



NPR 23A-9 596
 Plan #2 (3-06-18)
 7:07, March 16 2018

Azimuths to True North
 Magnetic North: 9.62°

Magnetic Field
 Strength: 51484.8snT
 Dip Angle: 65.85°
 Date: 3/16/2018
 Model: HDGM

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SHL 1706'FNL, 2462'FWL, SEC.9	1.0	0.0	0.0	39.632158	-108.174154	Point
BHL 2347'FNL, 1308'FEL, SEC.9	10146.0	-641.6	1510.6	39.630396	-108.168791	Ellipse (Radii: L200.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	400.0	3.00	160.00	400.0	-2.5	0.9	3.00	160.00	1.8	
4	902.0	16.75	108.63	893.8	-38.1	74.4	3.00	-60.08	83.4	
5	6501.3	16.75	108.63	6255.5	-553.8	1603.9	0.00	0.00	1692.7	
6	7059.8	0.00	0.00	6806.0	-579.7	1680.7	3.00	180.00	1773.6	
7	7385.9	3.26	250.00	7131.9	-582.9	1672.0	1.00	250.00	1766.8	
8	10404.9	3.26	250.00	10146.0	-641.6	1510.6	0.00	0.00	1641.2	BHL 2347'FNL, 1308'FEL, SEC.9



Directional

Caerus Oil and Gas LLC

SEC.9-T5S-R96W

NPR G09 596 Pad Sec.9-T5S-R96W

NPR 23A-9 596

Wellbore #1

Plan: Plan #2 (3-06-18)

Standard Planning Report

16 March, 2018

Database:	US_EDM	Local Co-ordinate Reference:	Well NPR 23A-9 596
Company:	Caerus Oil and Gas LLC	TVD Reference:	WELL @ 7670.0ft (Original Well Elev)
Project:	SEC.9-T5S-R96W	MD Reference:	WELL @ 7670.0ft (Original Well Elev)
Site:	NPR G09 596 Pad Sec.9-T5S-R96W	North Reference:	True
Well:	NPR 23A-9 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (3-06-18)		

Project	SEC.9-T5S-R96W, Garfield County, CO		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		Using Well Reference Point
Map Zone:	Zone 12N (114 W to 108 W)		Using geodetic scale factor

Site	NPR G09 596 Pad Sec.9-T5S-R96W				
Site Position:	Northing:	14,404,590.33 usft	Latitude:	39.632067	
From:	Lat/Long	Easting:	2,436,015.01 usft	Longitude:	-108.174492
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	1.80 °

Well	NPR 23A-9 596					
Well Position	+N/-S	33.0 ft	Northing:	14,404,626.36 usft	Latitude:	39.632158
	+E/-W	95.0 ft	Easting:	2,436,108.93 usft	Longitude:	-108.174155
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	7,640.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/16/2018	9.62	65.85	51,485

Design	Plan #2 (3-06-18)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	113.01

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	3.00	160.00	400.0	-2.5	0.9	3.00	3.00	0.00	160.00	
902.0	16.75	108.63	893.8	-38.1	74.4	3.00	2.74	-10.23	-60.08	
6,501.3	16.75	108.63	6,255.5	-553.8	1,603.9	0.00	0.00	0.00	0.00	
7,059.8	0.00	0.00	6,806.0	-579.7	1,680.7	3.00	-3.00	0.00	180.00	
7,385.9	3.26	250.00	7,131.9	-582.9	1,672.0	1.00	1.00	-33.74	250.00	
10,404.9	3.26	250.00	10,146.0	-641.6	1,510.6	0.00	0.00	0.00	0.00	BHL 2347°FNL, 1308'

Database:	US_EDM	Local Co-ordinate Reference:	Well NPR 23A-9 596
Company:	Caerus Oil and Gas LLC	TVD Reference:	WELL @ 7670.0ft (Original Well Elev)
Project:	SEC.9-T5S-R96W	MD Reference:	WELL @ 7670.0ft (Original Well Elev)
Site:	NPR G09 596 Pad Sec.9-T5S-R96W	North Reference:	True
Well:	NPR 23A-9 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (3-06-18)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 1706'FNL, 2462'FWL, SEC.9										
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
400.0	3.00	160.00	400.0	-2.5	0.9	1.8	3.00	3.00	0.00	
500.0	5.19	129.93	499.7	-7.8	5.3	7.9	3.00	2.19	-30.07	
600.0	7.93	118.97	599.0	-14.1	14.8	19.1	3.00	2.74	-10.95	
700.0	10.81	113.71	697.7	-21.2	29.4	35.3	3.00	2.88	-5.26	
800.0	13.74	110.66	795.4	-29.2	49.1	56.6	3.00	2.93	-3.05	
900.0	16.70	108.66	891.9	-37.9	73.8	82.8	3.00	2.95	-1.99	
902.0	16.75	108.63	893.8	-38.1	74.4	83.4	3.00	2.96	-1.64	
1,000.0	16.75	108.63	987.6	-47.2	101.1	111.5	0.00	0.00	0.00	
1,100.0	16.75	108.63	1,083.4	-56.4	128.5	140.3	0.00	0.00	0.00	
1,200.0	16.75	108.63	1,179.2	-65.6	155.8	169.0	0.00	0.00	0.00	
1,300.0	16.75	108.63	1,274.9	-74.8	183.1	197.8	0.00	0.00	0.00	
1,400.0	16.75	108.63	1,370.7	-84.0	210.4	226.5	0.00	0.00	0.00	
1,500.0	16.75	108.63	1,466.4	-93.2	237.7	255.2	0.00	0.00	0.00	
1,600.0	16.75	108.63	1,562.2	-102.4	265.0	284.0	0.00	0.00	0.00	
1,700.0	16.75	108.63	1,657.9	-111.6	292.4	312.7	0.00	0.00	0.00	
1,800.0	16.75	108.63	1,753.7	-120.8	319.7	341.5	0.00	0.00	0.00	
1,900.0	16.75	108.63	1,849.4	-130.0	347.0	370.2	0.00	0.00	0.00	
2,000.0	16.75	108.63	1,945.2	-139.2	374.3	399.0	0.00	0.00	0.00	
2,100.0	16.75	108.63	2,040.9	-148.5	401.6	427.7	0.00	0.00	0.00	
2,123.0	16.75	108.63	2,063.0	-150.6	407.9	434.3	0.00	0.00	0.00	
WASATCH.MBL										
2,200.0	16.75	108.63	2,136.7	-157.7	428.9	456.4	0.00	0.00	0.00	
2,300.0	16.75	108.63	2,232.5	-166.9	456.3	485.2	0.00	0.00	0.00	
2,400.0	16.75	108.63	2,328.2	-176.1	483.6	513.9	0.00	0.00	0.00	
2,500.0	16.75	108.63	2,424.0	-185.3	510.9	542.7	0.00	0.00	0.00	
2,579.4	16.75	108.63	2,500.0	-192.6	532.6	565.5	0.00	0.00	0.00	
9 5/8"										
2,600.0	16.75	108.63	2,519.7	-194.5	538.2	571.4	0.00	0.00	0.00	
2,700.0	16.75	108.63	2,615.5	-203.7	565.5	600.1	0.00	0.00	0.00	
2,800.0	16.75	108.63	2,711.2	-212.9	592.8	628.9	0.00	0.00	0.00	
2,900.0	16.75	108.63	2,807.0	-222.1	620.1	657.6	0.00	0.00	0.00	
3,000.0	16.75	108.63	2,902.7	-231.3	647.5	686.4	0.00	0.00	0.00	
3,100.0	16.75	108.63	2,998.5	-240.6	674.8	715.1	0.00	0.00	0.00	
3,200.0	16.75	108.63	3,094.3	-249.8	702.1	743.9	0.00	0.00	0.00	
3,300.0	16.75	108.63	3,190.0	-259.0	729.4	772.6	0.00	0.00	0.00	
3,400.0	16.75	108.63	3,285.8	-268.2	756.7	801.3	0.00	0.00	0.00	
3,500.0	16.75	108.63	3,381.5	-277.4	784.0	830.1	0.00	0.00	0.00	
3,600.0	16.75	108.63	3,477.3	-286.6	811.4	858.8	0.00	0.00	0.00	
3,700.0	16.75	108.63	3,573.0	-295.8	838.7	887.6	0.00	0.00	0.00	
3,800.0	16.75	108.63	3,668.8	-305.0	866.0	916.3	0.00	0.00	0.00	
3,900.0	16.75	108.63	3,764.5	-314.2	893.3	945.1	0.00	0.00	0.00	
4,000.0	16.75	108.63	3,860.3	-323.4	920.6	973.8	0.00	0.00	0.00	
4,100.0	16.75	108.63	3,956.0	-332.6	947.9	1,002.5	0.00	0.00	0.00	
4,200.0	16.75	108.63	4,051.8	-341.9	975.2	1,031.3	0.00	0.00	0.00	
4,300.0	16.75	108.63	4,147.6	-351.1	1,002.6	1,060.0	0.00	0.00	0.00	
4,400.0	16.75	108.63	4,243.3	-360.3	1,029.9	1,088.8	0.00	0.00	0.00	
4,500.0	16.75	108.63	4,339.1	-369.5	1,057.2	1,117.5	0.00	0.00	0.00	

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Well:	NPR 23A-9 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (3-06-18)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,600.0	16.75	108.63	4,434.8	-378.7	1,084.5	1,146.3	0.00	0.00	0.00	
4,629.4	16.75	108.63	4,463.0	-381.4	1,092.5	1,154.7	0.00	0.00	0.00	
WASATCH_G_ZONE.MBL										
4,700.0	16.75	108.63	4,530.6	-387.9	1,111.8	1,175.0	0.00	0.00	0.00	
4,800.0	16.75	108.63	4,626.3	-397.1	1,139.1	1,203.7	0.00	0.00	0.00	
4,900.0	16.75	108.63	4,722.1	-406.3	1,166.5	1,232.5	0.00	0.00	0.00	
5,000.0	16.75	108.63	4,817.8	-415.5	1,193.8	1,261.2	0.00	0.00	0.00	
5,007.5	16.75	108.63	4,825.0	-416.2	1,195.8	1,263.4	0.00	0.00	0.00	
FORT_UNION.MBL										
5,100.0	16.75	108.63	4,913.6	-424.7	1,221.1	1,290.0	0.00	0.00	0.00	
5,200.0	16.75	108.63	5,009.4	-434.0	1,248.4	1,318.7	0.00	0.00	0.00	
5,300.0	16.75	108.63	5,105.1	-443.2	1,275.7	1,347.4	0.00	0.00	0.00	
5,400.0	16.75	108.63	5,200.9	-452.4	1,303.0	1,376.2	0.00	0.00	0.00	
5,500.0	16.75	108.63	5,296.6	-461.6	1,330.4	1,404.9	0.00	0.00	0.00	
5,600.0	16.75	108.63	5,392.4	-470.8	1,357.7	1,433.7	0.00	0.00	0.00	
5,700.0	16.75	108.63	5,488.1	-480.0	1,385.0	1,462.4	0.00	0.00	0.00	
5,800.0	16.75	108.63	5,583.9	-489.2	1,412.3	1,491.2	0.00	0.00	0.00	
5,900.0	16.75	108.63	5,679.6	-498.4	1,439.6	1,519.9	0.00	0.00	0.00	
6,000.0	16.75	108.63	5,775.4	-507.6	1,466.9	1,548.6	0.00	0.00	0.00	
6,100.0	16.75	108.63	5,871.2	-516.8	1,494.2	1,577.4	0.00	0.00	0.00	
6,200.0	16.75	108.63	5,966.9	-526.0	1,521.6	1,606.1	0.00	0.00	0.00	
6,300.0	16.75	108.63	6,062.7	-535.3	1,548.9	1,634.9	0.00	0.00	0.00	
6,400.0	16.75	108.63	6,158.4	-544.5	1,576.2	1,663.6	0.00	0.00	0.00	
6,500.0	16.75	108.63	6,254.2	-553.7	1,603.5	1,692.4	0.00	0.00	0.00	
6,501.3	16.75	108.63	6,255.5	-553.8	1,603.9	1,692.7	0.00	0.00	0.00	
6,600.0	13.79	108.63	6,350.6	-562.1	1,628.5	1,718.7	3.00	-3.00	0.00	
6,700.0	10.79	108.63	6,448.3	-568.9	1,648.7	1,739.9	3.00	-3.00	0.00	
6,800.0	7.79	108.63	6,547.0	-574.1	1,664.0	1,756.0	3.00	-3.00	0.00	
6,860.4	5.98	108.63	6,607.0	-576.4	1,670.8	1,763.2	3.00	-3.00	0.00	
OHIO_CREEK.MBL										
6,900.0	4.79	108.63	6,646.4	-577.6	1,674.4	1,766.9	3.00	-3.00	0.00	
7,000.0	1.79	108.63	6,746.2	-579.4	1,679.8	1,772.6	3.00	-3.00	0.00	
7,059.8	0.00	0.00	6,806.0	-579.7	1,680.7	1,773.6	3.00	-3.00	0.00	
7,100.0	0.40	250.00	6,846.2	-579.7	1,680.6	1,773.5	1.00	1.00	0.00	
7,109.8	0.50	250.00	6,856.0	-579.8	1,680.5	1,773.4	1.00	1.00	0.00	
WILLIAMS_FORK.MBL										
7,159.8	1.00	250.00	6,906.0	-580.0	1,679.9	1,772.9	1.00	1.00	0.00	
TOP_GAS.MBL										
7,200.0	1.40	250.00	6,946.2	-580.3	1,679.1	1,772.3	1.00	1.00	0.00	
7,300.0	2.40	250.00	7,046.1	-581.4	1,676.0	1,769.9	1.00	1.00	0.00	
7,385.9	3.26	250.00	7,131.9	-582.9	1,672.0	1,766.8	1.00	1.00	0.00	
7,400.0	3.26	250.00	7,146.0	-583.1	1,671.2	1,766.2	0.00	0.00	0.00	
7,500.0	3.26	250.00	7,245.8	-585.1	1,665.9	1,762.0	0.00	0.00	0.00	
7,600.0	3.26	250.00	7,345.7	-587.0	1,660.5	1,757.9	0.00	0.00	0.00	
7,700.0	3.26	250.00	7,445.5	-589.0	1,655.2	1,753.7	0.00	0.00	0.00	
7,800.0	3.26	250.00	7,545.3	-590.9	1,649.8	1,749.6	0.00	0.00	0.00	
7,900.0	3.26	250.00	7,645.2	-592.9	1,644.5	1,745.4	0.00	0.00	0.00	
8,000.0	3.26	250.00	7,745.0	-594.8	1,639.2	1,741.2	0.00	0.00	0.00	
8,100.0	3.26	250.00	7,844.9	-596.8	1,633.8	1,737.1	0.00	0.00	0.00	
8,200.0	3.26	250.00	7,944.7	-598.7	1,628.5	1,732.9	0.00	0.00	0.00	
8,300.0	3.26	250.00	8,044.5	-600.7	1,623.1	1,728.8	0.00	0.00	0.00	
8,400.0	3.26	250.00	8,144.4	-602.6	1,617.8	1,724.6	0.00	0.00	0.00	
8,500.0	3.26	250.00	8,244.2	-604.5	1,612.4	1,720.5	0.00	0.00	0.00	
8,600.0	3.26	250.00	8,344.0	-606.5	1,607.1	1,716.3	0.00	0.00	0.00	

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Site:	NPR G09 596 Pad Sec.9-T5S-R96W	North Reference:	True
Well:	NPR 23A-9 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (3-06-18)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,700.0	3.26	250.00	8,443.9	-608.4	1,601.7	1,712.1	0.00	0.00	0.00	
8,800.0	3.26	250.00	8,543.7	-610.4	1,596.4	1,708.0	0.00	0.00	0.00	
8,900.0	3.26	250.00	8,643.6	-612.3	1,591.1	1,703.8	0.00	0.00	0.00	
9,000.0	3.26	250.00	8,743.4	-614.3	1,585.7	1,699.7	0.00	0.00	0.00	
9,100.0	3.26	250.00	8,843.2	-616.2	1,580.4	1,695.5	0.00	0.00	0.00	
9,200.0	3.26	250.00	8,943.1	-618.2	1,575.0	1,691.3	0.00	0.00	0.00	
9,300.0	3.26	250.00	9,042.9	-620.1	1,569.7	1,687.2	0.00	0.00	0.00	
9,400.0	3.26	250.00	9,142.8	-622.1	1,564.3	1,683.0	0.00	0.00	0.00	
9,500.0	3.26	250.00	9,242.6	-624.0	1,559.0	1,678.9	0.00	0.00	0.00	
9,554.5	3.26	250.00	9,297.0	-625.1	1,556.1	1,676.6	0.00	0.00	0.00	
CAMEO.MBL										
9,600.0	3.26	250.00	9,342.4	-625.9	1,553.6	1,674.7	0.00	0.00	0.00	
9,700.0	3.26	250.00	9,442.3	-627.9	1,548.3	1,670.5	0.00	0.00	0.00	
9,800.0	3.26	250.00	9,542.1	-629.8	1,543.0	1,666.4	0.00	0.00	0.00	
9,900.0	3.26	250.00	9,641.9	-631.8	1,537.6	1,662.2	0.00	0.00	0.00	
10,000.0	3.26	250.00	9,741.8	-633.7	1,532.3	1,658.1	0.00	0.00	0.00	
10,100.0	3.26	250.00	9,841.6	-635.7	1,526.9	1,653.9	0.00	0.00	0.00	
10,200.0	3.26	250.00	9,941.5	-637.6	1,521.6	1,649.8	0.00	0.00	0.00	
10,229.6	3.26	250.00	9,971.0	-638.2	1,520.0	1,648.5	0.00	0.00	0.00	
ROLLINS.MBL										
10,300.0	3.26	250.00	10,041.3	-639.6	1,516.2	1,645.6	0.00	0.00	0.00	
10,400.0	3.26	250.00	10,141.1	-641.5	1,510.9	1,641.4	0.00	0.00	0.00	
10,404.9	3.26	250.00	10,146.0	-641.6	1,510.6	1,641.2	0.00	0.00	0.00	
TD.MBL - BHL 2347'FNL, 1308'FEL, SEC.9										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 1706'FNL, 2462'FM - hit/miss target - Shape - Point	0.00	0.00	1.0	0.0	0.0	14,404,626.36	2,436,108.93	39.632158	-108.174155	
BHL 2347'FNL, 1308'FE - plan hits target center - Ellipse (radii L200.0 W100.0 on 250.00 azi)	0.00	0.00	10,146.0	-641.6	1,510.6	14,404,032.43	2,437,639.49	39.630396	-108.168792	

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")		
2,579.4	2,500.0	9 5/8"	9-5/8	12-1/4		

Database:	US_EDM	Local Co-ordinate Reference:	Well NPR 23A-9 596
Company:	Caerus Oil and Gas LLC	TVD Reference:	WELL @ 7670.0ft (Original Well Elev)
Project:	SEC.9-T5S-R96W	MD Reference:	WELL @ 7670.0ft (Original Well Elev)
Site:	NPR G09 596 Pad Sec.9-T5S-R96W	North Reference:	True
Well:	NPR 23A-9 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (3-06-18)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,123.0	2,063.0	WASATCH.MBL		0.00		
4,629.4	4,463.0	WASATCH_G_ZONE.MBL		0.00		
5,007.5	4,825.0	FORT_UNION.MBL		0.00		
6,860.4	6,607.0	OHIO_CREEK.MBL		0.00		
7,109.8	6,856.0	WILLIAMS_FORK.MBL		0.00		
7,159.8	6,906.0	TOP_GAS.MBL		0.00		
9,554.5	9,297.0	CAMEO.MBL		0.00		
10,229.6	9,971.0	ROLLINS.MBL		0.00		
10,404.9	10,146.0	TD.MBL		0.00		