

Noble Energy

Weld County, CO (NAD 83)

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

Coalview G02-64-1HN

API: 05-123-39892

Plan A

Design: Actual Surveys

Sperry Drilling Services

Final Survey Report

24 September, 2014

Surface UWI : API: 05-123-39892

Well Coordinates: 1,367,092.28 N, 3,249,965.85 E (40° 20' 15.36" 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 G02-64-1HN

RKB=24' @ 4839.00usft (H&P 343)

N

Grid

API - US Survey Feet - Custom

HALLIBURTON

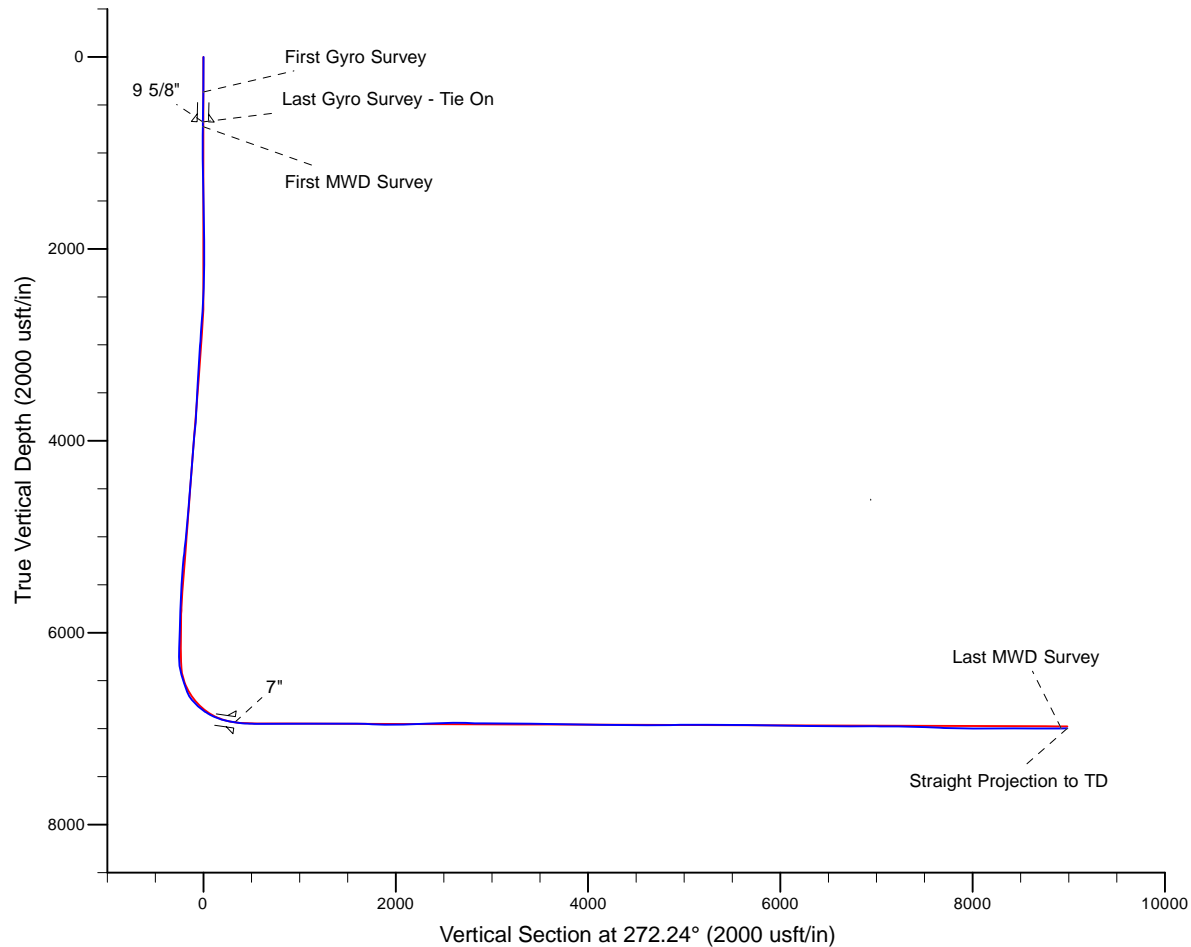
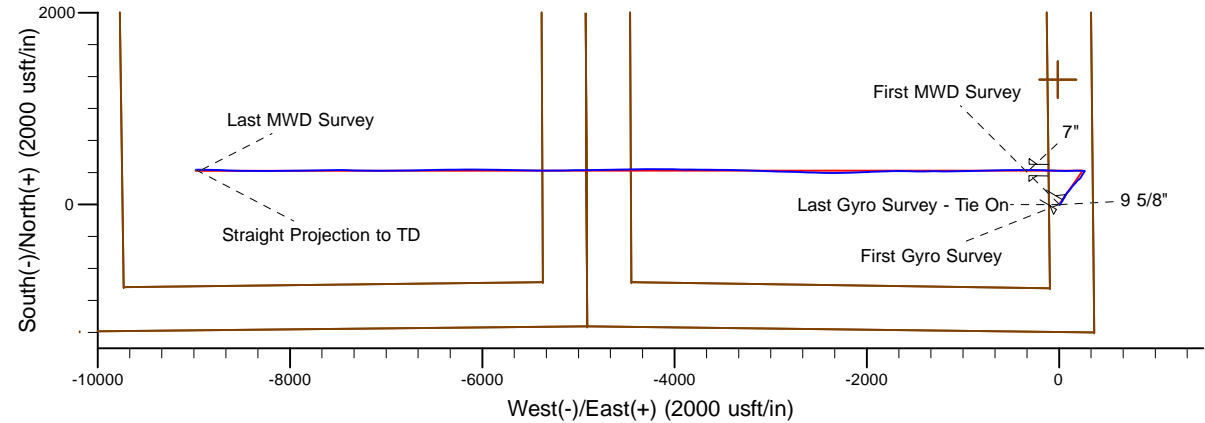
Project: Weld County, CO (NAD 83)
Site: Sec. 1-T4N-R65W (C06-32-A / G01-08-A/ C06-33-A)
Well: Coalview G02-64-1HN
Wellbore: Plan A
Design: Actual Surveys

Noble Energy

HALLIBURTON
Sperry Drilling

LEGEND

- Coalview G02-64-1HN, Plan A, Rev A0 Proposal V0
- Actual Surveys



Platted SHL: 1328 FSL, 351 FEL
Platted Lat/Long: 40.3376 N, 104.6033 W
Location: Sec. 1-T4N-R65W

~7" Casing: 1694' FSL, 668' FEL
Lat/Long: 40.338593N 104.604402W
State Planes - CO Northern: 1367450.88N 3249655.11E
Location: Sec. 1-T4N-R65W

Platted BHL: 1660' FSL, 1228' FWL
Lat/Long: 40.33881 N, 104.6355 W
State Planes - CO Northern: 1367443.92 N, 3240985.70 E
Location: Sec. 2-T4N-R65W

WELL DETAILS: Coalview G02-64-1HN

Ground Level: 4815.00
RKB=24' @ 4839.00usft (H&P 343)

Created By: Gordy Roth
Created On: 08/27/2014

Design Report for Coalview G02-64-1HN - Actual Surveys

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
365.00	0.40	51.77	365.00	0.79	1.00	-0.97	0.11
First Gyro Survey							
677.00	1.30	120.27	676.96	-0.32	4.91	-4.92	0.39
Last Gyro Survey - Tie On							
725.00	0.97	123.84	724.96	-0.82	5.72	-5.75	0.70
First MWD Survey							
817.00	1.08	130.61	816.94	-1.82	7.03	-7.09	0.18
910.00	1.27	134.19	909.92	-3.11	8.43	-8.55	0.22
1,003.00	1.37	325.00	1,002.91	-2.92	8.53	-8.64	2.83
1,200.00	1.38	317.04	1,199.86	0.75	5.56	-5.53	0.10
1,293.00	1.65	317.51	1,292.82	2.56	3.90	-3.79	0.29
1,385.00	1.70	314.42	1,384.78	4.49	2.03	-1.85	0.11
1,478.00	1.63	305.97	1,477.74	6.23	-0.03	0.27	0.27
1,571.00	1.82	301.49	1,570.70	7.78	-2.36	2.66	0.25
1,664.00	1.74	218.75	1,663.67	7.45	-4.50	4.79	2.53
1,757.00	1.49	213.70	1,756.63	5.34	-6.06	6.26	0.31
1,850.00	1.47	216.77	1,849.60	3.38	-7.44	7.57	0.09
1,942.00	1.57	223.78	1,941.57	1.52	-9.02	9.07	0.23
2,035.00	0.94	111.52	2,034.56	0.32	-9.19	9.20	2.27
2,126.00	0.93	75.58	2,125.55	0.23	-7.78	7.79	0.63
2,217.00	1.09	79.59	2,216.53	0.57	-6.22	6.23	0.19
2,310.00	1.29	90.56	2,309.51	0.72	-4.30	4.32	0.33
2,402.00	1.18	88.13	2,401.49	0.75	-2.32	2.34	0.13
2,495.00	1.60	77.79	2,494.46	1.05	-0.09	0.13	0.52
2,589.00	5.84	57.52	2,588.25	3.90	5.23	-5.07	4.65
2,684.00	6.04	46.65	2,682.74	9.92	12.94	-12.54	1.20
2,778.00	6.75	37.93	2,776.16	17.68	19.93	-19.23	1.28
2,872.00	7.11	36.12	2,869.47	26.73	26.76	-25.69	0.45
2,967.00	6.63	34.48	2,963.79	36.00	33.33	-31.89	0.55
3,062.00	7.70	28.95	3,058.05	46.09	39.51	-37.68	1.34
3,156.00	8.47	29.49	3,151.11	57.63	45.97	-43.68	0.82
3,251.00	7.60	27.26	3,245.18	69.30	52.29	-49.54	0.97
3,346.00	7.80	31.50	3,339.32	80.39	58.54	-55.35	0.63
3,440.00	7.37	31.09	3,432.50	90.99	64.98	-61.37	0.46
3,535.00	6.49	25.16	3,526.80	101.07	70.41	-66.41	1.19
3,630.00	6.07	28.18	3,621.23	110.35	75.07	-70.69	0.56
3,725.00	5.74	32.05	3,715.73	118.81	79.96	-75.25	0.54
3,820.00	6.98	45.80	3,810.15	126.86	86.62	-81.59	2.06
3,914.00	7.89	48.74	3,903.36	135.10	95.57	-90.21	1.05
4,009.00	9.09	38.85	3,997.32	145.24	105.18	-99.41	1.99
4,104.00	8.82	35.92	4,091.16	156.98	114.16	-107.93	0.56
4,199.00	7.60	36.29	4,185.19	167.95	122.15	-115.48	1.29
4,293.00	6.61	35.96	4,278.46	177.34	129.00	-121.97	1.05
4,388.00	6.39	37.86	4,372.85	185.93	135.46	-128.08	0.32
4,482.00	7.51	44.70	4,466.16	194.43	142.99	-135.27	1.48
4,576.00	8.26	41.72	4,559.27	203.84	151.80	-143.71	0.91
4,671.00	7.88	39.94	4,653.33	213.92	160.53	-152.03	0.48
4,766.00	7.19	37.74	4,747.51	223.62	168.35	-159.47	0.79
4,955.00	7.57	42.73	4,934.95	242.12	184.03	-174.42	0.39

Design Report for Coalview G02-64-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
5,049.00	8.27	53.00	5,028.06	250.73	193.63	-183.68	1.68
5,144.00	8.11	52.03	5,122.09	258.97	204.37	-194.08	0.22
5,239.00	9.45	40.33	5,215.98	269.04	214.71	-204.01	2.34
5,334.00	9.07	35.80	5,309.74	281.06	224.13	-212.96	0.86
5,429.00	7.77	32.88	5,403.72	292.52	232.00	-220.38	1.44
5,523.00	6.74	31.55	5,496.96	302.56	238.34	-226.31	1.11
5,618.00	6.26	30.48	5,591.35	311.78	243.88	-231.49	0.52
5,713.00	5.30	30.33	5,685.87	320.03	248.72	-236.01	1.01
5,808.00	4.60	28.59	5,780.51	327.16	252.76	-239.77	0.75
5,903.00	3.91	30.00	5,875.25	333.31	256.20	-242.97	0.73
5,997.00	3.22	32.30	5,969.07	338.32	259.22	-245.78	0.75
6,092.00	2.61	35.35	6,063.95	342.34	261.89	-248.30	0.66
6,186.00	2.32	34.83	6,157.86	345.64	264.22	-250.49	0.31
6,281.00	2.16	42.76	6,252.79	348.54	266.53	-252.69	0.37
6,375.00	6.95	270.64	6,346.58	349.90	262.04	-248.15	9.10
6,470.00	17.34	274.48	6,439.33	351.08	242.12	-228.20	10.96
6,564.00	16.77	273.67	6,529.20	353.04	214.63	-200.65	0.66
6,659.00	22.72	268.60	6,618.58	353.47	182.58	-168.61	6.51
6,708.00	30.25	266.61	6,662.40	352.50	160.77	-146.85	15.47
6,754.00	38.30	267.34	6,700.38	351.16	134.92	-121.07	17.52
6,849.00	48.97	269.79	6,769.05	349.65	69.48	-55.75	11.37
6,944.00	56.87	272.36	6,826.28	351.16	-6.22	19.96	8.59
7,039.00	65.51	272.18	6,872.02	354.45	-89.32	103.12	9.10
7,133.00	72.60	270.83	6,905.60	356.73	-177.02	190.84	7.66
7,227.00	80.12	270.81	6,927.76	358.04	-268.29	282.10	8.00
7,404.00	87.01	270.58	6,947.58	360.17	-444.06	457.81	3.89
7,499.00	89.51	268.31	6,950.47	359.25	-539.00	552.64	3.55
7,594.00	90.12	267.10	6,950.77	355.44	-633.92	647.34	1.43
7,689.00	90.86	268.79	6,949.96	352.04	-728.85	742.07	1.94
7,783.00	90.18	269.48	6,949.11	350.62	-822.83	835.92	1.03
7,878.00	89.23	269.70	6,949.60	349.94	-917.83	930.82	1.03
7,973.00	89.72	269.00	6,950.47	348.86	-1,012.82	1,025.69	0.90
8,067.00	90.52	268.49	6,950.27	346.80	-1,106.79	1,119.52	1.01
8,162.00	90.80	270.31	6,949.18	345.81	-1,201.78	1,214.39	1.94
8,257.00	89.72	270.17	6,948.74	346.20	-1,296.78	1,309.33	1.15
8,352.00	90.25	269.26	6,948.77	345.73	-1,391.77	1,404.24	1.11
8,445.00	90.25	270.97	6,948.36	345.92	-1,484.77	1,497.17	1.84
8,540.00	88.58	270.40	6,949.33	347.05	-1,579.75	1,592.12	1.86
8,635.00	88.86	270.96	6,951.46	348.18	-1,674.72	1,687.06	0.66
8,730.00	88.49	268.40	6,953.65	347.65	-1,769.69	1,781.94	2.72
8,825.00	88.21	268.26	6,956.39	344.88	-1,864.61	1,876.67	0.33
8,919.00	88.58	266.21	6,959.02	340.35	-1,958.46	1,970.27	2.22
9,014.00	91.73	266.79	6,958.76	334.55	-2,053.27	2,064.78	3.37
9,109.00	91.26	267.94	6,956.29	330.19	-2,148.13	2,159.41	1.31
9,204.00	92.87	270.03	6,952.86	328.50	-2,243.05	2,254.18	2.78
9,299.00	93.45	271.06	6,947.63	329.41	-2,337.90	2,348.99	1.24
9,394.00	93.05	270.81	6,942.24	330.95	-2,432.73	2,443.82	0.50
9,489.00	91.76	271.32	6,938.25	332.72	-2,527.63	2,538.71	1.46
9,583.00	88.00	272.20	6,938.45	335.60	-2,621.57	2,632.69	4.11
9,678.00	87.97	271.52	6,941.79	338.68	-2,716.46	2,727.63	0.72
9,773.00	88.52	271.23	6,944.70	340.96	-2,811.38	2,822.57	0.65

Design Report for Coalview G02-64-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
9,868.00	89.94	271.64	6,945.98	343.34	-2,906.34	2,917.55	1.56
9,962.00	89.01	271.87	6,946.84	346.22	-3,000.29	3,011.54	1.02
10,057.00	89.51	272.67	6,948.06	349.98	-3,095.21	3,106.53	0.99
10,150.00	88.52	271.86	6,949.66	353.66	-3,188.12	3,199.52	1.38
10,242.00	89.17	271.70	6,951.52	356.52	-3,280.06	3,291.50	0.73
10,335.00	90.80	270.43	6,951.54	358.24	-3,373.04	3,384.47	2.22
10,428.00	89.75	271.22	6,951.10	359.58	-3,466.02	3,477.44	1.41
10,521.00	90.06	271.06	6,951.25	361.43	-3,559.01	3,570.42	0.38
10,613.00	88.09	270.65	6,952.74	362.81	-3,650.98	3,662.38	2.19
10,706.00	88.65	270.54	6,955.38	363.77	-3,743.94	3,755.30	0.61
10,799.00	89.88	270.61	6,956.57	364.70	-3,836.92	3,848.25	1.32
10,891.00	88.92	270.85	6,957.54	365.88	-3,928.91	3,940.22	1.08
10,984.00	88.64	270.20	6,959.52	366.73	-4,021.88	4,033.15	0.76
11,076.00	89.54	271.23	6,960.98	367.88	-4,113.86	4,125.11	1.49
11,167.00	89.66	269.14	6,961.61	368.17	-4,204.85	4,216.04	2.30
11,259.00	89.54	269.55	6,962.26	367.12	-4,296.85	4,307.92	0.46
11,351.00	89.48	269.22	6,963.04	366.13	-4,388.84	4,399.80	0.36
11,444.00	89.32	269.67	6,964.02	365.23	-4,481.83	4,492.69	0.51
11,536.00	89.01	269.65	6,965.36	364.68	-4,573.82	4,584.58	0.34
11,629.00	90.22	268.65	6,965.98	363.30	-4,666.80	4,677.44	1.69
11,722.00	91.67	268.18	6,964.45	360.73	-4,759.75	4,770.22	1.64
11,814.00	91.17	268.88	6,962.17	358.37	-4,851.69	4,862.00	0.93
11,909.00	90.31	270.40	6,960.94	357.78	-4,946.68	4,956.89	1.84
12,004.00	89.48	269.47	6,961.12	357.67	-5,041.67	5,051.81	1.31
12,099.00	90.28	268.45	6,961.31	355.94	-5,136.66	5,146.65	1.36
12,194.00	90.92	269.81	6,960.32	354.50	-5,231.64	5,241.50	1.58
12,288.00	89.94	270.05	6,959.61	354.39	-5,325.63	5,335.42	1.07
12,383.00	90.15	270.12	6,959.54	354.53	-5,420.63	5,430.35	0.23
12,478.00	88.67	271.39	6,960.52	355.78	-5,515.62	5,525.31	2.05
12,573.00	89.26	270.67	6,962.23	357.49	-5,610.58	5,620.27	0.98
12,668.00	87.93	271.24	6,964.56	359.07	-5,705.54	5,715.22	1.52
12,762.00	88.49	270.80	6,967.50	360.74	-5,799.48	5,809.15	0.76
12,857.00	88.77	270.74	6,969.77	362.02	-5,894.44	5,904.09	0.30
12,952.00	89.54	270.60	6,971.17	363.13	-5,989.42	5,999.05	0.82
13,047.00	90.52	270.55	6,971.12	364.08	-6,084.42	6,094.01	1.03
13,142.00	88.61	269.77	6,971.84	364.35	-6,179.41	6,188.93	2.17
13,237.00	89.35	269.29	6,973.53	363.57	-6,274.39	6,283.81	0.93
13,331.00	90.65	269.15	6,973.53	362.29	-6,368.38	6,377.68	1.39
13,426.00	88.65	269.85	6,974.11	361.46	-6,463.37	6,472.56	2.23
13,521.00	90.09	269.52	6,975.16	360.94	-6,558.36	6,567.46	1.56
13,616.00	90.25	267.95	6,974.88	358.84	-6,653.33	6,662.28	1.66
13,711.00	90.52	267.11	6,974.24	354.75	-6,748.24	6,756.95	0.93
13,806.00	89.78	269.43	6,973.99	351.88	-6,843.19	6,851.72	2.56
13,900.00	88.86	270.42	6,975.11	351.76	-6,937.18	6,945.63	1.44
13,995.00	89.88	270.09	6,976.15	352.18	-7,032.17	7,040.57	1.13
14,089.00	88.55	270.94	6,977.44	353.02	-7,126.16	7,134.51	1.68
14,184.00	89.20	270.70	6,979.30	354.38	-7,221.13	7,229.47	0.73
14,279.00	90.15	270.91	6,979.84	355.72	-7,316.12	7,324.43	1.02
14,373.00	88.30	271.50	6,981.11	357.69	-7,410.08	7,418.41	2.07
14,468.00	86.89	269.42	6,985.10	358.46	-7,504.99	7,513.27	2.64
14,562.00	87.51	269.98	6,989.69	357.97	-7,598.88	7,607.06	0.89

Design Report for Coalview G02-64-1HN - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
14,657.00	88.58	269.23	6,992.93	357.31	-7,693.82	7,701.90	1.38
14,751.00	88.70	268.81	6,995.16	355.70	-7,787.78	7,795.73	0.46
14,846.00	88.83	268.33	6,997.21	353.33	-7,882.72	7,890.51	0.52
14,941.00	89.20	269.70	6,998.85	351.70	-7,977.69	7,985.35	1.49
15,035.00	90.55	268.49	6,999.05	350.22	-8,071.68	8,079.20	1.93
15,130.00	90.37	269.37	6,998.29	348.44	-8,166.66	8,174.04	0.95
15,224.00	89.69	270.52	6,998.24	348.35	-8,260.65	8,267.96	1.42
15,319.00	89.66	270.73	6,998.78	349.39	-8,355.65	8,362.92	0.22
15,413.00	90.74	270.98	6,998.45	350.79	-8,449.63	8,456.89	1.18
15,508.00	90.56	271.51	6,997.37	352.85	-8,544.61	8,551.87	0.59
15,602.00	88.49	272.12	6,998.15	355.83	-8,638.55	8,645.86	2.30
15,697.00	89.51	271.61	6,999.81	358.92	-8,733.48	8,740.84	1.20
15,792.00	90.65	271.28	6,999.68	361.32	-8,828.45	8,835.83	1.25
15,880.00	91.23	270.64	6,998.23	362.79	-8,916.43	8,923.79	0.98
Last MWD Survey							
15,944.00	91.23	270.64	6,996.86	363.51	-8,980.41	8,987.75	0.00
Straight Projection to TD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
365.00	365.00	0.79	1.00	First Gyro Survey
677.00	676.96	-0.32	4.91	Last Gyro Survey - Tie On
725.00	724.96	-0.82	5.72	First MWD Survey
15,880.00	6,998.23	362.79	-8,916.43	Last MWD Survey
15,944.00	6,996.86	363.51	-8,980.41	Straight Projection to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Coalview G02-64-1HN BHL	272.24	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
365.00	677.00	Surface Surveys	Flexi-Shot
725.00	7,227.00	Intermediate Surveys	MWD+IFR1
7,404.00	15,944.00	Production Surveys	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
677.00	676.96	9 5/8"	9-5/8	12-1/4
7,270.00	6,934.51	7"	7	8-3/4

Design Report for Coalview G02-64-1HN - Actual Surveys

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 G02-64-1HN - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,367,092.28	3,249,965.85	40° 20' 15.360 N	104° 36' 11.880 W
Coalview G02-66-1HN - actual wellpath misses target center by 1300.65usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-13.00	1,300.52	-13.15	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
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 - actual wellpath misses target center by 1300.65usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-13.00	1,300.52	-13.15	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
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 - actual wellpath misses target center by 1300.65usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-13.00	1,300.52	-13.15	1,368,392.74	3,249,952.70	40° 20' 28.212 N	104° 36' 11.880 W
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 G02-64-1HN - actual wellpath misses target center by 23.56usft at 15944.00usft MD (6996.86 TVD, 363.51 N, -8980.41 E) - Point	0.00	0.00	6,976.50	351.65	-8,980.52	1,367,443.92	3,240,985.70	40° 20' 19.716 N	104° 38' 7.800 W

Directional Difficulty Index

Average Dogleg over Survey:	1.61 °/100usft	Maximum Dogleg over Survey:	17.52 °/100usft at 6,754.00 usft
Net Tortousity applicable to Plans:	0.94 °/100usft	Directional Difficulty Index:	6.755

Audit Info

North Reference Sheet for Sec. 1-T4N-R65W (C06-32-A / G01-08-A/ C06-33-A) - Coalview G02-64-1HN - Plan A

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 (H&P 343). Northing and Easting are relative to Coalview G02-64-1HN

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: 1,367,092.28 usft N, 3,249,965.85 usft E

Geographical Coordinates of Well: 40° 20' 15.36" N, 104° 36' 11.88" W

Grid Convergence at Surface is: 0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,944.00usft the Bottom Hole Displacement is 8,987.76usft in the Direction of 272.32° (Grid).

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

