

ConocoPhillips RBU Gold Data

Niobrara Central Zone

Rush

Rush 4-65 29-30 4DH

Rush 4-65 29-30 4DH

Plan: Design A

Standard Planning Report

30 August, 2018

ConocoPhillips

Planning Report

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

Project	Niobrara Central Zone, Colorado Central Zone, FIPS Zone: 0502		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 4DH					
Well Position	+N/-S	-4,096.49 ft	Northing:	1,670,263.698 usft	Latitude:	39° 40' 14.850 N
	+E/-W	10,987.31 ft	Easting:	3,231,636.633 usft	Longitude:	104° 40' 37.640 W
Position Uncertainty		2.00 ft	Wellhead Elevation:	5,695.50 ft	Ground Level:	5,695.50 ft

Wellbore	Rush 4-65 29-30 4DH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2018	12/1/2018	8.14	66.27	51,839.64900330

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	266.31	

Plan Survey Tool Program		Date	8/29/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,216.00	Design A (Rush 4-65 29-30 4DH)	Gyro-BM-MS	Gyro - bat/mem drop m/s
2	2,216.00	5,249.00	Design A (Rush 4-65 29-30 4DH)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
3	5,249.00	6,822.48	Design A (Rush 4-65 29-30 4DH)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
4	6,822.48	7,671.25	Design A (Rush 4-65 29-30 4DH)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
5	7,671.25	8,450.59	Design A (Rush 4-65 29-30 4DH)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
6	8,450.59	18,227.36	Design A (Rush 4-65 29-30 4DH)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5720.50ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5720.50ft (25' RKB)
Site:	Rush	North Reference:	True
Well:	Rush 4-65 29-30 4DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 4DH		
Design:	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	
5,249.00	0.00	0.00	5,249.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,822.48	23.60	210.32	6,778.36	-275.84	-161.29	1.50	1.50	0.00	210.32	
7,671.25	23.60	210.32	7,556.12	-569.20	-332.83	0.00	0.00	0.00	0.00	
8,450.59	89.48	270.23	7,985.00	-727.50	-889.89	10.00	8.45	7.69	62.23	Rush 4-65 29-30 4DH
18,227.36	89.48	270.23	8,074.00	-687.85	-10,666.17	0.00	0.00	0.00	0.00	Rush 4-65 29-30 4DH

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Site:	Rush	North Reference:	True
Well:	Rush 4-65 29-30 4DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 4DH		
Design:	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
SHL: 1231' FSL, 422' FWL									
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
Fox Hills Top									
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
Pierre Top - Fox Hills Base - 9-5/8" Casing									
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
Surface Casing									
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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Wellbore:	Rush 4-65 29-30 4DH		
Design:	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
5,249.00	0.00	0.00	5,249.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.77	210.32	5,300.00	-0.29	-0.17	0.19	1.50	1.50	0.00
5,400.00	2.27	210.32	5,399.96	-2.58	-1.51	1.67	1.50	1.50	0.00
5,500.00	3.77	210.32	5,499.82	-7.12	-4.16	4.61	1.50	1.50	0.00
5,600.00	5.27	210.32	5,599.51	-13.91	-8.13	9.01	1.50	1.50	0.00
5,700.00	6.77	210.32	5,698.95	-22.96	-13.42	14.87	1.50	1.50	0.00
5,800.00	8.27	210.32	5,798.09	-34.25	-20.03	22.19	1.50	1.50	0.00
5,900.00	9.77	210.32	5,896.85	-47.77	-27.93	30.95	1.50	1.50	0.00
6,000.00	11.27	210.32	5,995.17	-63.53	-37.15	41.16	1.50	1.50	0.00
6,100.00	12.77	210.32	6,092.98	-81.50	-47.65	52.80	1.50	1.50	0.00
6,200.00	14.27	210.32	6,190.21	-101.67	-59.45	65.87	1.50	1.50	0.00
6,300.00	15.77	210.32	6,286.79	-124.03	-72.53	80.36	1.50	1.50	0.00
6,400.00	17.27	210.32	6,382.66	-148.57	-86.87	96.26	1.50	1.50	0.00
6,500.00	18.77	210.32	6,477.76	-175.27	-102.48	113.55	1.50	1.50	0.00
6,600.00	20.27	210.32	6,572.01	-204.11	-119.35	132.23	1.50	1.50	0.00
6,700.00	21.77	210.32	6,665.35	-235.06	-137.45	152.29	1.50	1.50	0.00
6,800.00	23.27	210.32	6,757.73	-268.12	-156.78	173.71	1.50	1.50	0.00
6,822.48	23.60	210.32	6,778.36	-275.84	-161.29	178.71	1.50	1.50	0.00
EOB: 955' FSL, 261' FWL									
6,900.00	23.60	210.32	6,849.39	-302.63	-176.96	196.06	0.00	0.00	0.00
7,000.00	23.60	210.32	6,941.03	-337.19	-197.17	218.46	0.00	0.00	0.00
7,100.00	23.60	210.32	7,032.66	-371.76	-217.38	240.85	0.00	0.00	0.00
7,200.00	23.60	210.32	7,124.29	-406.32	-237.59	263.24	0.00	0.00	0.00
7,300.00	23.60	210.32	7,215.93	-440.88	-257.80	285.63	0.00	0.00	0.00
7,400.00	23.60	210.32	7,307.56	-475.45	-278.01	308.03	0.00	0.00	0.00
7,500.00	23.60	210.32	7,399.20	-510.01	-298.22	330.42	0.00	0.00	0.00
7,600.00	23.60	210.32	7,490.83	-544.57	-318.43	352.81	0.00	0.00	0.00
7,671.25	23.60	210.32	7,556.12	-569.20	-332.83	368.77	0.00	0.00	0.00
KOP: 662' FSL, 89' FWL									
7,700.00	25.06	216.33	7,582.32	-579.08	-339.34	375.90	10.00	5.08	20.92
7,750.00	28.10	225.23	7,627.05	-595.91	-353.98	391.60	10.00	6.07	17.80
7,800.00	31.60	232.42	7,670.42	-612.20	-372.74	411.36	10.00	7.00	14.37
7,850.00	35.43	238.25	7,712.12	-627.83	-395.46	435.04	10.00	7.66	11.67
7,900.00	39.49	243.06	7,751.81	-642.66	-421.97	462.45	10.00	8.12	9.61
7,950.00	43.71	247.09	7,789.19	-656.60	-452.07	493.39	10.00	8.45	8.06
7,962.29	44.77	247.98	7,798.00	-659.88	-460.00	501.51	10.00	8.61	7.28
Niobrara Top									
8,000.00	48.06	250.53	7,823.99	-669.53	-485.54	527.62	10.00	8.72	6.76
8,050.00	52.50	253.53	7,855.94	-681.36	-522.12	564.89	10.00	8.87	6.00
8,100.00	57.00	256.19	7,884.79	-692.00	-561.53	604.90	10.00	9.01	5.32
8,150.00	61.56	258.59	7,910.33	-701.36	-603.46	647.35	10.00	9.11	4.80
8,200.00	66.15	260.79	7,932.36	-709.37	-647.61	691.92	10.00	9.19	4.40
8,250.00	70.77	262.84	7,950.71	-715.98	-693.63	738.27	10.00	9.25	4.10
8,300.00	75.42	264.77	7,965.25	-721.13	-741.18	786.05	10.00	9.29	3.87
8,345.16	79.63	266.45	7,975.00	-724.49	-785.13	830.12	10.00	9.32	3.72
D Chalk Top									
8,350.00	80.08	266.63	7,975.85	-724.78	-789.88	834.89	10.00	9.33	3.66

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Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5720.50ft (25' RKB)
Site:	Rush	North Reference:	True
Well:	Rush 4-65 29-30 4DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 4DH		
Design:	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)
8,400.00	84.75	268.43	7,982.45	-726.91	-839.39	884.43	10.00	9.34	3.61
8,450.59	89.48	270.23	7,985.00	-727.50	-889.89	934.87	10.00	9.35	3.55
BPI/LP: 500' FSL, 460' FEL									
8,500.00	89.48	270.23	7,985.45	-727.30	-939.30	984.16	0.00	0.00	0.00
8,600.00	89.48	270.23	7,986.36	-726.89	-1,039.29	1,083.92	0.00	0.00	0.00
8,700.00	89.48	270.23	7,987.27	-726.48	-1,139.29	1,183.68	0.00	0.00	0.00
8,800.00	89.48	270.23	7,988.18	-726.08	-1,239.28	1,283.44	0.00	0.00	0.00
8,900.00	89.48	270.23	7,989.09	-725.67	-1,339.28	1,383.20	0.00	0.00	0.00
9,000.00	89.48	270.23	7,990.00	-725.27	-1,439.27	1,482.97	0.00	0.00	0.00
9,100.00	89.48	270.23	7,990.91	-724.86	-1,539.27	1,582.73	0.00	0.00	0.00
9,200.00	89.48	270.23	7,991.82	-724.46	-1,639.26	1,682.49	0.00	0.00	0.00
9,300.00	89.48	270.23	7,992.73	-724.05	-1,739.26	1,782.25	0.00	0.00	0.00
9,400.00	89.48	270.23	7,993.64	-723.65	-1,839.25	1,882.01	0.00	0.00	0.00
9,500.00	89.48	270.23	7,994.55	-723.24	-1,939.25	1,981.77	0.00	0.00	0.00
9,600.00	89.48	270.23	7,995.46	-722.83	-2,039.24	2,081.54	0.00	0.00	0.00
9,700.00	89.48	270.23	7,996.37	-722.43	-2,139.24	2,181.30	0.00	0.00	0.00
9,800.00	89.48	270.23	7,997.28	-722.02	-2,239.23	2,281.06	0.00	0.00	0.00
9,900.00	89.48	270.23	7,998.19	-721.62	-2,339.23	2,380.82	0.00	0.00	0.00
10,000.00	89.48	270.23	7,999.10	-721.21	-2,439.22	2,480.58	0.00	0.00	0.00
10,100.00	89.48	270.23	8,000.02	-720.81	-2,539.22	2,580.34	0.00	0.00	0.00
10,200.00	89.48	270.23	8,000.93	-720.40	-2,639.21	2,680.11	0.00	0.00	0.00
10,300.00	89.48	270.23	8,001.84	-720.00	-2,739.21	2,779.87	0.00	0.00	0.00
10,400.00	89.48	270.23	8,002.75	-719.59	-2,839.20	2,879.63	0.00	0.00	0.00
10,500.00	89.48	270.23	8,003.66	-719.19	-2,939.20	2,979.39	0.00	0.00	0.00
10,600.00	89.48	270.23	8,004.57	-718.78	-3,039.20	3,079.15	0.00	0.00	0.00
10,700.00	89.48	270.23	8,005.48	-718.37	-3,139.19	3,178.91	0.00	0.00	0.00
10,800.00	89.48	270.23	8,006.39	-717.97	-3,239.19	3,278.68	0.00	0.00	0.00
10,900.00	89.48	270.23	8,007.30	-717.56	-3,339.18	3,378.44	0.00	0.00	0.00
11,000.00	89.48	270.23	8,008.21	-717.16	-3,439.18	3,478.20	0.00	0.00	0.00
11,100.00	89.48	270.23	8,009.12	-716.75	-3,539.17	3,577.96	0.00	0.00	0.00
11,200.00	89.48	270.23	8,010.03	-716.35	-3,639.17	3,677.72	0.00	0.00	0.00
11,300.00	89.48	270.23	8,010.94	-715.94	-3,739.16	3,777.48	0.00	0.00	0.00
11,400.00	89.48	270.23	8,011.85	-715.54	-3,839.16	3,877.25	0.00	0.00	0.00
11,500.00	89.48	270.23	8,012.76	-715.13	-3,939.15	3,977.01	0.00	0.00	0.00
11,600.00	89.48	270.23	8,013.67	-714.72	-4,039.15	4,076.77	0.00	0.00	0.00
11,700.00	89.48	270.23	8,014.58	-714.32	-4,139.14	4,176.53	0.00	0.00	0.00
11,800.00	89.48	270.23	8,015.49	-713.91	-4,239.14	4,276.29	0.00	0.00	0.00
11,900.00	89.48	270.23	8,016.40	-713.51	-4,339.13	4,376.05	0.00	0.00	0.00
12,000.00	89.48	270.23	8,017.31	-713.10	-4,439.13	4,475.82	0.00	0.00	0.00
12,100.00	89.48	270.23	8,018.22	-712.70	-4,539.12	4,575.58	0.00	0.00	0.00
12,200.00	89.48	270.23	8,019.13	-712.29	-4,639.12	4,675.34	0.00	0.00	0.00
12,300.00	89.48	270.23	8,020.04	-711.89	-4,739.11	4,775.10	0.00	0.00	0.00
12,400.00	89.48	270.23	8,020.95	-711.48	-4,839.11	4,874.86	0.00	0.00	0.00
12,500.00	89.48	270.23	8,021.86	-711.07	-4,939.10	4,974.62	0.00	0.00	0.00
12,600.00	89.48	270.23	8,022.77	-710.67	-5,039.10	5,074.39	0.00	0.00	0.00
12,700.00	89.48	270.23	8,023.68	-710.26	-5,139.09	5,174.15	0.00	0.00	0.00
12,800.00	89.48	270.23	8,024.59	-709.86	-5,239.09	5,273.91	0.00	0.00	0.00
12,900.00	89.48	270.23	8,025.50	-709.45	-5,339.08	5,373.67	0.00	0.00	0.00
13,000.00	89.48	270.23	8,026.41	-709.05	-5,439.08	5,473.43	0.00	0.00	0.00
13,100.00	89.48	270.23	8,027.32	-708.64	-5,539.07	5,573.19	0.00	0.00	0.00
13,200.00	89.48	270.23	8,028.24	-708.24	-5,639.07	5,672.96	0.00	0.00	0.00
13,300.00	89.48	270.23	8,029.15	-707.83	-5,739.06	5,772.72	0.00	0.00	0.00
13,400.00	89.48	270.23	8,030.06	-707.42	-5,839.06	5,872.48	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 4DH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5720.50ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5720.50ft (25' RKB)
Site:	Rush	North Reference:	True
Well:	Rush 4-65 29-30 4DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 4DH		
Design:	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	89.48	270.23	8,030.97	-707.02	-5,939.05	5,972.24	0.00	0.00	0.00
13,600.00	89.48	270.23	8,031.88	-706.61	-6,039.05	6,072.00	0.00	0.00	0.00
13,700.00	89.48	270.23	8,032.79	-706.21	-6,139.04	6,171.76	0.00	0.00	0.00
13,800.00	89.48	270.23	8,033.70	-705.80	-6,239.04	6,271.53	0.00	0.00	0.00
13,900.00	89.48	270.23	8,034.61	-705.40	-6,339.03	6,371.29	0.00	0.00	0.00
14,000.00	89.48	270.23	8,035.52	-704.99	-6,439.03	6,471.05	0.00	0.00	0.00
14,100.00	89.48	270.23	8,036.43	-704.59	-6,539.02	6,570.81	0.00	0.00	0.00
14,200.00	89.48	270.23	8,037.34	-704.18	-6,639.02	6,670.57	0.00	0.00	0.00
14,300.00	89.48	270.23	8,038.25	-703.78	-6,739.01	6,770.33	0.00	0.00	0.00
14,400.00	89.48	270.23	8,039.16	-703.37	-6,839.01	6,870.10	0.00	0.00	0.00
14,500.00	89.48	270.23	8,040.07	-702.96	-6,939.00	6,969.86	0.00	0.00	0.00
14,600.00	89.48	270.23	8,040.98	-702.56	-7,039.00	7,069.62	0.00	0.00	0.00
14,700.00	89.48	270.23	8,041.89	-702.15	-7,138.99	7,169.38	0.00	0.00	0.00
14,800.00	89.48	270.23	8,042.80	-701.75	-7,238.99	7,269.14	0.00	0.00	0.00
14,900.00	89.48	270.23	8,043.71	-701.34	-7,338.98	7,368.90	0.00	0.00	0.00
15,000.00	89.48	270.23	8,044.62	-700.94	-7,438.98	7,468.66	0.00	0.00	0.00
15,100.00	89.48	270.23	8,045.53	-700.53	-7,538.97	7,568.43	0.00	0.00	0.00
15,200.00	89.48	270.23	8,046.44	-700.13	-7,638.97	7,668.19	0.00	0.00	0.00
15,300.00	89.48	270.23	8,047.35	-699.72	-7,738.96	7,767.95	0.00	0.00	0.00
15,400.00	89.48	270.23	8,048.26	-699.31	-7,838.96	7,867.71	0.00	0.00	0.00
15,500.00	89.48	270.23	8,049.17	-698.91	-7,938.95	7,967.47	0.00	0.00	0.00
15,600.00	89.48	270.23	8,050.08	-698.50	-8,038.95	8,067.23	0.00	0.00	0.00
15,700.00	89.48	270.23	8,050.99	-698.10	-8,138.94	8,167.00	0.00	0.00	0.00
15,800.00	89.48	270.23	8,051.90	-697.69	-8,238.94	8,266.76	0.00	0.00	0.00
15,900.00	89.48	270.23	8,052.81	-697.29	-8,338.93	8,366.52	0.00	0.00	0.00
16,000.00	89.48	270.23	8,053.72	-696.88	-8,438.93	8,466.28	0.00	0.00	0.00
16,100.00	89.48	270.23	8,054.63	-696.48	-8,538.92	8,566.04	0.00	0.00	0.00
16,200.00	89.48	270.23	8,055.54	-696.07	-8,638.92	8,665.80	0.00	0.00	0.00
16,300.00	89.48	270.23	8,056.46	-695.66	-8,738.91	8,765.57	0.00	0.00	0.00
16,400.00	89.48	270.23	8,057.37	-695.26	-8,838.91	8,865.33	0.00	0.00	0.00
16,500.00	89.48	270.23	8,058.28	-694.85	-8,938.90	8,965.09	0.00	0.00	0.00
16,600.00	89.48	270.23	8,059.19	-694.45	-9,038.90	9,064.85	0.00	0.00	0.00
16,700.00	89.48	270.23	8,060.10	-694.04	-9,138.89	9,164.61	0.00	0.00	0.00
16,800.00	89.48	270.23	8,061.01	-693.64	-9,238.89	9,264.37	0.00	0.00	0.00
16,900.00	89.48	270.23	8,061.92	-693.23	-9,338.88	9,364.14	0.00	0.00	0.00
17,000.00	89.48	270.23	8,062.83	-692.83	-9,438.88	9,463.90	0.00	0.00	0.00
17,100.00	89.48	270.23	8,063.74	-692.42	-9,538.87	9,563.66	0.00	0.00	0.00
17,200.00	89.48	270.23	8,064.65	-692.01	-9,638.87	9,663.42	0.00	0.00	0.00
17,300.00	89.48	270.23	8,065.56	-691.61	-9,738.86	9,763.18	0.00	0.00	0.00
17,400.00	89.48	270.23	8,066.47	-691.20	-9,838.86	9,862.94	0.00	0.00	0.00
17,500.00	89.48	270.23	8,067.38	-690.80	-9,938.85	9,962.71	0.00	0.00	0.00
17,600.00	89.48	270.23	8,068.29	-690.39	-10,038.85	10,062.47	0.00	0.00	0.00
17,700.00	89.48	270.23	8,069.20	-689.99	-10,138.84	10,162.23	0.00	0.00	0.00
17,800.00	89.48	270.23	8,070.11	-689.58	-10,238.84	10,261.99	0.00	0.00	0.00
17,900.00	89.48	270.23	8,071.02	-689.18	-10,338.83	10,361.75	0.00	0.00	0.00
18,000.00	89.48	270.23	8,071.93	-688.77	-10,438.83	10,461.51	0.00	0.00	0.00
18,100.00	89.48	270.23	8,072.84	-688.37	-10,538.82	10,561.28	0.00	0.00	0.00
18,200.00	89.48	270.23	8,073.75	-687.96	-10,638.82	10,661.04	0.00	0.00	0.00
18,227.36	89.48	270.23	8,074.00	-687.85	-10,666.17	10,688.33	0.00	0.00	0.00
BHL: 500' FSL, 325' FWL									

ConocoPhillips

Planning Report

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

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Rush 4-65 29-30 4DH B	0.00	0.00	7,985.00	-727.50	-889.89	1,669,528.183	3,230,753.382	39° 40' 7.660 N	104° 40' 49.020 W
- plan hits target center									
- Point									
Rush 4-65 29-30 4DH B	0.00	0.00	8,074.00	-687.85	-10,666.17	1,669,479.278	3,220,977.306	39° 40' 8.030 N	104° 42' 54.040 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
2,016.00	2,016.00	9-5/8" Casing		9-5/8	12-1/4
18,227.36	8,074.00	5-1/2" Casing		5-1/2	8-1/2

Formations					
Measured Depth	Vertical Depth	Name		Lithology	Dip
(ft)	(ft)				(°)
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
7,962.29	7,798.00	Niobrara Top			0.00
8,345.16	7,975.00	D Chalk Top			0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
100.00	100.00	0.00	0.00	SHL: 1231' FSL, 422' FWL
6,822.48	6,778.36	-275.84	-161.29	EOB: 955' FSL, 261' FWL
7,671.25	7,556.12	-569.20	-332.83	KOP: 662' FSL, 89' FWL
8,450.59	7,985.00	-727.50	-889.89	BPI/LP: 500' FSL, 460' FEL
18,227.36	8,074.00	-687.85	-10,666.17	BHL: 500' FSL, 325' FWL