

Noble Energy

Weld County, CO (NAD 83)

Sec. 1-T4N-R65W (C06-32-A / G01-08-A/ C06-33-A)

Coalview G02-63-1HN

05-123-39893

Original Wellbore

Design: Noble Flexishot and Sperry MWD Survey

Sperry Drilling Services

Final Survey Report

25 September, 2014

Surface UWI : 05-123-39893

Well Coordinates: 1,367,070.42 N, 3,249,966.07 E (40° 20' 15.14" N, 104° 36' 11.88" W)

Ground Level: 4,815.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Coalview G02-63-1HN

RKB=24' @ 4839.00usft (343)

N

Grid

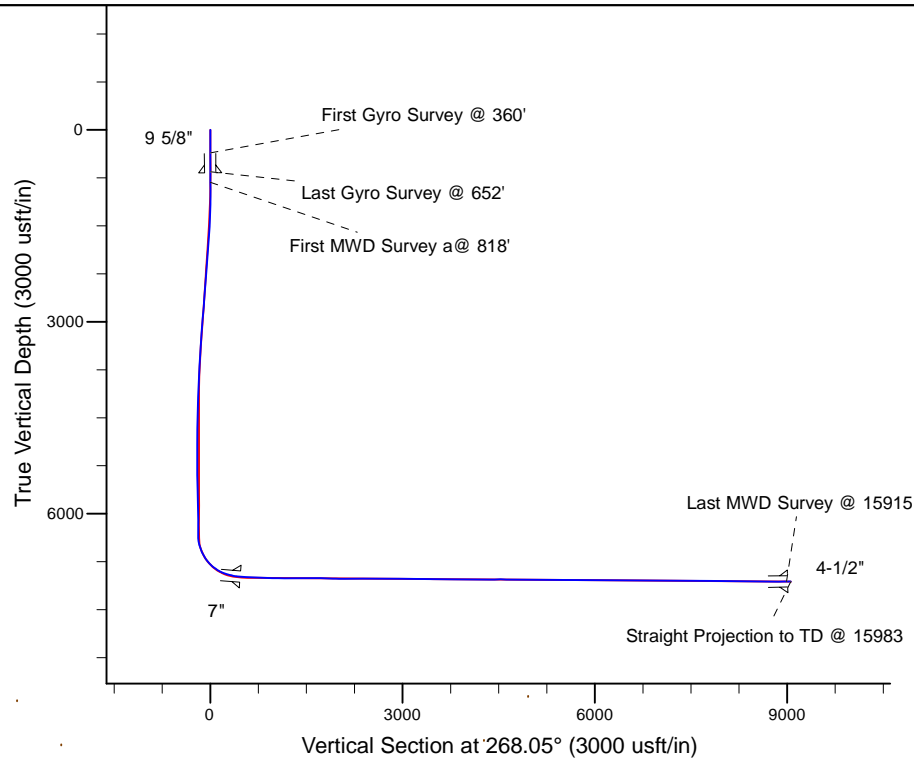
API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 1-T4N-R65W (C06-32-A / G01-08-A/ C06-33-A)
 Well: Coalview G02-63-1HN
 Wellbore: Original Wellbore
 Design: Noble Flexishot and Sperry MWD Survey

Noble Energy

HALLIBURTON
 Sperry Drilling



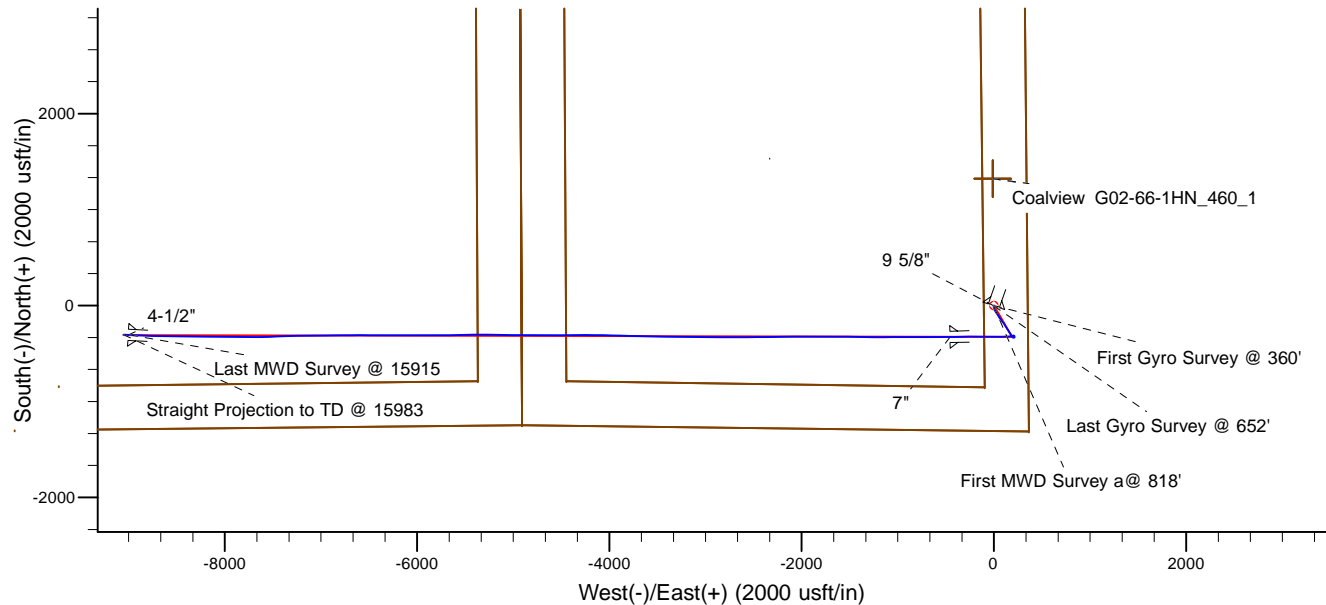
Platted SHL: 1305 FSL, 351 FEL
 Platted Lat/Long: 40.33754 N, 104.60330 W
 Location: Sec. 1-T4N-R65W

~7\" Casing: 972' FSL, 804' FEL
 Lat/Long: 40° 20' 11.957 N 104° 36' 17.827 W
 State Planes - CO Northern: 1366743.29 N 3249508.84 E
 Location: Sec. 1-T4N-R65W

Platted BHL: 980 FSL, 1145 FWL
 Lat/Long: 40.33694 N, 104.63579 W
 State Planes - CO Northern: 1366761.93 N, 3240911.51 E
 Location: Sec. 2-T4N-R65W

LEGEND

✗ Coalview G02-63-1HN, Original Wellbore, Rev B0 Proposal V0
 □ Noble Flexishot and Sperry MWD Survey



WELL DETAILS: Coalview G02-63-1HN	
Ground Level:	4815.00
RKB=24' @ 4839.00usft (343)	
Created By:	Amanda Marchand
Created On:	09/25/2014

Design Report for Coalview G02-63-1HN - Noble Flexishot and Sperry MWD Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360.00	0.20	162.06	360.00	-0.60	0.19	-0.17	0.06
First Gyro Survey @ 360'							
652.00	1.20	199.16	651.97	-3.97	-0.65	0.79	0.36
Last Gyro Survey @ 652'							
818.00	0.71	199.46	817.95	-6.58	-1.57	1.79	0.30
First MWD Survey @ 818'							
1,004.00	0.79	205.74	1,003.94	-8.82	-2.51	2.81	0.06
1,097.00	2.06	181.61	1,096.91	-11.07	-2.83	3.21	1.48
1,189.00	3.61	170.34	1,188.79	-15.58	-2.39	2.92	1.78
1,283.00	5.45	162.67	1,282.49	-22.76	-0.57	1.34	2.06
1,386.00	7.16	162.70	1,384.87	-33.56	2.80	-1.66	1.66
1,479.00	8.72	154.84	1,476.97	-45.47	7.52	-5.97	2.04
1,572.00	9.10	147.77	1,568.86	-58.08	14.44	-12.45	1.25
1,665.00	9.04	147.36	1,660.69	-70.45	22.30	-19.89	0.09
1,758.00	9.04	146.46	1,752.54	-82.69	30.28	-27.45	0.15
1,851.00	8.74	145.50	1,844.42	-94.61	38.32	-35.08	0.36
1,942.00	7.52	148.15	1,934.50	-105.36	45.38	-41.76	1.40
2,036.00	7.48	148.67	2,027.70	-115.81	51.81	-47.83	0.08
2,127.00	7.20	148.19	2,117.95	-125.72	57.89	-53.58	0.31
2,218.00	6.96	148.07	2,208.26	-135.24	63.81	-59.17	0.26
2,311.00	6.73	147.65	2,300.60	-144.63	69.71	-64.74	0.25
2,403.00	7.48	144.27	2,391.89	-154.05	76.09	-70.80	0.93
2,495.00	7.19	139.53	2,483.14	-163.29	83.32	-77.72	0.73
2,588.00	8.67	143.38	2,575.25	-173.34	91.28	-85.33	1.69
2,681.00	8.70	142.58	2,667.18	-184.55	99.74	-93.40	0.13
2,773.00	8.83	141.62	2,758.11	-195.61	108.35	-101.63	0.21
2,961.00	9.17	147.03	2,943.80	-219.49	125.46	-117.92	0.48
3,055.00	8.70	145.91	3,036.65	-231.67	133.52	-125.56	0.53
3,150.00	8.58	146.01	3,130.58	-243.49	141.51	-133.14	0.13
3,245.00	8.71	153.68	3,224.50	-255.81	148.66	-139.87	1.22
3,338.00	8.08	153.54	3,316.50	-267.98	154.70	-145.48	0.68
3,433.00	7.13	151.32	3,410.67	-279.13	160.50	-150.91	1.05
3,527.00	6.27	149.89	3,504.02	-288.69	165.88	-155.95	0.93
3,622.00	5.48	147.21	3,598.52	-296.99	170.94	-160.73	0.88
3,716.00	5.03	145.37	3,692.13	-304.15	175.71	-165.25	0.51
3,809.00	4.86	145.25	3,784.78	-310.74	180.27	-169.59	0.18
3,903.00	4.86	144.22	3,878.44	-317.24	184.87	-173.96	0.09
3,997.00	4.97	142.85	3,972.10	-323.72	189.66	-178.52	0.17
4,091.00	4.45	136.16	4,065.78	-329.60	194.64	-183.31	0.80
4,185.00	2.66	114.94	4,159.60	-333.15	199.15	-187.69	2.33
4,279.00	2.46	121.12	4,253.51	-335.11	202.85	-191.32	0.36
4,374.00	1.25	83.74	4,348.46	-336.05	205.63	-194.06	1.74
4,469.00	1.06	71.95	4,443.44	-335.67	207.49	-195.94	0.32
4,564.00	1.09	55.06	4,538.42	-334.88	209.07	-197.54	0.33
4,658.00	1.05	42.54	4,632.41	-333.73	210.38	-198.90	0.25
4,753.00	0.87	52.88	4,727.39	-332.65	211.55	-200.10	0.26
4,848.00	0.77	50.79	4,822.38	-331.81	212.62	-201.19	0.11
4,942.00	0.90	44.46	4,916.37	-330.89	213.62	-202.23	0.17
5,036.00	1.68	340.12	5,010.35	-329.06	213.67	-202.34	1.62

Design Report for Coalview G02-63-1HN - Noble Flexishot and Sperry MWD Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,131.00	1.32	346.60	5,105.32	-326.69	212.94	-201.70	0.42
5,226.00	1.46	1.74	5,200.29	-324.42	212.73	-201.56	0.41
5,320.00	1.57	15.21	5,294.26	-321.98	213.10	-202.01	0.40
5,415.00	2.13	324.88	5,389.22	-319.28	212.43	-201.43	1.74
5,510.00	1.94	329.47	5,484.16	-316.45	210.59	-199.70	0.26
5,604.00	2.00	287.61	5,578.11	-314.58	208.22	-197.39	1.50
5,698.00	1.66	295.32	5,672.06	-313.50	205.43	-194.64	0.45
5,793.00	1.41	273.95	5,767.02	-312.83	203.02	-192.25	0.65
5,888.00	1.02	254.68	5,862.00	-312.98	201.04	-190.26	0.59
5,982.00	0.65	257.16	5,955.99	-313.32	199.71	-188.93	0.40
6,077.00	0.52	201.18	6,050.99	-313.84	199.03	-188.23	0.59
6,172.00	0.71	177.92	6,145.98	-314.83	198.90	-188.06	0.33
6,266.00	1.01	165.91	6,239.97	-316.21	199.12	-188.24	0.37
6,361.00	1.14	160.22	6,334.96	-317.91	199.64	-188.70	0.18
6,409.00	4.50	254.41	6,382.90	-318.87	197.99	-187.02	9.84
6,456.00	10.43	265.71	6,429.49	-319.68	191.96	-180.97	12.94
6,551.00	17.71	266.59	6,521.58	-321.19	168.93	-157.90	7.67
6,646.00	23.87	269.13	6,610.35	-322.34	135.26	-124.20	6.55
6,740.00	33.68	268.01	6,692.64	-323.54	90.08	-79.01	10.45
6,835.00	41.50	269.23	6,767.86	-324.88	32.19	-21.11	8.27
6,930.00	51.30	270.68	6,833.30	-324.86	-36.51	47.55	10.37
7,025.00	59.66	270.67	6,887.09	-323.94	-114.71	125.68	8.80
7,119.00	68.48	270.21	6,928.15	-323.30	-199.16	210.06	9.39
7,214.00	76.85	269.20	6,956.43	-323.79	-289.77	300.62	8.87
7,308.00	79.47	268.83	6,975.72	-325.37	-381.74	392.60	2.81
7,337.00	84.47	268.48	6,979.77	-326.05	-410.44	421.31	17.28
7,504.00	87.75	269.77	6,991.09	-328.59	-577.01	587.87	2.11
7,599.00	87.53	270.32	6,995.01	-328.51	-671.93	682.73	0.62
7,694.00	87.35	270.31	6,999.25	-327.99	-766.83	777.56	0.19
7,788.00	87.53	270.13	7,003.45	-327.63	-860.74	871.40	0.27
7,883.00	89.08	269.77	7,006.26	-327.71	-955.70	966.30	1.67
7,978.00	88.80	269.49	7,008.02	-328.33	-1,050.68	1,061.25	0.42
8,073.00	89.08	269.60	7,009.77	-329.08	-1,145.66	1,156.20	0.32
8,168.00	90.99	270.31	7,009.71	-329.16	-1,240.65	1,251.14	2.14
8,263.00	91.14	270.24	7,007.95	-328.70	-1,335.63	1,346.05	0.17
8,357.00	90.59	271.12	7,006.53	-327.58	-1,429.62	1,439.94	1.10
8,452.00	89.94	271.21	7,006.09	-325.65	-1,524.60	1,534.80	0.69
8,547.00	90.25	270.78	7,005.93	-324.00	-1,619.58	1,629.67	0.56
8,642.00	88.21	270.41	7,007.21	-323.02	-1,714.56	1,724.57	2.18
8,736.00	88.24	269.95	7,010.12	-322.72	-1,808.52	1,818.46	0.49
8,831.00	87.94	269.76	7,013.29	-322.96	-1,903.46	1,913.36	0.37
8,926.00	89.69	269.29	7,015.25	-323.75	-1,998.43	2,008.30	1.91
9,021.00	89.85	268.87	7,015.63	-325.27	-2,093.42	2,103.28	0.47
9,115.00	90.55	269.81	7,015.31	-326.36	-2,187.41	2,197.26	1.25
9,210.00	91.11	269.80	7,013.93	-326.68	-2,282.40	2,292.20	0.59
9,305.00	89.29	269.77	7,013.60	-327.04	-2,377.40	2,387.15	1.92
9,400.00	89.08	269.00	7,014.95	-328.06	-2,472.38	2,482.12	0.84
9,495.00	89.66	269.84	7,015.99	-329.02	-2,567.37	2,577.08	1.07
9,590.00	89.69	269.47	7,016.53	-329.59	-2,662.37	2,672.04	0.39
9,684.00	90.43	270.51	7,016.43	-329.61	-2,756.36	2,765.99	1.36
9,779.00	90.15	270.30	7,015.95	-328.93	-2,851.36	2,860.91	0.37

Design Report for Coalview G02-63-1HN - Noble Flexishot and Sperry MWD Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
9,874.00	90.15	270.55	7,015.70	-328.23	-2,946.36	2,955.82	0.26
9,969.00	89.91	270.34	7,015.65	-327.49	-3,041.35	3,050.74	0.34
10,063.00	89.91	270.05	7,015.80	-327.17	-3,135.35	3,144.68	0.31
10,156.00	90.09	270.24	7,015.80	-326.94	-3,228.35	3,237.61	0.28
10,249.00	89.14	271.23	7,016.43	-325.74	-3,321.34	3,330.51	1.48
10,341.00	88.64	271.23	7,018.21	-323.77	-3,413.30	3,422.35	0.54
10,434.00	88.52	271.20	7,020.51	-321.80	-3,506.25	3,515.18	0.13
10,527.00	88.34	270.86	7,023.06	-320.13	-3,599.20	3,608.02	0.41
10,620.00	88.89	271.30	7,025.31	-318.37	-3,692.16	3,700.86	0.76
10,713.00	89.35	271.49	7,026.74	-316.11	-3,785.12	3,793.69	0.54
10,806.00	89.54	271.39	7,027.64	-313.77	-3,878.09	3,886.52	0.23
10,898.00	89.97	271.71	7,028.03	-311.29	-3,970.05	3,978.35	0.58
10,991.00	90.15	271.70	7,027.94	-308.52	-4,063.01	4,071.16	0.19
11,082.00	89.97	270.30	7,027.84	-306.93	-4,153.99	4,162.04	1.55
11,173.00	90.06	269.99	7,027.82	-306.70	-4,244.99	4,252.97	0.35
11,266.00	90.40	269.81	7,027.44	-306.86	-4,337.99	4,345.93	0.41
11,358.00	90.49	269.50	7,026.73	-307.42	-4,429.99	4,437.89	0.35
11,450.00	89.57	269.89	7,026.68	-307.91	-4,521.98	4,529.85	1.09
11,543.00	89.78	269.79	7,027.21	-308.17	-4,614.98	4,622.80	0.25
11,636.00	90.09	269.19	7,027.31	-308.99	-4,707.98	4,715.77	0.73
11,728.00	89.75	270.59	7,027.44	-309.17	-4,799.98	4,807.72	1.57
11,821.00	90.12	270.74	7,027.55	-308.09	-4,892.97	4,900.62	0.43
11,916.00	88.58	270.56	7,028.62	-307.01	-4,987.95	4,995.52	1.63
12,011.00	88.77	270.56	7,030.82	-306.08	-5,082.92	5,090.40	0.20
12,106.00	89.29	271.35	7,032.43	-304.50	-5,177.90	5,185.26	1.00
12,200.00	88.31	269.82	7,034.40	-303.54	-5,271.87	5,279.15	1.93
12,295.00	88.65	270.01	7,036.92	-303.68	-5,366.83	5,374.06	0.41
12,390.00	88.58	268.96	7,039.21	-304.54	-5,461.80	5,469.00	1.11
12,485.00	90.09	268.92	7,040.32	-306.29	-5,556.77	5,563.98	1.59
12,580.00	90.52	268.33	7,039.81	-308.57	-5,651.75	5,658.98	0.77
12,675.00	91.51	269.76	7,038.13	-310.16	-5,746.71	5,753.94	1.83
12,769.00	90.31	270.05	7,036.64	-310.31	-5,840.70	5,847.88	1.31
12,864.00	90.93	269.82	7,035.61	-310.42	-5,935.69	5,942.82	0.70
12,958.00	88.92	270.05	7,035.73	-310.53	-6,029.69	6,036.77	2.15
13,053.00	89.14	270.37	7,037.34	-310.18	-6,124.67	6,131.68	0.41
13,148.00	89.78	269.96	7,038.23	-309.90	-6,219.67	6,226.61	0.80
13,242.00	90.18	269.82	7,038.27	-310.09	-6,313.67	6,320.57	0.45
13,337.00	90.34	270.72	7,037.84	-309.64	-6,408.67	6,415.49	0.96
13,431.00	88.25	270.20	7,038.99	-308.88	-6,502.65	6,509.40	2.29
13,526.00	88.55	269.87	7,041.65	-308.83	-6,597.61	6,604.30	0.47
13,620.00	88.89	269.69	7,043.74	-309.19	-6,691.59	6,698.24	0.41
13,715.00	89.01	269.25	7,045.49	-310.06	-6,786.57	6,793.19	0.48
13,810.00	89.72	269.26	7,046.54	-311.30	-6,881.55	6,888.16	0.75
13,904.00	89.32	268.59	7,047.33	-313.06	-6,975.53	6,982.15	0.83
13,998.00	89.66	270.13	7,048.16	-314.11	-7,069.52	7,076.12	1.68
14,093.00	89.94	269.80	7,048.49	-314.17	-7,164.52	7,171.06	0.46
14,188.00	89.69	268.33	7,048.80	-315.72	-7,259.50	7,266.04	1.57
14,282.00	90.18	268.26	7,048.91	-318.52	-7,353.46	7,360.04	0.53
14,376.00	90.06	267.05	7,048.71	-322.36	-7,447.38	7,454.04	1.29
14,471.00	90.25	268.84	7,048.45	-325.77	-7,542.32	7,549.03	1.89
14,566.00	90.40	268.67	7,047.92	-327.83	-7,637.29	7,644.03	0.24

Design Report for Coalview G02-63-1HN - Noble Flexishot and Sperry MWD Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
14,660.00	90.40	270.00	7,047.26	-328.93	-7,731.28	7,738.00	1.41
14,754.00	88.74	270.95	7,047.96	-328.15	-7,825.27	7,831.91	2.03
14,849.00	88.80	270.92	7,050.00	-326.60	-7,920.24	7,926.76	0.07
14,944.00	88.98	270.82	7,051.84	-325.15	-8,015.21	8,021.63	0.22
15,038.00	89.14	270.65	7,053.39	-323.95	-8,109.19	8,115.52	0.25
15,133.00	89.23	270.34	7,054.74	-323.13	-8,204.17	8,210.42	0.34
15,228.00	89.54	270.45	7,055.76	-322.47	-8,299.17	8,305.33	0.35
15,321.00	90.03	270.80	7,056.11	-321.46	-8,392.16	8,398.24	0.65
15,416.00	89.11	269.35	7,056.82	-321.33	-8,487.15	8,493.17	1.81
15,510.00	89.48	271.62	7,057.98	-320.54	-8,581.14	8,587.07	2.45
15,604.00	88.49	270.61	7,059.64	-318.71	-8,675.10	8,680.92	1.50
15,698.00	90.03	272.12	7,060.85	-316.47	-8,769.06	8,774.75	2.29
15,792.00	90.86	272.58	7,060.12	-312.62	-8,862.98	8,868.48	1.01
15,886.00	90.86	272.76	7,058.71	-308.24	-8,956.87	8,962.17	0.19
15,915.00	90.96	272.88	7,058.25	-306.81	-8,985.83	8,991.06	0.54
Last MWD Survey @ 15915							
15,983.00	90.96	272.88	7,057.11	-303.40	-9,053.73	9,058.81	0.00
Straight Projection to TD @ 15983							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
360.00	360.00	-0.60	0.19	First Gyro Survey @ 360'
652.00	651.97	-3.97	-0.65	Last Gyro Survey @ 652'
818.00	817.95	-6.58	-1.57	First MWD Survey @ 818'
15,915.00	7,058.25	-306.81	-8,985.83	Last MWD Survey @ 15915
15,983.00	7,057.11	-303.40	-9,053.73	Straight Projection to TD @ 15983

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Coalview G02-63-1HN BHL	268.05	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
360.00	652.00	Noble Flexishot Surveys	Flexi-Shot
818.00	7,337.00	Intermediate Surveys	MWD+IFR1+MS_WY
7,504.00	15,983.00	Production Surveys	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
670.00	669.97	9 5/8"	9-5/8	12-1/4
7,384.00	6,983.92	7"	7	8-3/4
15,934.00	7,057.94	4-1/2"	4-1/2	6-1/8

Design Report for Coalview G02-63-1HN - Noble Flexishot and Sperry MWD Survey

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Coalview G02-66-1HN	0.00	0.00	-13.00	1,322.38	-13.37	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
- actual wellpath misses target center by 1322.51usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-13.00	2,641.04	327.31	1,371,033.67	3,250,279.99		
Point 2			-13.00	2,558.21	-10,233.63	1,370,950.84	3,239,719.50		
Point 3			-13.00	-2,621.93	-10,175.01	1,365,770.92	3,239,778.11		
Point 4			-13.00	-2,570.15	-4,894.94	1,365,822.70	3,245,057.96		
Point 5			-13.00	2,603.07	-4,915.56	1,370,995.70	3,245,037.34		
Point 6			-13.00	-2,570.15	-4,894.94	1,365,822.70	3,245,057.96		
Point 7			-13.00	-2,633.90	377.93	1,365,758.95	3,250,330.61		
Point 8			-13.00	2,641.04	327.31	1,371,033.67	3,250,279.99		
Coalview G02-66-1HN	0.00	0.00	-13.00	1,322.38	-13.37	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
- actual wellpath misses target center by 1322.51usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-13.00	2,181.02	-132.71	1,370,573.67	3,249,819.99		
Point 2			-13.00	-2,173.88	-82.09	1,366,218.95	3,249,870.61		
Point 3			-13.00	-2,110.13	-4,434.92	1,366,282.70	3,245,517.96		
Point 4			-13.00	2,143.05	-4,455.54	1,370,535.70	3,245,497.34		
Coalview G02-66-1HN	0.00	0.00	-13.00	1,322.38	-13.37	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
- actual wellpath misses target center by 1322.51usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-13.00	2,143.05	-5,375.58	1,370,535.70	3,244,577.34		
Point 2			-13.00	-2,110.13	-5,354.96	1,366,282.70	3,244,597.96		
Point 3			-13.00	-2,161.91	-9,714.99	1,366,230.92	3,240,238.11		
Point 4			-13.00	2,098.19	-9,773.61	1,370,490.84	3,240,179.50		
Coalview G02-63-1HN	0.00	0.00	7,060.00	-308.50	-9,054.94	1,366,761.93	3,240,911.51	40° 20' 12.984 N	104° 38' 8.844 W
- actual wellpath misses target center by 5.99usft at 15983.00usft MD (7057.11 TVD, -303.40 N, -9053.73 E)									
- Point									
Coalview G02-63-1HN	0.00	0.00	7,060.00	-308.50	-9,054.94	1,366,761.93	3,240,911.51	40° 20' 12.984 N	104° 38' 8.844 W
- actual wellpath misses target center by 5.98usft at 15983.00usft MD (7057.11 TVD, -303.40 N, -9053.73 E)									
- Point									

Directional Difficulty Index

Average Dogleg over Survey:	1.27 °/100usft	Maximum Dogleg over Survey:	17.28 °/100usft at 7,337.00 usft
Net Tortosity applicable to Plans:	0.61 °/100usft	Directional Difficulty Index:	6.650

Audit Info

North Reference Sheet for Sec. 1-T4N-R65W (C06-32-A / G01-08-A/ C06-33-A) - Coalview G02-63-1HN - Original Wellbore

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' @ 4839.00usft (343). Northing and Easting are relative to Coalview G02-63-1HN

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995799

Grid Coordinates of Well: 1,367,070.42 usft N, 3,249,966.07 usft E

Geographical Coordinates of Well: 40° 20' 15.14" N, 104° 36' 11.88" W

Grid Convergence at Surface is: 0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,983.00usft the Bottom Hole Displacement is 9,058.81usft in the Direction of 268.08° (Grid).

Magnetic Convergence at surface is: -7.85° (7 August 2014, , BGGM2014)

