

# Noble Energy (Rockies)

Garfield County, CO

Sec. 35-T7S-R95W (SGV 35L PAD)

Rulison Federal 35-24A - A 4

Wellbore #1

Plan: Plan #1

## Sperry Drilling Services

### Proposal Report

12 November, 2009

Well Coordinates: 577,338.00 N, 1,301,609.80 E (39° 23' 33.01" N, 107° 58' 17.07" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin: Centered on Well Rulison Federal 35-24A - Slot A 4

Viewing Datum: RKB - 24' @ 9227.00ft

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

**Plan Report for Rulison Federal 35-24A - Plan #1**

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	125.59	299.99	-0.57	0.80	0.98	2.00	2.00	0.00	125.59
400.00	3.50	125.59	399.89	-3.11	4.35	5.34	2.00	2.00	0.00	0.00
500.00	5.50	125.59	499.58	-7.67	10.73	13.18	2.00	2.00	0.00	0.00
600.00	7.50	125.59	598.93	-14.26	19.93	24.50	2.00	2.00	0.00	0.00
620.00	7.90	125.59	618.75	-15.82	22.11	27.18	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
700.00	9.50	125.59	697.83	-22.86	31.95	39.27	2.00	2.00	0.00	0.00
800.00	11.50	125.59	796.15	-33.47	46.77	57.49	2.00	2.00	0.00	0.00
900.00	13.50	125.59	893.77	-46.06	64.37	79.12	2.00	2.00	0.00	0.00
1,000.00	15.50	125.59	990.58	-60.63	84.73	104.15	2.00	2.00	0.00	0.00
1,044.19	16.38	125.59	1,033.07	-67.69	94.60	116.28	2.00	2.00	0.00	0.00
<b>End Build at 1044.19ft</b>										
1,100.00	16.38	125.59	1,086.62	-76.85	107.41	132.01	0.00	0.00	0.00	0.00
1,200.00	16.38	125.59	1,182.55	-93.27	130.34	160.21	0.00	0.00	0.00	0.00
1,300.00	16.38	125.59	1,278.49	-109.68	153.28	188.40	0.00	0.00	0.00	0.00
1,400.00	16.38	125.59	1,374.43	-126.10	176.22	216.60	0.00	0.00	0.00	0.00
1,500.00	16.38	125.59	1,470.37	-142.51	199.16	244.79	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	16.38	125.59	1,566.31	-158.93	222.10	272.99	0.00	0.00	0.00	0.00
1,700.00	16.38	125.59	1,662.25	-175.34	245.04	301.18	0.00	0.00	0.00	0.00
1,800.00	16.38	125.59	1,758.19	-191.75	267.98	329.38	0.00	0.00	0.00	0.00
1,900.00	16.38	125.59	1,854.13	-208.17	290.92	357.57	0.00	0.00	0.00	0.00
2,000.00	16.38	125.59	1,950.07	-224.58	313.86	385.77	0.00	0.00	0.00	0.00
2,100.00	16.38	125.59	2,046.01	-241.00	336.80	413.96	0.00	0.00	0.00	0.00
2,200.00	16.38	125.59	2,141.95	-257.41	359.74	442.15	0.00	0.00	0.00	0.00
2,300.00	16.38	125.59	2,237.89	-273.82	382.68	470.35	0.00	0.00	0.00	0.00
2,400.00	16.38	125.59	2,333.83	-290.24	405.61	498.54	0.00	0.00	0.00	0.00
2,500.00	16.38	125.59	2,429.77	-306.65	428.55	526.74	0.00	0.00	0.00	0.00
2,600.00	16.38	125.59	2,525.71	-323.07	451.49	554.93	0.00	0.00	0.00	0.00
2,700.00	16.38	125.59	2,621.65	-339.48	474.43	583.13	0.00	0.00	0.00	0.00
2,800.00	16.38	125.59	2,717.59	-355.89	497.37	611.32	0.00	0.00	0.00	0.00
2,900.00	16.38	125.59	2,813.52	-372.31	520.31	639.52	0.00	0.00	0.00	0.00
3,000.00	16.38	125.59	2,909.46	-388.72	543.25	667.71	0.00	0.00	0.00	0.00
3,100.00	16.38	125.59	3,005.40	-405.14	566.19	695.91	0.00	0.00	0.00	0.00
3,200.00	16.38	125.59	3,101.34	-421.55	589.13	724.10	0.00	0.00	0.00	0.00
3,300.00	16.38	125.59	3,197.28	-437.97	612.07	752.30	0.00	0.00	0.00	0.00
3,400.00	16.38	125.59	3,293.22	-454.38	635.01	780.49	0.00	0.00	0.00	0.00
3,500.00	16.38	125.59	3,389.16	-470.79	657.95	808.69	0.00	0.00	0.00	0.00
3,600.00	16.38	125.59	3,485.10	-487.21	680.88	836.88	0.00	0.00	0.00	0.00
<b>16.38 Inclination</b>										
3,700.00	16.38	125.59	3,581.04	-503.62	703.82	865.08	0.00	0.00	0.00	0.00
3,800.00	16.38	125.59	3,676.98	-520.04	726.76	893.27	0.00	0.00	0.00	0.00
3,900.00	16.38	125.59	3,772.92	-536.45	749.70	921.46	0.00	0.00	0.00	0.00
4,000.00	16.38	125.59	3,868.86	-552.86	772.64	949.66	0.00	0.00	0.00	0.00
4,100.00	16.38	125.59	3,964.80	-569.28	795.58	977.85	0.00	0.00	0.00	0.00
4,200.00	16.38	125.59	4,060.74	-585.69	818.52	1,006.05	0.00	0.00	0.00	0.00
4,300.00	16.38	125.59	4,156.68	-602.11	841.46	1,034.24	0.00	0.00	0.00	0.00
4,400.00	16.38	125.59	4,252.62	-618.52	864.40	1,062.44	0.00	0.00	0.00	0.00
4,500.00	16.38	125.59	4,348.56	-634.94	887.34	1,090.63	0.00	0.00	0.00	0.00
4,600.00	16.38	125.59	4,444.50	-651.35	910.28	1,118.83	0.00	0.00	0.00	0.00
4,700.00	16.38	125.59	4,540.43	-667.76	933.21	1,147.02	0.00	0.00	0.00	0.00
4,800.00	16.38	125.59	4,636.37	-684.18	956.15	1,175.22	0.00	0.00	0.00	0.00
4,900.00	16.38	125.59	4,732.31	-700.59	979.09	1,203.41	0.00	0.00	0.00	0.00

**Plan Report for Rulison Federal 35-24A - Plan #1**

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	16.38	125.59	4,828.25	-717.01	1,002.03	1,231.61	0.00	0.00	0.00	0.00
5,100.00	16.38	125.59	4,924.19	-733.42	1,024.97	1,259.80	0.00	0.00	0.00	0.00
5,200.00	16.38	125.59	5,020.13	-749.83	1,047.91	1,288.00	0.00	0.00	0.00	0.00
5,300.00	16.38	125.59	5,116.07	-766.25	1,070.85	1,316.19	0.00	0.00	0.00	0.00
5,400.00	16.38	125.59	5,212.01	-782.66	1,093.79	1,344.38	0.00	0.00	0.00	0.00
5,500.00	16.38	125.59	5,307.95	-799.08	1,116.73	1,372.58	0.00	0.00	0.00	0.00
5,600.00	16.38	125.59	5,403.89	-815.49	1,139.67	1,400.77	0.00	0.00	0.00	0.00
5,700.00	16.38	125.59	5,499.83	-831.91	1,162.61	1,428.97	0.00	0.00	0.00	0.00
5,800.00	16.38	125.59	5,595.77	-848.32	1,185.55	1,457.16	0.00	0.00	0.00	0.00
5,900.00	16.38	125.59	5,691.71	-864.73	1,208.48	1,485.36	0.00	0.00	0.00	0.00
6,000.00	16.38	125.59	5,787.65	-881.15	1,231.42	1,513.55	0.00	0.00	0.00	0.00
6,100.00	16.38	125.59	5,883.59	-897.56	1,254.36	1,541.75	0.00	0.00	0.00	0.00
6,131.26	16.38	125.59	5,913.58	-902.69	1,261.53	1,550.56	0.00	0.00	0.00	0.00
<b>Begin Drop at 6131.26ft</b>										
6,200.00	15.35	125.59	5,979.70	-913.63	1,276.82	1,569.35	1.50	-1.50	0.00	180.00
6,300.00	13.85	125.59	6,076.46	-928.30	1,297.32	1,594.55	1.50	-1.50	0.00	180.00
6,400.00	12.35	125.59	6,173.86	-941.49	1,315.76	1,617.21	1.50	-1.50	0.00	180.00
6,500.00	10.85	125.59	6,271.81	-953.20	1,332.11	1,637.31	1.50	-1.50	0.00	180.00
6,600.00	9.35	125.59	6,370.26	-963.40	1,346.38	1,654.84	1.50	-1.50	0.00	180.00
6,700.00	7.85	125.59	6,469.13	-972.11	1,358.54	1,669.79	1.50	-1.50	0.00	180.00
6,800.00	6.35	125.59	6,568.36	-979.30	1,368.60	1,682.15	1.50	-1.50	0.00	180.00
<b>Drop Rate = 1.50°/100ft</b>										
6,900.00	4.85	125.59	6,667.88	-984.98	1,376.54	1,691.91	1.50	-1.50	0.00	-180.00
7,000.00	3.35	125.59	6,767.62	-989.15	1,382.35	1,699.06	1.50	-1.50	0.00	180.00
7,100.00	1.85	125.59	6,867.51	-991.79	1,386.05	1,703.60	1.50	-1.50	0.00	180.00
7,200.00	0.35	125.59	6,967.49	-992.91	1,387.61	1,705.52	1.50	-1.50	0.00	180.00
7,223.43	0.00	125.55	6,990.92	-992.95	1,387.67	1,705.60	1.50	-1.50	-0.14	-180.00
<b>Rulison Federal 35-24A Plan #1 Zone Tgt</b>										
7,223.51	0.00	0.00	6,991.00	-992.95	1,387.67	1,705.60	1.50	-1.50	-156,245.15	-179.97
<b>End Drop at 7223.51ft - Williams Fork - Rulison Federal 35-24A Plan #1 Driller's Tgt</b>										
7,300.00	0.07	243.43	7,067.49	-992.97	1,387.63	1,705.58	0.09	0.09	-152.39	-116.57
7,400.00	0.16	243.43	7,167.49	-993.06	1,387.45	1,705.49	0.09	0.09	0.00	0.00
7,500.00	0.25	243.43	7,267.49	-993.22	1,387.13	1,705.33	0.09	0.09	0.00	0.00
7,600.00	0.34	243.43	7,367.49	-993.45	1,386.67	1,705.11	0.09	0.09	0.00	0.00
7,700.00	0.43	243.43	7,467.49	-993.75	1,386.08	1,704.81	0.09	0.09	0.00	0.00
7,800.00	0.52	243.43	7,567.48	-994.12	1,385.34	1,704.45	0.09	0.09	0.00	0.00
7,900.00	0.61	243.43	7,667.48	-994.56	1,384.46	1,704.01	0.09	0.09	0.00	0.00
8,000.00	0.70	243.43	7,767.47	-995.07	1,383.43	1,703.51	0.09	0.09	0.00	0.00
8,100.00	0.79	243.43	7,867.47	-995.65	1,382.27	1,702.94	0.09	0.09	0.00	0.00
8,200.00	0.88	243.43	7,967.45	-996.30	1,380.97	1,702.29	0.09	0.09	0.00	0.00
8,300.00	0.97	243.43	8,067.44	-997.02	1,379.53	1,701.58	0.09	0.09	0.00	0.00
8,312.56	0.98	243.43	8,080.00	-997.12	1,379.34	1,701.49	0.09	0.09	0.00	0.00
<b>Top of Gas</b>										
8,400.00	1.06	243.43	8,167.43	-997.81	1,377.95	1,700.80	0.09	0.09	0.00	0.00
8,500.00	1.15	243.43	8,267.41	-998.67	1,376.22	1,699.95	0.09	0.09	0.00	0.00
8,600.00	1.24	243.43	8,367.39	-999.61	1,374.36	1,699.04	0.09	0.09	0.00	0.00
8,700.00	1.33	243.43	8,467.36	-1,000.61	1,372.36	1,698.05	0.09	0.09	0.00	0.00
8,800.00	1.42	243.43	8,567.33	-1,001.68	1,370.21	1,696.99	0.09	0.09	0.00	0.00
8,900.00	1.51	243.43	8,667.30	-1,002.82	1,367.93	1,695.86	0.09	0.09	0.00	0.00
9,000.00	1.60	243.43	8,767.26	-1,004.03	1,365.50	1,694.67	0.09	0.09	0.00	0.00
9,090.12	1.68	243.43	8,857.35	-1,005.19	1,363.20	1,693.53	0.09	0.09	0.00	0.00
9,100.00	1.67	243.43	8,867.22	-1,005.32	1,362.94	1,693.40	0.09	-0.09	0.00	-180.00
9,200.00	1.59	243.43	8,967.18	-1,006.59	1,360.40	1,692.15	0.09	-0.09	0.00	180.00
9,300.00	1.50	243.43	9,067.14	-1,007.79	1,357.99	1,690.96	0.09	-0.09	0.00	180.00
9,400.00	1.41	243.43	9,167.11	-1,008.93	1,355.72	1,689.84	0.09	-0.09	0.00	180.00
9,500.00	1.33	243.43	9,267.08	-1,010.00	1,353.58	1,688.79	0.09	-0.09	0.00	180.00
9,600.00	1.24	243.43	9,367.06	-1,011.00	1,351.58	1,687.80	0.09	-0.09	0.00	180.00
9,628.95	1.22	243.43	9,396.00	-1,011.28	1,351.02	1,687.53	0.09	-0.09	0.00	-180.00
<b>Cameo</b>										

**Plan Report for Rulison Federal 35-24A - Plan #1**

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 (°)
9,700.00	1.15	243.43	9,467.04	-1,011.93	1,349.71	1,686.88	0.09	-0.09	0.00	180.00
9,800.00	1.07	243.43	9,567.02	-1,012.80	1,347.97	1,686.03	0.09	-0.09	0.00	180.00
9,900.00	0.98	243.43	9,667.00	-1,013.60	1,346.38	1,685.24	0.09	-0.09	0.00	180.00
10,000.00	0.89	243.43	9,766.99	-1,014.33	1,344.91	1,684.52	0.09	-0.09	0.00	180.00
10,100.00	0.81	243.43	9,866.98	-1,015.00	1,343.58	1,683.86	0.09	-0.09	0.00	180.00
10,110.02	0.80	243.43	9,877.00	-1,015.06	1,343.46	1,683.80	0.09	-0.09	0.00	-180.00
<b>Rollins</b>										
10,200.00	0.72	243.43	9,966.97	-1,015.59	1,342.39	1,683.27	0.09	-0.09	0.00	180.00
10,300.00	0.64	243.43	10,066.96	-1,016.12	1,341.33	1,682.75	0.09	-0.09	0.00	180.00
10,400.00	0.55	243.43	10,166.96	-1,016.59	1,340.40	1,682.29	0.09	-0.09	0.00	180.00
10,416.04	0.54	243.43	10,183.00	-1,016.65	1,340.27	1,682.23	0.09	-0.09	0.00	-180.00
<b>Cozzette</b>										
10,500.00	0.46	243.43	10,266.95	-1,016.98	1,339.61	1,681.90	0.09	-0.09	0.00	180.00
10,600.00	0.38	243.43	10,366.95	-1,017.31	1,338.95	1,681.58	0.09	-0.09	0.00	180.00
10,655.05	0.33	243.43	10,422.00	-1,017.46	1,338.65	1,681.43	0.09	-0.09	0.00	-180.00
<b>Corcora</b>										
10,700.00	0.29	243.43	10,466.95	-1,017.57	1,338.43	1,681.32	0.09	-0.09	0.00	180.00
10,787.05	0.22	243.43	10,554.00	-1,017.74	1,338.09	1,681.15	0.09	-0.09	0.00	-180.00
<b>Mancos</b>										
10,800.00	0.20	243.43	10,566.95	-1,017.76	1,338.05	1,681.13	0.09	-0.09	0.00	180.00
10,900.00	0.12	243.43	10,666.95	-1,017.89	1,337.79	1,681.01	0.09	-0.09	0.00	180.00
11,000.00	0.03	243.43	10,766.95	-1,017.95	1,337.68	1,680.95	0.09	-0.09	0.00	180.00
11,037.05	0.00	0.00	10,804.00	-1,017.95	1,337.67	1,680.95	0.09	-0.09	314.62	180.00
<b>Total Depth = 11037.05ft - Rulison Federal 35-24A Plan #1 BH Tgt</b>										

**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
620.00	618.75	-15.82	22.11	Build Rate = 2.00°/100ft
1,044.19	1,033.07	-67.69	94.60	End Build at 1044.19ft
3,600.00	3,485.10	-487.21	680.88	16.38 Inclination
6,131.26	5,913.58	-902.69	1,261.53	Begin Drop at 6131.26ft
6,800.00	6,568.36	-979.30	1,368.60	Drop Rate = 1.50°/100ft
7,223.51	6,991.00	-992.95	1,387.67	End Drop at 7223.51ft
11,037.05	10,804.00	-1,017.95	1,337.67	Total Depth = 11037.05ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Rulison Federal 35-24A Plan #1 BH Tgt	127.27	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,037.05	Plan #1	MWD

## Plan Report for Rulison Federal 35-24A - Plan #1

### Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,470.37	8 5/8" Casing Pt.	8-5/8	11

### Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,223.51	6,991.00	Williams Fork		0.00	
8,312.56	8,080.00	Top of Gas		0.00	
9,628.95	9,396.00	Cameo		0.00	
10,110.02	9,877.00	Rollins		0.00	
10,416.04	10,183.00	Cozzette		0.00	
10,655.05	10,422.00	Corcora		0.00	
10,787.05	10,554.00	Mancos		0.00	

### *Targets associated with this wellbore*

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Rulison Federal 35-24A Plan #1 Zone Tgt	6,991.00	-1,017.95	1,337.67	Rectangle
Rulison Federal 35-24A Plan #1 BH Tgt	10,804.00	-1,017.95	1,337.67	Point
Rulison Federal 35-24A Plan #1 Driller's Tgt	6,991.00	-992.95	1,387.67	Rectangle

## North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - Rulison Federal 35-24A - Wellbore #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 - 24' @ 9227.00ft. Northing and Easting are relative to Rulison Federal 35-24A - Slot A 4

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: 0.99994882

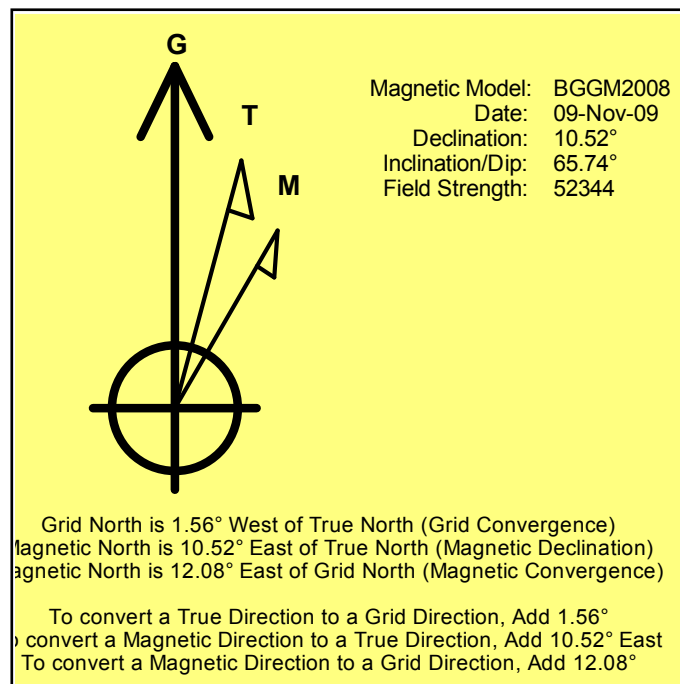
Grid Coordinates of Well: 577,338.00 ft N, 1,301,609.80 ft E

Geographical Coordinates of Well: 39° 23' 33.01" N, 107° 58' 17.07" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,037.05ft  
the Bottom Hole Displacement is 1,680.95ft in the Direction of 127.27° (Grid).

Magnetic Convergence at surface is: -12.08° ( 9 November 2009, , BGGM2008)



Project: Garfield County, CO  
Site: Sec. 35-T7S-R95W (SGV 35L PAD)  
Well: Rulison Federal 35-24A  
Wellbore: Wellbore #1  
Plan: Plan #1

# Noble Energy (Rockies)

HALLIBURTON

## SECTION DETAILS

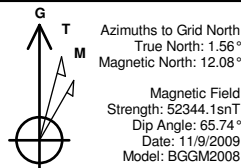
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	
1044.19	16.38	125.59	1033.07	-67.69	94.60	2.00	125.59	116.28	
6131.26	16.38	125.59	5913.58	-902.69	1261.53	0.00	0.00	1550.56	Rulison Federal 35-24A Plan #1 Driller's Tgt
7223.51	0.00	0.00	6991.00	-992.95	1387.67	1.50	180.00	1705.60	
9090.12	1.68	243.43	8857.35	-1005.19	1363.20	0.09	243.43	1693.53	
11037.05	0.00	360.00	10804.00	-1017.95	1337.67	0.09	180.00	1680.95	Rulison Federal 35-24A Plan #1 BH Tgt

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Rulison Federal 35-24A Plan #1 Driller's Tgt	6991.00	-992.95	1387.67	Rectangle (Sides: L25.00 W25.00)
Rulison Federal 35-24A Plan #1 Zone Tgt	6991.00	-1017.95	1337.67	Rectangle (Sides: L100.00 W200.00)
Rulison Federal 35-24A Plan #1 BH Tgt	10804.00	-1017.95	1337.67	Point

## WELL DETAILS: Rulison Federal 35-24A

Ground Level:	9203.00	Latitude	39° 23' 33.008 N	Longitude	107° 58' 17.072 W	A 4
Northing	577338.00	Easting	1301609.80			



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6991.00	7223.51	Williams Fork
8080.00	8312.56	Top of Gas
9396.00	9628.95	Cameo
9877.00	10110.02	Rollins
10183.00	10416.04	Cozzette
10422.00	10655.05	Corcora
10554.00	10787.05	Mancos

