

ConocoPhillips RBU Gold Data

Niobrara Central Zone

Rush

Rush 4-65 29-30 3CH

Rush 4-65 29-30 3CH

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 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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 3CH					
Well Position	+N/-S	-3,971.02 ft	Northing:	1,670,389.178 usft	Latitude:	39° 40' 16.090 N
	+E/-W	10,988.82 ft	Easting:	3,231,637.061 usft	Longitude:	104° 40' 37.620 W
Position Uncertainty		2.00 ft	Wellhead Elevation:	5,695.50 ft	Ground Level:	5,695.50 ft

Wellbore	Rush 4-65 29-30 3CH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2018	12/1/2018	8.14	66.27	51,839.81552429

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	272.87	

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 3CH)Gyro-BM-MS		
			Gyro - bat/mem drop m/s		
2	2,216.00	5,360.00	Design A (Rush 4-65 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
3	5,360.00	6,556.48	Design A (Rush 4-65 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
4	6,556.48	7,568.38	Design A (Rush 4-65 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
5	7,568.38	8,351.49	Design A (Rush 4-65 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
6	8,351.49	18,142.33	Design A (Rush 4-65 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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	
5,360.00	0.00	0.00	5,360.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,556.48	17.95	320.36	6,537.01	143.13	-118.58	1.50	1.50	0.00	320.36	
7,568.38	17.95	320.36	7,499.67	383.23	-317.51	0.00	0.00	0.00	0.00	
8,351.49	89.70	270.23	7,946.00	495.83	-875.77	10.00	9.16	-6.40	-51.60	Rush 4-65 29-30 3CH
18,142.33	89.70	270.23	7,998.00	535.47	-10,666.39	0.00	0.00	0.00	0.00	Rush 4-65 29-30 3CH

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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: 1356' 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									
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 - 9-5/8" 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

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,360.00	0.00	0.00	5,360.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.60	320.36	5,400.00	0.16	-0.13	0.14	1.50	1.50	0.00
5,500.00	2.10	320.36	5,499.97	1.98	-1.64	1.73	1.50	1.50	0.00
5,600.00	3.60	320.36	5,599.84	5.80	-4.81	5.09	1.50	1.50	0.00
5,700.00	5.10	320.36	5,699.55	11.64	-9.65	10.22	1.50	1.50	0.00
5,800.00	6.60	320.36	5,799.03	19.49	-16.15	17.11	1.50	1.50	0.00
5,900.00	8.10	320.36	5,898.20	29.34	-24.31	25.75	1.50	1.50	0.00
6,000.00	9.60	320.36	5,997.01	41.19	-34.13	36.15	1.50	1.50	0.00
6,100.00	11.10	320.36	6,095.38	55.03	-45.59	48.29	1.50	1.50	0.00
6,200.00	12.60	320.36	6,193.25	70.84	-58.69	62.17	1.50	1.50	0.00
6,300.00	14.10	320.36	6,290.54	88.62	-73.42	77.77	1.50	1.50	0.00
6,400.00	15.60	320.36	6,387.20	108.35	-89.77	95.09	1.50	1.50	0.00
6,500.00	17.10	320.36	6,483.15	130.03	-107.73	114.11	1.50	1.50	0.00
6,556.48	17.95	320.36	6,537.01	143.12	-118.58	125.61	1.50	1.50	0.00
EOB: 1499' FSL, 303' FWL									
6,600.00	17.95	320.36	6,578.41	153.45	-127.13	134.67	0.00	0.00	0.00
6,700.00	17.95	320.36	6,673.55	177.18	-146.79	155.49	0.00	0.00	0.00
6,800.00	17.95	320.36	6,768.68	200.91	-166.45	176.32	0.00	0.00	0.00
6,900.00	17.95	320.36	6,863.81	224.64	-186.11	197.14	0.00	0.00	0.00
7,000.00	17.95	320.36	6,958.95	248.36	-205.77	217.96	0.00	0.00	0.00
7,100.00	17.95	320.36	7,054.08	272.09	-225.43	238.79	0.00	0.00	0.00
7,200.00	17.95	320.36	7,149.22	295.82	-245.09	259.61	0.00	0.00	0.00
7,300.00	17.95	320.36	7,244.35	319.55	-264.75	280.44	0.00	0.00	0.00
7,400.00	17.95	320.36	7,339.48	343.28	-284.41	301.26	0.00	0.00	0.00
7,500.00	17.95	320.36	7,434.62	367.01	-304.07	322.08	0.00	0.00	0.00
7,568.38	17.95	320.36	7,499.67	383.23	-317.51	336.32	0.00	0.00	0.00
KOP: 1739' FSL, 104' FWL									
7,600.00	20.06	313.12	7,529.57	390.69	-324.58	343.76	10.00	6.68	-22.90
7,650.00	23.86	304.39	7,575.95	402.27	-339.19	358.93	10.00	7.60	-17.45
7,700.00	28.02	298.03	7,620.91	413.51	-357.91	378.20	10.00	8.32	-12.72
7,750.00	32.40	293.24	7,664.11	424.33	-380.61	401.40	10.00	8.77	-9.59
7,800.00	36.93	289.49	7,705.23	434.63	-407.09	428.37	10.00	9.05	-7.50
7,850.00	41.55	286.46	7,743.95	444.35	-437.17	458.90	10.00	9.24	-6.05
7,900.00	46.24	283.95	7,779.97	453.40	-470.62	492.76	10.00	9.37	-5.04
7,950.00	50.97	281.80	7,813.03	461.73	-507.18	529.69	10.00	9.47	-4.30
7,966.10	52.50	281.16	7,823.00	464.25	-519.56	542.19	10.00	9.52	-3.92
Niobrara Top									
8,000.00	55.74	279.92	7,842.87	469.26	-546.56	569.40	10.00	9.55	-3.68
8,050.00	60.53	278.24	7,869.26	475.94	-588.48	611.61	10.00	9.59	-3.35
8,100.00	65.34	276.72	7,892.00	481.73	-632.62	655.97	10.00	9.62	-3.05
8,150.00	70.17	275.31	7,910.93	486.56	-678.63	702.17	10.00	9.65	-2.82
8,200.00	75.01	273.98	7,925.88	490.41	-726.16	749.84	10.00	9.67	-2.65
8,245.75	79.44	272.82	7,936.00	493.05	-770.69	794.44	10.00	9.69	-2.54
C Chalk Top									
8,250.00	79.85	272.71	7,936.76	493.25	-774.87	798.62	10.00	9.69	-2.50
8,300.00	84.70	271.48	7,943.48	495.06	-824.36	848.15	10.00	9.70	-2.46

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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)
8,351.49	89.70	270.23	7,946.00	495.83	-875.77	899.53	10.00	9.70	-2.42
BPI/LP: 1849' FSL, 460' FEL									
8,400.00	89.70	270.23	7,946.26	496.02	-924.28	947.99	0.00	0.00	0.00
8,500.00	89.70	270.23	7,946.79	496.43	-1,024.28	1,047.88	0.00	0.00	0.00
8,600.00	89.70	270.23	7,947.32	496.83	-1,124.27	1,147.77	0.00	0.00	0.00
8,700.00	89.70	270.23	7,947.85	497.24	-1,224.27	1,247.66	0.00	0.00	0.00
8,800.00	89.70	270.23	7,948.38	497.64	-1,324.27	1,347.56	0.00	0.00	0.00
8,900.00	89.70	270.23	7,948.91	498.05	-1,424.27	1,447.45	0.00	0.00	0.00
9,000.00	89.70	270.23	7,949.44	498.45	-1,524.27	1,547.34	0.00	0.00	0.00
9,100.00	89.70	270.23	7,949.98	498.86	-1,624.26	1,647.23	0.00	0.00	0.00
9,200.00	89.70	270.23	7,950.51	499.26	-1,724.26	1,747.12	0.00	0.00	0.00
9,300.00	89.70	270.23	7,951.04	499.67	-1,824.26	1,847.02	0.00	0.00	0.00
9,400.00	89.70	270.23	7,951.57	500.07	-1,924.26	1,946.91	0.00	0.00	0.00
9,500.00	89.70	270.23	7,952.10	500.48	-2,024.25	2,046.80	0.00	0.00	0.00
9,600.00	89.70	270.23	7,952.63	500.88	-2,124.25	2,146.69	0.00	0.00	0.00
9,700.00	89.70	270.23	7,953.16	501.29	-2,224.25	2,246.59	0.00	0.00	0.00
9,800.00	89.70	270.23	7,953.69	501.69	-2,324.25	2,346.48	0.00	0.00	0.00
9,900.00	89.70	270.23	7,954.22	502.10	-2,424.24	2,446.37	0.00	0.00	0.00
10,000.00	89.70	270.23	7,954.76	502.50	-2,524.24	2,546.26	0.00	0.00	0.00
10,100.00	89.70	270.23	7,955.29	502.91	-2,624.24	2,646.16	0.00	0.00	0.00
10,200.00	89.70	270.23	7,955.82	503.31	-2,724.24	2,746.05	0.00	0.00	0.00
10,300.00	89.70	270.23	7,956.35	503.72	-2,824.24	2,845.94	0.00	0.00	0.00
10,400.00	89.70	270.23	7,956.88	504.12	-2,924.23	2,945.83	0.00	0.00	0.00
10,500.00	89.70	270.23	7,957.41	504.53	-3,024.23	3,045.72	0.00	0.00	0.00
10,600.00	89.70	270.23	7,957.94	504.93	-3,124.23	3,145.62	0.00	0.00	0.00
10,700.00	89.70	270.23	7,958.47	505.34	-3,224.23	3,245.51	0.00	0.00	0.00
10,800.00	89.70	270.23	7,959.00	505.74	-3,324.22	3,345.40	0.00	0.00	0.00
10,900.00	89.70	270.23	7,959.54	506.15	-3,424.22	3,445.29	0.00	0.00	0.00
11,000.00	89.70	270.23	7,960.07	506.55	-3,524.22	3,545.19	0.00	0.00	0.00
11,100.00	89.70	270.23	7,960.60	506.96	-3,624.22	3,645.08	0.00	0.00	0.00
11,200.00	89.70	270.23	7,961.13	507.36	-3,724.22	3,744.97	0.00	0.00	0.00
11,300.00	89.70	270.23	7,961.66	507.77	-3,824.21	3,844.86	0.00	0.00	0.00
11,400.00	89.70	270.23	7,962.19	508.17	-3,924.21	3,944.76	0.00	0.00	0.00
11,500.00	89.70	270.23	7,962.72	508.58	-4,024.21	4,044.65	0.00	0.00	0.00
11,600.00	89.70	270.23	7,963.25	508.98	-4,124.21	4,144.54	0.00	0.00	0.00
11,700.00	89.70	270.23	7,963.78	509.39	-4,224.20	4,244.43	0.00	0.00	0.00
11,800.00	89.70	270.23	7,964.32	509.79	-4,324.20	4,344.32	0.00	0.00	0.00
11,900.00	89.70	270.23	7,964.85	510.20	-4,424.20	4,444.22	0.00	0.00	0.00
12,000.00	89.70	270.23	7,965.38	510.60	-4,524.20	4,544.11	0.00	0.00	0.00
12,100.00	89.70	270.23	7,965.91	511.01	-4,624.20	4,644.00	0.00	0.00	0.00
12,200.00	89.70	270.23	7,966.44	511.41	-4,724.19	4,743.89	0.00	0.00	0.00
12,300.00	89.70	270.23	7,966.97	511.82	-4,824.19	4,843.79	0.00	0.00	0.00
12,400.00	89.70	270.23	7,967.50	512.22	-4,924.19	4,943.68	0.00	0.00	0.00
12,500.00	89.70	270.23	7,968.03	512.63	-5,024.19	5,043.57	0.00	0.00	0.00
12,600.00	89.70	270.23	7,968.56	513.03	-5,124.18	5,143.46	0.00	0.00	0.00
12,700.00	89.70	270.23	7,969.10	513.44	-5,224.18	5,243.35	0.00	0.00	0.00
12,800.00	89.70	270.23	7,969.63	513.84	-5,324.18	5,343.25	0.00	0.00	0.00
12,900.00	89.70	270.23	7,970.16	514.25	-5,424.18	5,443.14	0.00	0.00	0.00
13,000.00	89.70	270.23	7,970.69	514.65	-5,524.18	5,543.03	0.00	0.00	0.00
13,100.00	89.70	270.23	7,971.22	515.06	-5,624.17	5,642.92	0.00	0.00	0.00
13,200.00	89.70	270.23	7,971.75	515.46	-5,724.17	5,742.82	0.00	0.00	0.00
13,300.00	89.70	270.23	7,972.28	515.87	-5,824.17	5,842.71	0.00	0.00	0.00
13,400.00	89.70	270.23	7,972.81	516.27	-5,924.17	5,942.60	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
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	89.70	270.23	7,973.34	516.68	-6,024.16	6,042.49	0.00	0.00	0.00	
13,600.00	89.70	270.23	7,973.88	517.08	-6,124.16	6,142.39	0.00	0.00	0.00	
13,700.00	89.70	270.23	7,974.41	517.48	-6,224.16	6,242.28	0.00	0.00	0.00	
13,800.00	89.70	270.23	7,974.94	517.89	-6,324.16	6,342.17	0.00	0.00	0.00	
13,900.00	89.70	270.23	7,975.47	518.29	-6,424.16	6,442.06	0.00	0.00	0.00	
14,000.00	89.70	270.23	7,976.00	518.70	-6,524.15	6,541.95	0.00	0.00	0.00	
14,100.00	89.70	270.23	7,976.53	519.10	-6,624.15	6,641.85	0.00	0.00	0.00	
14,200.00	89.70	270.23	7,977.06	519.51	-6,724.15	6,741.74	0.00	0.00	0.00	
14,300.00	89.70	270.23	7,977.59	519.91	-6,824.15	6,841.63	0.00	0.00	0.00	
14,400.00	89.70	270.23	7,978.12	520.32	-6,924.14	6,941.52	0.00	0.00	0.00	
14,500.00	89.70	270.23	7,978.66	520.72	-7,024.14	7,041.42	0.00	0.00	0.00	
14,600.00	89.70	270.23	7,979.19	521.13	-7,124.14	7,141.31	0.00	0.00	0.00	
14,700.00	89.70	270.23	7,979.72	521.53	-7,224.14	7,241.20	0.00	0.00	0.00	
14,800.00	89.70	270.23	7,980.25	521.94	-7,324.14	7,341.09	0.00	0.00	0.00	
14,900.00	89.70	270.23	7,980.78	522.34	-7,424.13	7,440.99	0.00	0.00	0.00	
15,000.00	89.70	270.23	7,981.31	522.75	-7,524.13	7,540.88	0.00	0.00	0.00	
15,100.00	89.70	270.23	7,981.84	523.15	-7,624.13	7,640.77	0.00	0.00	0.00	
15,200.00	89.70	270.23	7,982.37	523.56	-7,724.13	7,740.66	0.00	0.00	0.00	
15,300.00	89.70	270.23	7,982.90	523.96	-7,824.12	7,840.55	0.00	0.00	0.00	
15,400.00	89.70	270.23	7,983.44	524.37	-7,924.12	7,940.45	0.00	0.00	0.00	
15,500.00	89.70	270.23	7,983.97	524.77	-8,024.12	8,040.34	0.00	0.00	0.00	
15,600.00	89.70	270.23	7,984.50	525.18	-8,124.12	8,140.23	0.00	0.00	0.00	
15,700.00	89.70	270.23	7,985.03	525.58	-8,224.12	8,240.12	0.00	0.00	0.00	
15,800.00	89.70	270.23	7,985.56	525.99	-8,324.11	8,340.02	0.00	0.00	0.00	
15,900.00	89.70	270.23	7,986.09	526.39	-8,424.11	8,439.91	0.00	0.00	0.00	
16,000.00	89.70	270.23	7,986.62	526.80	-8,524.11	8,539.80	0.00	0.00	0.00	
16,100.00	89.70	270.23	7,987.15	527.20	-8,624.11	8,639.69	0.00	0.00	0.00	
16,200.00	89.70	270.23	7,987.68	527.61	-8,724.10	8,739.59	0.00	0.00	0.00	
16,300.00	89.70	270.23	7,988.22	528.01	-8,824.10	8,839.48	0.00	0.00	0.00	
16,400.00	89.70	270.23	7,988.75	528.42	-8,924.10	8,939.37	0.00	0.00	0.00	
16,500.00	89.70	270.23	7,989.28	528.82	-9,024.10	9,039.26	0.00	0.00	0.00	
16,600.00	89.70	270.23	7,989.81	529.23	-9,124.10	9,139.15	0.00	0.00	0.00	
16,700.00	89.70	270.23	7,990.34	529.63	-9,224.09	9,239.05	0.00	0.00	0.00	
16,800.00	89.70	270.23	7,990.87	530.04	-9,324.09	9,338.94	0.00	0.00	0.00	
16,900.00	89.70	270.23	7,991.40	530.44	-9,424.09	9,438.83	0.00	0.00	0.00	
17,000.00	89.70	270.23	7,991.93	530.85	-9,524.09	9,538.72	0.00	0.00	0.00	
17,100.00	89.70	270.23	7,992.46	531.25	-9,624.08	9,638.62	0.00	0.00	0.00	
17,200.00	89.70	270.23	7,993.00	531.66	-9,724.08	9,738.51	0.00	0.00	0.00	
17,300.00	89.70	270.23	7,993.53	532.06	-9,824.08	9,838.40	0.00	0.00	0.00	
17,400.00	89.70	270.23	7,994.06	532.47	-9,924.08	9,938.29	0.00	0.00	0.00	
17,500.00	89.70	270.23	7,994.59	532.87	-10,024.08	10,038.19	0.00	0.00	0.00	
17,600.00	89.70	270.23	7,995.12	533.28	-10,124.07	10,138.08	0.00	0.00	0.00	
17,700.00	89.70	270.23	7,995.65	533.68	-10,224.07	10,237.97	0.00	0.00	0.00	
17,800.00	89.70	270.23	7,996.18	534.09	-10,324.07	10,337.86	0.00	0.00	0.00	
17,900.00	89.70	270.23	7,996.71	534.49	-10,424.07	10,437.75	0.00	0.00	0.00	
18,000.00	89.70	270.23	7,997.24	534.90	-10,524.06	10,537.65	0.00	0.00	0.00	
18,100.00	89.70	270.23	7,997.78	535.30	-10,624.06	10,637.54	0.00	0.00	0.00	
18,142.33	89.70	270.23	7,998.00	535.47	-10,666.39	10,679.82	0.00	0.00	0.00	
BHL: 1849' FSL, 325' FWL - 5-1/2" Casing										

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Rush 4-65 29-30 3CH
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 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rush 4-65 29-30 3CH		
Design:	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 3CH - plan hits target center - Point	0.00	0.00	7,946.00	495.83	-875.77	1,670,877.043	3,230,756.850	39° 40' 20.990 N	104° 40' 48.820 W
Rush 4-65 29-30 3CH - plan hits target center - Point	0.00	0.00	7,998.00	535.47	-10,666.39	1,670,828.009	3,220,966.433	39° 40' 21.360 N	104° 42' 54.030 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,216.00	2,216.00	9-5/8" Casing	9-5/8	12-1/4
18,142.33	7,998.00	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	
7,966.10	7,823.00	Niobrara Top		0.00	
8,245.75	7,936.00	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: 1356' FSL, 422' FWL
6,556.48	6,537.01	143.12	-118.58	EOB: 1499' FSL, 303' FWL
7,568.38	7,499.67	383.23	-317.51	KOP: 1739' FSL, 104' FWL
8,351.49	7,946.00	495.83	-875.77	BPI/LP: 1849' FSL, 460' FEL
18,142.33	7,998.00	535.47	-10,666.39	BHL: 1849' FSL, 325' FWL