

# **ConocoPhillips RBU Gold Data**

**Niobrara Central Zone**

**Rush**

**Rush 4-65 29-30 4CH**

**Rush 4-65 29-30 4CH**

**Plan: Design A**

## **Standard Planning Report**

**30 August, 2018**

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Rush 4-65 29-30 4CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Site:</b>	Rush	<b>North Reference:</b>	True
<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

<b>Project</b>	Niobrara Central Zone, Colorado Central Zone, FIPS Zone: 0502		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		Using geodetic scale factor

Site	Rush				
Site Position:		Northing:	1,674,265.179 usft	Latitude:	39° 40' 55.358 N
From:	Lat/Long	Easting:	3,220,614.549 usft	Longitude:	104° 42' 58.151 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.49 °

Well	Rush 4-65 29-30 4CH					
Well Position	+N/-S	-4,071.19 ft	Northing:	1,670,289.004 usft	Latitude:	39° 40' 15.100 N
	+E/-W	10,988.08 ft	Easting:	3,231,637.186 usft	Longitude:	104° 40' 37.630 W
Position Uncertainty		2.00 ft	Wellhead Elevation:	5,695.50 ft	Ground Level:	5,695.50 ft

<b>Wellbore</b>	Rush 4-65 29-30 4CH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2018	12/1/2018	8.14	66.27	51,839.68280891

Design	Design A				
Audit Notes:					
Version:	0	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	267.25	

<b>Plan Survey Tool Program</b>	<b>Date</b>	8/29/2018			
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	2,216.00	Design A (Rush 4-65 29-30 4CH)Gyro-BM-MS		
			Gyro - bat/mem drop m/s		
2	2,216.00	5,286.00	Design A (Rush 4-65 29-30 4CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
3	5,286.00	6,589.52	Design A (Rush 4-65 29-30 4CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
4	6,589.52	7,556.01	Design A (Rush 4-65 29-30 4CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
5	7,556.01	8,334.87	Design A (Rush 4-65 29-30 4CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
6	8,334.87	18,113.01	Design A (Rush 4-65 29-30 4CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		

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<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,286.00	0.00	0.00	5,286.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,589.52	19.55	217.50	6,564.36	-174.76	-134.08	1.50	1.50	0.00	217.50	
7,556.01	19.55	217.50	7,475.13	-431.38	-330.99	0.00	0.00	0.00	0.00	
8,334.87	89.56	270.23	7,915.00	-552.45	-888.32	10.00	8.99	6.77	54.48	Rush 4-65 29-30 4CH
18,113.01	89.56	270.23	7,990.00	-512.80	-10,666.09	0.00	0.00	0.00	0.00	Rush 4-65 29-30 4CH

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<b>Site:</b>	Rush	<b>North Reference:</b>	True
<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

Planned Survey									
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)
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
<b>SHL: 1256' FSL, 422' FWL</b>									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,747.00	0.00	0.00	1,747.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Top</b>									
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,016.00	0.00	0.00	2,016.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre Top - Fox Hills Base - 9-5/8" Casing</b>									
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,216.00	0.00	0.00	2,216.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Surface Casing</b>									
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00

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<b>Site:</b>	Rush	<b>North Reference:</b>	True
<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

Planned Survey									
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)
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,286.00	0.00	0.00	5,286.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.21	217.50	5,300.00	-0.02	-0.02	0.02	1.50	1.50	0.00
5,400.00	1.71	217.50	5,399.98	-1.35	-1.04	1.10	1.50	1.50	0.00
5,500.00	3.21	217.50	5,499.89	-4.75	-3.65	3.87	1.50	1.50	0.00
5,600.00	4.71	217.50	5,599.65	-10.23	-7.85	8.33	1.50	1.50	0.00
5,700.00	6.21	217.50	5,699.19	-17.78	-13.64	14.48	1.50	1.50	0.00
5,800.00	7.71	217.50	5,798.45	-27.40	-21.02	22.31	1.50	1.50	0.00
5,900.00	9.21	217.50	5,897.36	-39.07	-29.98	31.82	1.50	1.50	0.00
6,000.00	10.71	217.50	5,995.85	-52.79	-40.50	42.99	1.50	1.50	0.00
6,100.00	12.21	217.50	6,093.85	-68.55	-52.60	55.83	1.50	1.50	0.00
6,200.00	13.71	217.50	6,191.30	-86.35	-66.25	70.32	1.50	1.50	0.00
6,300.00	15.21	217.50	6,288.13	-106.16	-81.45	86.45	1.50	1.50	0.00
6,400.00	16.71	217.50	6,384.28	-127.97	-98.19	104.22	1.50	1.50	0.00
6,500.00	18.21	217.50	6,479.66	-151.77	-116.45	123.60	1.50	1.50	0.00
6,589.52	19.55	217.50	6,564.37	-174.76	-134.08	142.32	1.50	1.50	0.00
<b>EOB: 1081' FSL, 288' FWL</b>									
6,600.00	19.55	217.50	6,574.24	-177.54	-136.22	144.59	0.00	0.00	0.00
6,700.00	19.55	217.50	6,668.48	-204.09	-156.59	166.21	0.00	0.00	0.00
6,800.00	19.55	217.50	6,762.71	-230.64	-176.97	187.84	0.00	0.00	0.00
6,900.00	19.55	217.50	6,856.94	-257.20	-197.34	209.46	0.00	0.00	0.00
7,000.00	19.55	217.50	6,951.18	-283.75	-217.71	231.09	0.00	0.00	0.00
7,100.00	19.55	217.50	7,045.41	-310.30	-238.08	252.71	0.00	0.00	0.00
7,200.00	19.55	217.50	7,139.64	-336.85	-258.46	274.33	0.00	0.00	0.00
7,300.00	19.55	217.50	7,233.88	-363.41	-278.83	295.96	0.00	0.00	0.00
7,400.00	19.55	217.50	7,328.11	-389.96	-299.20	317.58	0.00	0.00	0.00
7,500.00	19.55	217.50	7,422.34	-416.51	-319.57	339.21	0.00	0.00	0.00
7,556.01	19.55	217.50	7,475.12	-431.38	-330.98	351.32	0.00	0.00	0.00
<b>KOP: 825' FSL, 91' FWL</b>									
7,600.00	22.38	226.93	7,516.21	-442.95	-341.59	362.47	10.00	6.44	21.45
7,650.00	26.11	235.08	7,561.80	-455.76	-357.58	379.05	10.00	7.45	16.29
7,700.00	30.19	241.23	7,605.89	-468.11	-377.63	399.67	10.00	8.15	12.32
7,750.00	34.49	246.02	7,648.13	-479.92	-401.60	424.18	10.00	8.60	9.57
7,800.00	38.93	249.84	7,688.21	-491.10	-429.30	452.39	10.00	8.90	7.65
7,850.00	43.49	252.99	7,725.82	-501.55	-460.52	484.07	10.00	9.10	6.29
7,900.00	48.11	255.65	7,760.67	-511.21	-495.02	519.00	10.00	9.25	5.31
7,949.17	52.71	257.91	7,792.00	-519.85	-531.90	556.25	10.00	9.35	4.60
<b>Niobrara Top</b>									
7,950.00	52.79	257.94	7,792.50	-519.98	-532.54	556.90	10.00	9.40	4.30
8,000.00	57.50	259.97	7,821.07	-527.82	-572.80	597.49	10.00	9.43	4.05
8,050.00	62.25	261.79	7,846.16	-534.66	-615.49	640.46	10.00	9.49	3.65
8,100.00	67.02	263.46	7,867.58	-540.44	-660.28	685.47	10.00	9.53	3.34
8,150.00	71.80	265.02	7,885.16	-545.13	-706.84	732.20	10.00	9.57	3.11
8,200.00	76.59	266.49	7,898.77	-548.69	-754.80	780.28	10.00	9.59	2.94
8,230.04	79.48	267.34	7,905.00	-550.27	-784.14	809.66	10.00	9.60	2.85
<b>C Chalk Top</b>									
8,250.00	81.40	267.90	7,908.32	-551.08	-803.81	829.34	10.00	9.61	2.80
8,300.00	86.21	269.28	7,913.71	-552.30	-853.48	879.02	10.00	9.62	2.76

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<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

Planned Survey									
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)
8,334.87	89.56	270.23	7,915.00	-552.45	-888.32	913.83	10.00	9.62	2.73
<b>BPI/LP: 700' FSL, 460' FEL</b>									
8,400.00	89.56	270.23	7,915.50	-552.19	-953.45	978.87	0.00	0.00	0.00
8,500.00	89.56	270.23	7,916.27	-551.78	-1,053.45	1,078.73	0.00	0.00	0.00
8,600.00	89.56	270.23	7,917.03	-551.38	-1,153.44	1,178.59	0.00	0.00	0.00
8,700.00	89.56	270.23	7,917.80	-550.97	-1,253.44	1,278.45	0.00	0.00	0.00
8,800.00	89.56	270.23	7,918.57	-550.56	-1,353.44	1,378.31	0.00	0.00	0.00
8,900.00	89.56	270.23	7,919.33	-550.16	-1,453.43	1,478.18	0.00	0.00	0.00
9,000.00	89.56	270.23	7,920.10	-549.75	-1,553.43	1,578.04	0.00	0.00	0.00
9,100.00	89.56	270.23	7,920.87	-549.35	-1,653.42	1,677.90	0.00	0.00	0.00
9,200.00	89.56	270.23	7,921.64	-548.94	-1,753.42	1,777.76	0.00	0.00	0.00
9,300.00	89.56	270.23	7,922.40	-548.54	-1,853.42	1,877.62	0.00	0.00	0.00
9,400.00	89.56	270.23	7,923.17	-548.13	-1,953.41	1,977.48	0.00	0.00	0.00
9,500.00	89.56	270.23	7,923.94	-547.73	-2,053.41	2,077.34	0.00	0.00	0.00
9,600.00	89.56	270.23	7,924.70	-547.32	-2,153.41	2,177.21	0.00	0.00	0.00
9,700.00	89.56	270.23	7,925.47	-546.92	-2,253.40	2,277.07	0.00	0.00	0.00
9,800.00	89.56	270.23	7,926.24	-546.51	-2,353.40	2,376.93	0.00	0.00	0.00
9,900.00	89.56	270.23	7,927.01	-546.10	-2,453.39	2,476.79	0.00	0.00	0.00
10,000.00	89.56	270.23	7,927.77	-545.70	-2,553.39	2,576.65	0.00	0.00	0.00
10,100.00	89.56	270.23	7,928.54	-545.29	-2,653.39	2,676.51	0.00	0.00	0.00
10,200.00	89.56	270.23	7,929.31	-544.89	-2,753.38	2,776.37	0.00	0.00	0.00
10,300.00	89.56	270.23	7,930.07	-544.48	-2,853.38	2,876.24	0.00	0.00	0.00
10,400.00	89.56	270.23	7,930.84	-544.08	-2,953.38	2,976.10	0.00	0.00	0.00
10,500.00	89.56	270.23	7,931.61	-543.67	-3,053.37	3,075.96	0.00	0.00	0.00
10,600.00	89.56	270.23	7,932.37	-543.27	-3,153.37	3,175.82	0.00	0.00	0.00
10,700.00	89.56	270.23	7,933.14	-542.86	-3,253.36	3,275.68	0.00	0.00	0.00
10,800.00	89.56	270.23	7,933.91	-542.46	-3,353.36	3,375.54	0.00	0.00	0.00
10,900.00	89.56	270.23	7,934.68	-542.05	-3,453.36	3,475.40	0.00	0.00	0.00
11,000.00	89.56	270.23	7,935.44	-541.64	-3,553.35	3,575.26	0.00	0.00	0.00
11,100.00	89.56	270.23	7,936.21	-541.24	-3,653.35	3,675.13	0.00	0.00	0.00
11,200.00	89.56	270.23	7,936.98	-540.83	-3,753.35	3,774.99	0.00	0.00	0.00
11,300.00	89.56	270.23	7,937.74	-540.43	-3,853.34	3,874.85	0.00	0.00	0.00
11,400.00	89.56	270.23	7,938.51	-540.02	-3,953.34	3,974.71	0.00	0.00	0.00
11,500.00	89.56	270.23	7,939.28	-539.62	-4,053.33	4,074.57	0.00	0.00	0.00
11,600.00	89.56	270.23	7,940.04	-539.21	-4,153.33	4,174.43	0.00	0.00	0.00
11,700.00	89.56	270.23	7,940.81	-538.81	-4,253.33	4,274.29	0.00	0.00	0.00
11,800.00	89.56	270.23	7,941.58	-538.40	-4,353.32	4,374.16	0.00	0.00	0.00
11,900.00	89.56	270.23	7,942.35	-537.99	-4,453.32	4,474.02	0.00	0.00	0.00
12,000.00	89.56	270.23	7,943.11	-537.59	-4,553.32	4,573.88	0.00	0.00	0.00
12,100.00	89.56	270.23	7,943.88	-537.18	-4,653.31	4,673.74	0.00	0.00	0.00
12,200.00	89.56	270.23	7,944.65	-536.78	-4,753.31	4,773.60	0.00	0.00	0.00
12,300.00	89.56	270.23	7,945.41	-536.37	-4,853.30	4,873.46	0.00	0.00	0.00
12,400.00	89.56	270.23	7,946.18	-535.97	-4,953.30	4,973.32	0.00	0.00	0.00
12,500.00	89.56	270.23	7,946.95	-535.56	-5,053.30	5,073.19	0.00	0.00	0.00
12,600.00	89.56	270.23	7,947.71	-535.16	-5,153.29	5,173.05	0.00	0.00	0.00
12,700.00	89.56	270.23	7,948.48	-534.75	-5,253.29	5,272.91	0.00	0.00	0.00
12,800.00	89.56	270.23	7,949.25	-534.35	-5,353.29	5,372.77	0.00	0.00	0.00
12,900.00	89.56	270.23	7,950.02	-533.94	-5,453.28	5,472.63	0.00	0.00	0.00
13,000.00	89.56	270.23	7,950.78	-533.53	-5,553.28	5,572.49	0.00	0.00	0.00
13,100.00	89.56	270.23	7,951.55	-533.13	-5,653.27	5,672.35	0.00	0.00	0.00
13,200.00	89.56	270.23	7,952.32	-532.72	-5,753.27	5,772.22	0.00	0.00	0.00
13,300.00	89.56	270.23	7,953.08	-532.32	-5,853.27	5,872.08	0.00	0.00	0.00
13,400.00	89.56	270.23	7,953.85	-531.91	-5,953.26	5,971.94	0.00	0.00	0.00

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Rush 4-65 29-30 4CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Site:</b>	Rush	<b>North Reference:</b>	True
<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

Planned Survey									
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)
13,500.00	89.56	270.23	7,954.62	-531.51	-6,053.26	6,071.80	0.00	0.00	0.00
13,600.00	89.56	270.23	7,955.38	-531.10	-6,153.26	6,171.66	0.00	0.00	0.00
13,700.00	89.56	270.23	7,956.15	-530.70	-6,253.25	6,271.52	0.00	0.00	0.00
13,800.00	89.56	270.23	7,956.92	-530.29	-6,353.25	6,371.38	0.00	0.00	0.00
13,900.00	89.56	270.23	7,957.69	-529.89	-6,453.24	6,471.25	0.00	0.00	0.00
14,000.00	89.56	270.23	7,958.45	-529.48	-6,553.24	6,571.11	0.00	0.00	0.00
14,100.00	89.56	270.23	7,959.22	-529.07	-6,653.24	6,670.97	0.00	0.00	0.00
14,200.00	89.56	270.23	7,959.99	-528.67	-6,753.23	6,770.83	0.00	0.00	0.00
14,300.00	89.56	270.23	7,960.75	-528.26	-6,853.23	6,870.69	0.00	0.00	0.00
14,400.00	89.56	270.23	7,961.52	-527.86	-6,953.23	6,970.55	0.00	0.00	0.00
14,500.00	89.56	270.23	7,962.29	-527.45	-7,053.22	7,070.41	0.00	0.00	0.00
14,600.00	89.56	270.23	7,963.05	-527.05	-7,153.22	7,170.28	0.00	0.00	0.00
14,700.00	89.56	270.23	7,963.82	-526.64	-7,253.21	7,270.14	0.00	0.00	0.00
14,800.00	89.56	270.23	7,964.59	-526.24	-7,353.21	7,370.00	0.00	0.00	0.00
14,900.00	89.56	270.23	7,965.36	-525.83	-7,453.21	7,469.86	0.00	0.00	0.00
15,000.00	89.56	270.23	7,966.12	-525.43	-7,553.20	7,569.72	0.00	0.00	0.00
15,100.00	89.56	270.23	7,966.89	-525.02	-7,653.20	7,669.58	0.00	0.00	0.00
15,200.00	89.56	270.23	7,967.66	-524.61	-7,753.20	7,769.44	0.00	0.00	0.00
15,300.00	89.56	270.23	7,968.42	-524.21	-7,853.19	7,869.30	0.00	0.00	0.00
15,400.00	89.56	270.23	7,969.19	-523.80	-7,953.19	7,969.17	0.00	0.00	0.00
15,500.00	89.56	270.23	7,969.96	-523.40	-8,053.18	8,069.03	0.00	0.00	0.00
15,600.00	89.56	270.23	7,970.72	-522.99	-8,153.18	8,168.89	0.00	0.00	0.00
15,700.00	89.56	270.23	7,971.49	-522.59	-8,253.18	8,268.75	0.00	0.00	0.00
15,800.00	89.56	270.23	7,972.26	-522.18	-8,353.17	8,368.61	0.00	0.00	0.00
15,900.00	89.56	270.23	7,973.03	-521.78	-8,453.17	8,468.47	0.00	0.00	0.00
16,000.00	89.56	270.23	7,973.79	-521.37	-8,553.17	8,568.33	0.00	0.00	0.00
16,100.00	89.56	270.23	7,974.56	-520.97	-8,653.16	8,668.20	0.00	0.00	0.00
16,200.00	89.56	270.23	7,975.33	-520.56	-8,753.16	8,768.06	0.00	0.00	0.00
16,300.00	89.56	270.23	7,976.09	-520.15	-8,853.15	8,867.92	0.00	0.00	0.00
16,400.00	89.56	270.23	7,976.86	-519.75	-8,953.15	8,967.78	0.00	0.00	0.00
16,500.00	89.56	270.23	7,977.63	-519.34	-9,053.15	9,067.64	0.00	0.00	0.00
16,600.00	89.56	270.23	7,978.40	-518.94	-9,153.14	9,167.50	0.00	0.00	0.00
16,700.00	89.56	270.23	7,979.16	-518.53	-9,253.14	9,267.36	0.00	0.00	0.00
16,800.00	89.56	270.23	7,979.93	-518.13	-9,353.14	9,367.23	0.00	0.00	0.00
16,900.00	89.56	270.23	7,980.70	-517.72	-9,453.13	9,467.09	0.00	0.00	0.00
17,000.00	89.56	270.23	7,981.46	-517.32	-9,553.13	9,566.95	0.00	0.00	0.00
17,100.00	89.56	270.23	7,982.23	-516.91	-9,653.12	9,666.81	0.00	0.00	0.00
17,200.00	89.56	270.23	7,983.00	-516.51	-9,753.12	9,766.67	0.00	0.00	0.00
17,300.00	89.56	270.23	7,983.76	-516.10	-9,853.12	9,866.53	0.00	0.00	0.00
17,400.00	89.56	270.23	7,984.53	-515.69	-9,953.11	9,966.39	0.00	0.00	0.00
17,500.00	89.56	270.23	7,985.30	-515.29	-10,053.11	10,066.26	0.00	0.00	0.00
17,600.00	89.56	270.23	7,986.07	-514.88	-10,153.11	10,166.12	0.00	0.00	0.00
17,700.00	89.56	270.23	7,986.83	-514.48	-10,253.10	10,265.98	0.00	0.00	0.00
17,800.00	89.56	270.23	7,987.60	-514.07	-10,353.10	10,365.84	0.00	0.00	0.00
17,900.00	89.56	270.23	7,988.37	-513.67	-10,453.09	10,465.70	0.00	0.00	0.00
18,000.00	89.56	270.23	7,989.13	-513.26	-10,553.09	10,565.56	0.00	0.00	0.00
18,100.00	89.56	270.23	7,989.90	-512.86	-10,653.09	10,665.42	0.00	0.00	0.00
18,113.01	89.56	270.23	7,990.00	-512.80	-10,666.09	10,678.41	0.00	0.00	0.00
BHL: 700' FSL, 325' FWL									

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Rush 4-65 29-30 4CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5720.50ft (25' RKB)
<b>Site:</b>	Rush	<b>North Reference:</b>	True
<b>Well:</b>	Rush 4-65 29-30 4CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rush 4-65 29-30 4CH		
<b>Design:</b>	Design A		

### Design Targets

#### Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Rush 4-65 29-30 4CH - plan hits target center - Point	0.00	0.00	7,915.00	-552.45	-888.32	1,669,728.539	3,230,753.920	39° 40' 9.640 N	104° 40' 48.990 W
Rush 4-65 29-30 4CH - plan hits target center - Point	0.00	0.00	7,990.00	-512.80	-10,666.09	1,669,679.620	3,220,976.356	39° 40' 10.010 N	104° 42' 54.030 W

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,016.00	2,016.00	9-5/8" Casing	9-5/8	12-1/4
18,113.01	7,990.00	5-1/2" Casing	5-1/2	8-1/2

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,747.00	1,747.00	Fox Hills Top		0.00	
2,016.00	2,016.00	Pierre Top - Fox Hills Base		0.00	
2,216.00	2,216.00	Surface Casing		0.00	
7,949.17	7,792.00	Niobrara Top		0.00	
8,230.04	7,905.00	C Chalk Top		0.00	

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
100.00	100.00	0.00	0.00	SHL: 1256' FSL, 422' FWL
6,589.52	6,564.37	-174.76	-134.08	EOB: 1081' FSL, 288' FWL
7,556.01	7,475.12	-431.38	-330.98	KOP: 825' FSL, 91' FWL
8,334.87	7,915.00	-552.45	-888.32	BPI/LP: 700' FSL, 460' FEL
18,113.01	7,990.00	-512.80	-10,666.09	BHL: 700' FSL, 325' FWL