tgt	7409.00	-157.93	2214.47	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3718.00	4177.12	Williams Fork
4949.00	5519.24	Top of Gas
6204.00	6774.70	Cameo
6536.00	7106.94	Rollins



Azimuths to True North
 Magnetic North: 10.59°
 Magnetic Field
 Strength: 52378.3snT
 Dip Angle: 65.72°
 Date: 7/22/2009
 Model: BGGM2008



ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
593.80	598.00	Build Rate = 4.00%/100ft
938.34	971.70	End Build at 971.70ft
2577.56	2862.00	29.87 Incline
4225.66	4762.54	Begin Drop at 4762.54ft
4559.35	5125.00	Drop Rate = 4.00%/100ft
4939.00	5509.24	End Drop at 5509.24ft
7409.00	7980.09	Total Depth = 7980.09ft

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 7-43C (70 PAD)/Wellbore #1)

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

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____