

Noble Energy

Garfield County, CO

Sec. 19-T7S-R94W (Rulison 19I PAD)

Rulison Federal 19-43B

Plan #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

26 February, 2009

Well Coordinates: 587,683.22 N, 1,316,450.58 E (39° 25' 19.17" N, 107° 55' 11.61" W)

Ground Level: 8,080.00 ft

Local Coordinate Origin:

Centered on Well Rulison Federal 19-43B

Viewing Datum:

RKB - 25' @ 8105.00ft (Original Well Elev)

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Plan Report for Rulison Federal 19-43B - 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	319.47	299.99	0.75	-0.64	0.98	2.00	2.00	0.00	319.47
378.00	3.06	319.47	377.93	3.10	-2.65	4.07	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
400.00	3.50	319.47	399.89	4.06	-3.47	5.32	2.00	2.00	0.00	0.00
500.00	5.50	319.47	499.58	10.02	-8.57	13.14	2.00	2.00	0.00	0.00
531.80	6.14	319.47	531.21	12.48	-10.66	16.36	2.00	2.00	0.00	0.00
End Build at 531.80ft										
600.00	6.14	319.47	599.02	18.02	-15.40	23.62	0.00	0.00	0.00	0.00
700.00	6.14	319.47	698.45	26.14	-22.35	34.27	0.00	0.00	0.00	0.00
800.00	6.14	319.47	797.88	34.26	-29.29	44.92	0.00	0.00	0.00	0.00
900.00	6.14	319.47	897.30	42.39	-36.24	55.58	0.00	0.00	0.00	0.00
1,000.00	6.14	319.47	996.73	50.51	-43.18	66.23	0.00	0.00	0.00	0.00
1,100.00	6.14	319.47	1,096.16	58.64	-50.13	76.88	0.00	0.00	0.00	0.00
1,200.00	6.14	319.47	1,195.59	66.76	-57.08	87.53	0.00	0.00	0.00	0.00
1,300.00	6.14	319.47	1,295.01	74.89	-64.02	98.18	0.00	0.00	0.00	0.00
1,400.00	6.14	319.47	1,394.44	83.01	-70.97	108.83	0.00	0.00	0.00	0.00
1,500.00	6.14	319.47	1,493.87	91.14	-77.91	119.49	0.00	0.00	0.00	0.00
1,600.00	6.14	319.47	1,593.29	99.26	-84.86	130.14	0.00	0.00	0.00	0.00
1,700.00	6.14	319.47	1,692.72	107.39	-91.80	140.79	0.00	0.00	0.00	0.00
1,800.00	6.14	319.47	1,792.15	115.51	-98.75	151.44	0.00	0.00	0.00	0.00
1,900.00	6.14	319.47	1,891.58	123.63	-105.69	162.09	0.00	0.00	0.00	0.00
2,000.00	6.14	319.47	1,991.00	131.76	-112.64	172.74	0.00	0.00	0.00	0.00
2,100.00	6.14	319.47	2,090.43	139.88	-119.59	183.40	0.00	0.00	0.00	0.00
2,200.00	6.14	319.47	2,189.86	148.01	-126.53	194.05	0.00	0.00	0.00	0.00
2,300.00	6.14	319.47	2,289.28	156.13	-133.48	204.70	0.00	0.00	0.00	0.00
2,400.00	6.14	319.47	2,388.71	164.26	-140.42	215.35	0.00	0.00	0.00	0.00
2,500.00	6.14	319.47	2,488.14	172.38	-147.37	226.00	0.00	0.00	0.00	0.00
8 5/8" Casing Pt										
2,600.00	6.14	319.47	2,587.57	180.51	-154.31	236.65	0.00	0.00	0.00	0.00
2,700.00	6.14	319.47	2,686.99	188.63	-161.26	247.31	0.00	0.00	0.00	0.00
2,800.00	6.14	319.47	2,786.42	196.75	-168.21	257.96	0.00	0.00	0.00	0.00
2,900.00	6.14	319.47	2,885.85	204.88	-175.15	268.61	0.00	0.00	0.00	0.00
3,000.00	6.14	319.47	2,985.27	213.00	-182.10	279.26	0.00	0.00	0.00	0.00
3,100.00	6.14	319.47	3,084.70	221.13	-189.04	289.91	0.00	0.00	0.00	0.00
3,200.00	6.14	319.47	3,184.13	229.25	-195.99	300.56	0.00	0.00	0.00	0.00
3,300.00	6.14	319.47	3,283.56	237.38	-202.93	311.22	0.00	0.00	0.00	0.00
3,329.00	6.14	319.47	3,312.39	239.73	-204.95	314.30	0.00	0.00	0.00	0.00
6.14 Inclination										
3,400.00	6.14	319.47	3,382.98	245.50	-209.88	321.87	0.00	0.00	0.00	0.00
3,500.00	6.14	319.47	3,482.41	253.63	-216.82	332.52	0.00	0.00	0.00	0.00
3,600.00	6.14	319.47	3,581.84	261.75	-223.77	343.17	0.00	0.00	0.00	0.00
3,700.00	6.14	319.47	3,681.26	269.87	-230.72	353.82	0.00	0.00	0.00	0.00
3,800.00	6.14	319.47	3,780.69	278.00	-237.66	364.47	0.00	0.00	0.00	0.00
3,900.00	6.14	319.47	3,880.12	286.12	-244.61	375.13	0.00	0.00	0.00	0.00
4,000.00	6.14	319.47	3,979.55	294.25	-251.55	385.78	0.00	0.00	0.00	0.00
4,100.00	6.14	319.47	4,078.97	302.37	-258.50	396.43	0.00	0.00	0.00	0.00
4,200.00	6.14	319.47	4,178.40	310.50	-265.44	407.08	0.00	0.00	0.00	0.00
4,300.00	6.14	319.47	4,277.83	318.62	-272.39	417.73	0.00	0.00	0.00	0.00
4,400.00	6.14	319.47	4,377.25	326.75	-279.33	428.38	0.00	0.00	0.00	0.00
4,500.00	6.14	319.47	4,476.68	334.87	-286.28	439.04	0.00	0.00	0.00	0.00
4,600.00	6.14	319.47	4,576.11	343.00	-293.23	449.69	0.00	0.00	0.00	0.00
4,700.00	6.14	319.47	4,675.53	351.12	-300.17	460.34	0.00	0.00	0.00	0.00
4,800.00	6.14	319.47	4,774.96	359.24	-307.12	470.99	0.00	0.00	0.00	0.00

Plan Report for Rulison Federal 19-43B - 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 (°)
4,900.00	6.14	319.47	4,874.39	367.37	-314.06	481.64	0.00	0.00	0.00	0.00
5,000.00	6.14	319.47	4,973.82	375.49	-321.01	492.29	0.00	0.00	0.00	0.00
5,100.00	6.14	319.47	5,073.24	383.62	-327.95	502.95	0.00	0.00	0.00	0.00
5,200.00	6.14	319.47	5,172.67	391.74	-334.90	513.60	0.00	0.00	0.00	0.00
5,300.00	6.14	319.47	5,272.10	399.87	-341.85	524.25	0.00	0.00	0.00	0.00
5,400.00	6.14	319.47	5,371.52	407.99	-348.79	534.90	0.00	0.00	0.00	0.00
5,500.00	6.14	319.47	5,470.95	416.12	-355.74	545.55	0.00	0.00	0.00	0.00
5,600.00	6.14	319.47	5,570.38	424.24	-362.68	556.20	0.00	0.00	0.00	0.00
5,700.00	6.14	319.47	5,669.81	432.36	-369.63	566.86	0.00	0.00	0.00	0.00
5,800.00	6.14	319.47	5,769.23	440.49	-376.57	577.51	0.00	0.00	0.00	0.00
5,900.00	6.14	319.47	5,868.66	448.61	-383.52	588.16	0.00	0.00	0.00	0.00
6,000.00	6.14	319.47	5,968.09	456.74	-390.46	598.81	0.00	0.00	0.00	0.00
6,100.00	6.14	319.47	6,067.51	464.86	-397.41	609.46	0.00	0.00	0.00	0.00
6,128.37	6.14	319.47	6,095.72	467.17	-399.38	612.48	0.00	0.00	0.00	0.00
Begin Drop at 6128.37ft										
6,200.00	5.06	319.47	6,167.01	472.48	-403.92	619.45	1.50	-1.50	0.00	180.00
6,300.00	3.56	319.47	6,266.72	478.19	-408.81	626.94	1.50	-1.50	0.00	180.00
6,330.00	3.11	319.47	6,296.67	479.52	-409.94	628.68	1.50	-1.50	0.00	-180.00
Drop Rate = 1.50°/100ft										
6,400.00	2.06	319.47	6,366.60	481.92	-411.99	631.83	1.50	-1.50	0.00	180.00
6,500.00	0.56	319.47	6,466.57	483.66	-413.48	634.11	1.50	-1.50	0.00	180.00
6,537.43	0.00	0.00	6,504.00	483.80	-413.60	634.29	1.50	-1.50	0.00	180.00
End Drop at 6537.43ft - Williams Fork - Rulison Federal 19-3B Plan#1 Driller's TGT										
6,600.00	0.05	243.44	6,566.57	483.79	-413.62	634.30	0.08	0.08	0.00	243.44
6,700.00	0.13	243.44	6,666.57	483.72	-413.77	634.35	0.08	0.08	0.00	0.00
6,800.00	0.21	243.44	6,766.57	483.58	-414.04	634.45	0.08	0.08	0.00	0.00
6,900.00	0.30	243.44	6,866.57	483.38	-414.44	634.59	0.08	0.08	0.00	0.00
7,000.00	0.38	243.44	6,966.57	483.12	-414.96	634.78	0.08	0.08	0.00	0.00
7,100.00	0.46	243.44	7,066.56	482.79	-415.61	635.01	0.08	0.08	0.00	0.00
7,200.00	0.54	243.44	7,166.56	482.41	-416.39	635.29	0.08	0.08	0.00	0.00
7,300.00	0.62	243.44	7,266.56	481.95	-417.30	635.62	0.08	0.08	0.00	0.00
7,355.45	0.67	243.44	7,322.00	481.67	-417.85	635.82	0.08	0.08	0.00	0.00
Top of gas										
7,400.00	0.70	243.44	7,366.55	481.44	-418.33	635.99	0.08	0.08	0.00	0.00
7,500.00	0.78	243.44	7,466.54	480.86	-419.49	636.41	0.08	0.08	0.00	0.00
7,600.00	0.87	243.44	7,566.53	480.21	-420.78	636.87	0.08	0.08	0.00	0.00
7,700.00	0.95	243.44	7,666.52	479.51	-422.19	637.38	0.08	0.08	0.00	0.00
7,800.00	1.03	243.44	7,766.50	478.74	-423.73	637.93	0.08	0.08	0.00	0.00
7,900.00	1.11	243.44	7,866.49	477.90	-425.40	638.53	0.08	0.08	0.00	0.00
8,000.00	1.19	243.44	7,966.47	477.00	-427.19	639.17	0.08	0.08	0.00	0.00
8,100.00	1.27	243.44	8,066.44	476.04	-429.12	639.86	0.08	0.08	0.00	0.00
8,200.00	1.35	243.44	8,166.42	475.02	-431.17	640.60	0.08	0.08	0.00	0.00
8,300.00	1.44	243.44	8,266.39	473.93	-433.34	641.38	0.08	0.08	0.00	0.00
8,400.00	1.52	243.44	8,366.35	472.78	-435.65	642.21	0.08	0.08	0.00	0.00
8,500.00	1.60	243.44	8,466.32	471.56	-438.08	643.08	0.08	0.08	0.00	0.00
8,529.60	1.62	243.44	8,495.91	471.19	-438.82	643.35	0.08	0.08	0.00	0.00
8,600.00	1.56	243.44	8,566.28	470.32	-440.57	643.98	0.08	-0.08	0.00	180.00
8,700.00	1.48	243.44	8,666.24	469.13	-442.95	644.83	0.08	-0.08	0.00	180.00
8,800.00	1.40	243.44	8,766.21	468.00	-445.20	645.64	0.08	-0.08	0.00	180.00
8,900.00	1.32	243.44	8,866.18	466.95	-447.31	646.40	0.08	-0.08	0.00	180.00
9,000.00	1.23	243.44	8,966.16	465.95	-449.30	647.11	0.08	-0.08	0.00	180.00
9,100.00	1.15	243.44	9,066.14	465.02	-451.16	647.78	0.08	-0.08	0.00	180.00
9,128.87	1.13	243.44	9,095.00	464.77	-451.67	647.96	0.08	-0.08	0.00	-180.00
Cameo										
9,200.00	1.07	243.44	9,166.12	464.16	-452.89	648.40	0.08	-0.08	0.00	180.00
9,300.00	0.98	243.44	9,266.10	463.36	-454.49	648.97	0.08	-0.08	0.00	180.00
9,400.00	0.90	243.44	9,366.09	462.62	-455.96	649.50	0.08	-0.08	0.00	180.00
9,500.00	0.82	243.44	9,466.08	461.95	-457.30	649.98	0.08	-0.08	0.00	180.00
9,588.93	0.74	243.44	9,555.00	461.41	-458.39	650.37	0.08	-0.08	0.00	180.00

Plan Report for Rulison Federal 19-43B - 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 (°)
Rollins										
9,600.00	0.74	243.44	9,566.07	461.35	-458.51	650.42	0.08	-0.08	0.00	180.00
9,700.00	0.65	243.44	9,666.06	460.80	-459.60	650.81	0.08	-0.08	0.00	180.00
9,800.00	0.57	243.44	9,766.05	460.33	-460.55	651.15	0.08	-0.08	0.00	180.00
9,900.00	0.49	243.44	9,866.05	459.92	-461.37	651.45	0.08	-0.08	0.00	180.00
9,927.95	0.46	243.44	9,894.00	459.81	-461.58	651.52	0.08	-0.08	0.00	-180.00
Cozzette										
10,000.00	0.40	243.44	9,966.05	459.57	-462.07	651.70	0.08	-0.08	0.00	180.00
10,100.00	0.32	243.44	10,066.05	459.29	-462.63	651.90	0.08	-0.08	0.00	180.00
10,200.00	0.24	243.44	10,166.04	459.07	-463.07	652.06	0.08	-0.08	0.00	180.00
10,206.96	0.23	243.44	10,173.00	459.06	-463.10	652.07	0.08	-0.08	0.00	-180.00
Corcoran										
10,300.00	0.15	243.44	10,266.04	458.92	-463.38	652.17	0.08	-0.08	0.00	180.00
10,336.96	0.12	243.44	10,303.00	458.87	-463.46	652.20	0.08	-0.08	0.00	180.00
Mancos										
10,400.00	0.07	243.44	10,366.04	458.83	-463.55	652.23	0.08	-0.08	0.00	-180.00
10,486.96	0.00	360.00	10,453.00	458.80	-463.60	652.25	0.08	-0.08	0.00	180.00
Rulison Federal 19-3B 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
378.00	377.93	3.10	-2.65	Build Rate = 2.00°/100ft
531.80	531.21	12.48	-10.66	End Build at 531.80ft
3,329.00	3,312.39	239.73	-204.95	6.14 Inclination
6,128.37	6,095.72	467.17	-399.38	Begin Drop at 6128.37ft
6,330.00	6,296.67	479.52	-409.94	Drop Rate = 1.50°/100ft
6,537.43	6,504.00	483.80	-413.60	End Drop at 6537.43ft
10,486.96	10,453.00	458.80	-463.60	Total Depth = 10486.96ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Rulison Federal 19-3B Plan#1 BH TGT	314.70	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,486.96	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,500.00	2,488.14	8 5/8" Casing Pt	8-5/8	12-1/4

Plan Report for Rulison Federal 19-43B - Plan #1 Proposal

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,537.43	6,504.00	Williams Fork		0.00	
7,355.45	7,322.00	Top of gas		0.00	
9,128.87	9,095.00	Cameo		0.00	
9,588.93	9,555.00	Rollins		0.00	
9,927.95	9,894.00	Cozzette		0.00	
10,206.96	10,173.00	Corcoran		0.00	
10,336.96	10,303.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Rulison Federal 19-3B Plan#1 BH TGT	10,453.00	458.80	-463.60	Point
Rulison Federal 19-3B Plan#1 Driller's TGT	6,504.00	483.80	-413.60	Rectangle
Rulison Federal 19-3B Plan#1 Zone TGT	6,504.00	458.80	-463.60	Rectangle

**North Reference Sheet for Sec. 19-T7S-R94W (Rulison 19I PAD) - Rulison Federal
19-43B - Plan #1**

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

Vertical Depths are relative to RKB - 25' @ 8105.00ft (Original Well Elev). Northing and Easting are relative to Rulison Federal 19-43B

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: 0.99995156

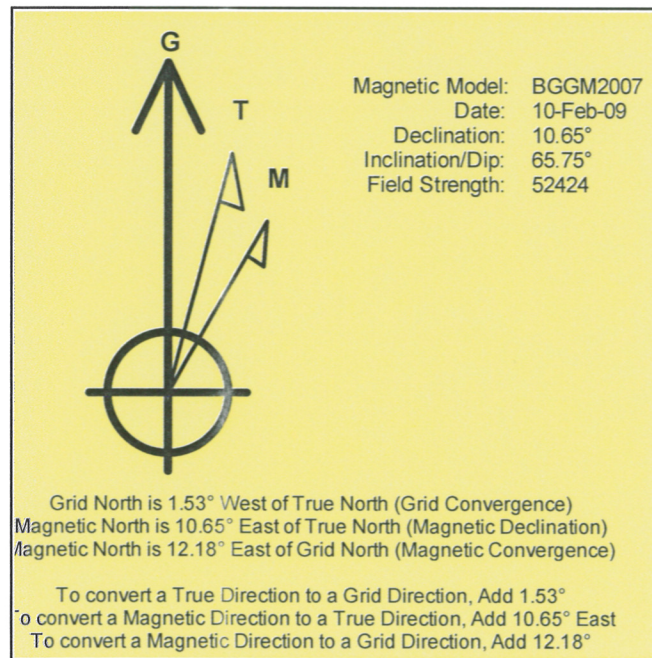
Grid Coordinates of Well: 587,683.22 ft N, 1,316,450.58 ft E

Geographical Coordinates of Well: 39° 25' 19.17" N, 107° 55' 11.61" W

Grid Convergence at Surface is: -1.53°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,486.96ft
the Bottom Hole Displacement is 652.25ft in the Direction of 314.70° (Grid).

Magnetic Convergence at surface is: -12.18° (10 February 2009, , BGGM2007)



Project: Garfield County, CO
Site: Sec. 19-T7S-R94W (Rulison 19I PAD)
Well: Rulison Federal 19-43B
Wellbore: Plan #1
Plan: Plan #1 Proposal

Noble Energy

HALLIBURTON

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
0.00	0.00	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
531.80	6.14	319.47	531.21	12.47	-10.66	2.00	319.47	16.36
6128.37	6.14	319.47	6095.72	467.17	-399.38	0.00	0.00	612.48
6537.43	0.00	0.00	6504.00	483.80	-413.60	1.50	180.00	634.29
8529.60	1.62	243.44	8495.91	471.19	-438.82	0.08	243.44	643.35
10486.96	0.00	360.00	10453.00	458.80	-463.60	0.08	180.00	652.25

Rulison Federal 19-3B Plan#1 Driller's TGT

Rulison Federal 19-3B Plan#1 BH TGT

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Rulison Federal 19-3B Plan#1 Driller's TGT	6504.00	483.80	-413.60	Rectangle (Sides: L25.00 W25.00)
Rulison Federal 19-3B Plan#1 Zone TGT	6504.00	458.80	-463.60	Rectangle (Sides: L100.00 W200.00)
Rulison Federal 19-3B Plan#1 BH TGT	10453.00	458.80	-463.60	Point

WELL DETAILS: Rulison Federal 19-43B

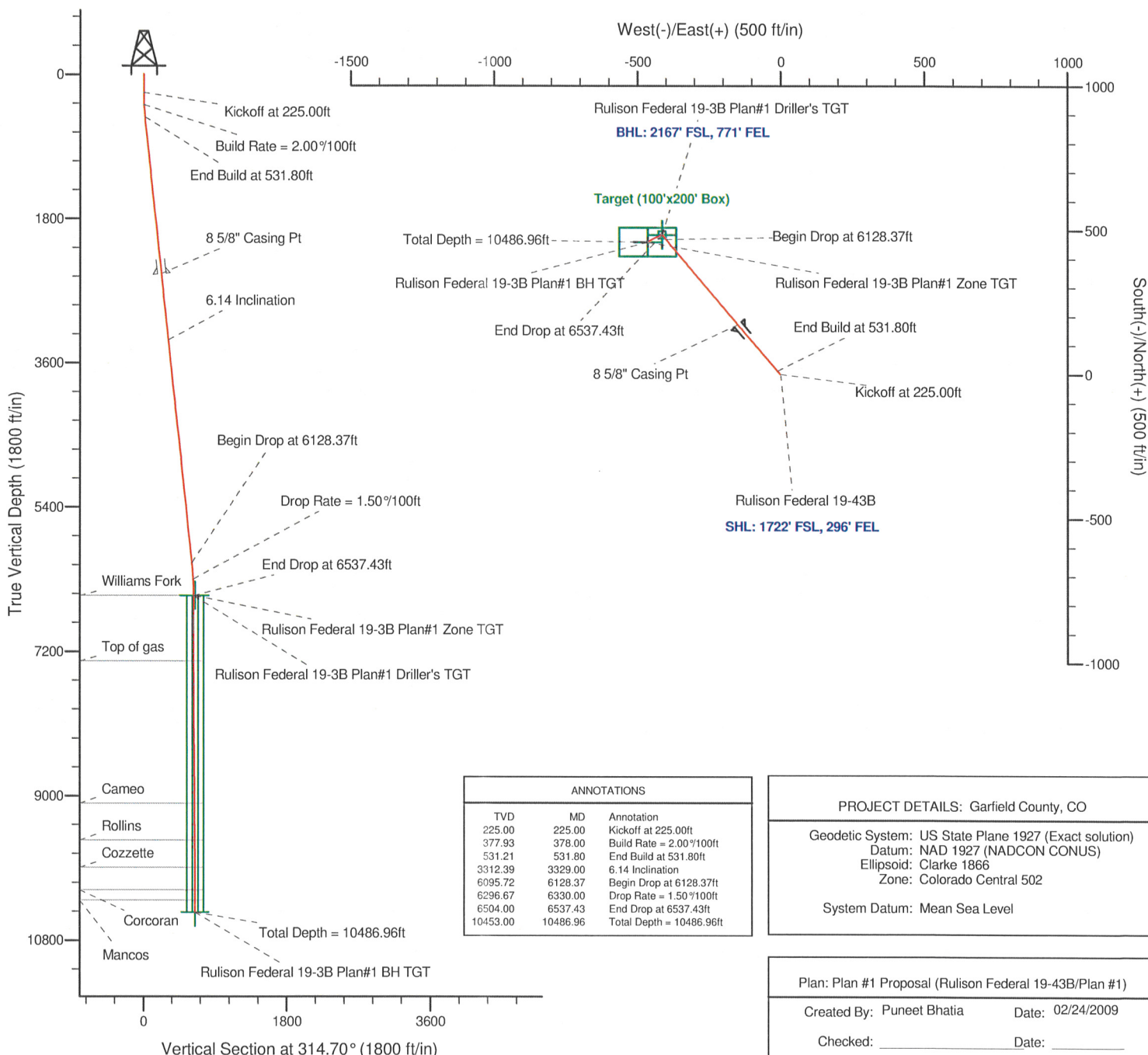
Ground Level:	8080.00
North	587683.22
East	1316450.58
Latitude	39° 25' 19.172 N
Longitude	107° 55' 11.609 W



Azimuths to Grid North
True North: 1.53°
Magnetic North: 12.18°
Magnetic Field
Strength: 52423.6snT
Dip Angle: 65.75°
Date: 2/10/2009
Model: BGGM2007

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6504.00	6537.43	Williams Fork
7322.00	7355.45	Top of gas
9095.00	9128.87	Cameo
9555.00	9588.93	Rollins
9894.00	9927.95	Cozzette
10173.00	10206.96	Corcoran
10303.00	10336.96	Mancos



ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
377.93	378.00	Build Rate = 2.00%/100ft
531.21	531.80	End Build at 531.80ft
3312.39	3329.00	6.14 Inclination
6095.72	6128.37	Begin Drop at 6128.37ft
6296.67	6330.00	Drop Rate = 1.50%/100ft
6504.00	6537.43	End Drop at 6537.43ft
10453.00	10486.96	Total Depth = 10486.96ft

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 (Rulison Federal 19-43B/Plan #1)

Created By: Puneet Bhatia Date: 02/24/2009

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____