

# **ConocoPhillips RBU Gold Data**

**Niobrara Central Zone**

**Grande**

**Grande 4-65 20-19 1CH**

**Grande 4-65 20-19 1CH**

**Plan: Design D**

## **Standard Planning Report**

**15 September, 2018**

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Grande 4-65 20-19 1CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Site:</b>	Grande	<b>North Reference:</b>	True
<b>Well:</b>	Grande 4-65 20-19 1CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

<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	Grande				
Site Position:		Northing:	1,679,554.079 usft	Latitude:	39° 41' 47.630 N
From:	Lat/Long	Easting:	3,220,569.758 usft	Longitude:	104° 42' 58.140 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.49

Well	Grande 4-65 20-19 1CH					
Well Position	+N/-S	-886.28 ft	Northing:	1,678,766.269 usft	Latitude:	39° 41' 38.846 N
	+E/-W	11,407.22 ft	Easting:	3,231,984.057 usft	Longitude:	104° 40' 32.210 W
Position Uncertainty		2.00 ft	Wellhead Elevation:	5,664.40 ft	Ground Level:	5,664.40 ft

<b>Wellbore</b>	Grande 4-65 20-19 1CH				
<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	66.28	51,851.36634044

<b>Design</b>	Design D				
<b>Audit Notes:</b>					
<b>Version:</b>	0	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	269.96	

<b>Plan Survey Tool Program</b>		<b>Date</b>	9/15/2018		
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	2,199.00	Design D (Grande 4-65 20-19 1C)	Gyro-BM-MS	
				Gyro - bat/mem drop m/s	
2	2,199.00	5,089.50	Design D (Grande 4-65 20-19 1C)	MWD+IFR_No SAG	
				MWD + IFR (No SAG) correctic	
3	5,089.50	6,623.12	Design D (Grande 4-65 20-19 1C)	MWD+IFR_No SAG	
				MWD + IFR (No SAG) correctic	
4	6,623.12	7,697.22	Design D (Grande 4-65 20-19 1C)	MWD+IFR_No SAG	
				MWD + IFR (No SAG) correctic	
5	7,697.22	8,364.49	Design D (Grande 4-65 20-19 1C)	MWD+IFR_No SAG	
				MWD + IFR (No SAG) correctic	
6	8,364.49	18,199.03	Design D (Grande 4-65 20-19 1C)	MWD+IFR_No SAG	
				MWD + IFR (No SAG) correctic	

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<b>Site:</b>	Grande	<b>North Reference:</b>	True
<b>Well:</b>	Grande 4-65 20-19 1CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

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	
5,089.50	0.00	0.00	5,089.50	0.00	0.00	0.00	0.00	0.00	0.00	
6,623.12	23.00	268.85	6,582.25	-6.07	-303.70	1.50	1.50	0.00	268.85	
7,697.22	23.00	268.85	7,570.93	-14.46	-723.37	0.00	0.00	0.00	0.00	
8,364.49	89.73	270.05	7,920.00	-17.08	-1,248.05	10.00	10.00	0.18	1.30	Grande 4-65 20-19 1CH
18,199.03	89.73	270.05	7,967.00	-8.52	-11,082.48	0.00	0.00	0.00	0.00	Grande 4-65 20-19 1CH

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<b>Site:</b>	Grande	<b>North Reference:</b>	True
<b>Well:</b>	Grande 4-65 20-19 1CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

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: 885' FNL, 788' 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
1,762.00	0.00	0.00	1,762.00	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
1,999.00	0.00	0.00	1,999.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Top - Fox Hills Base									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,199.00	0.00	0.00	2,199.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing - 9 5/8" Casing									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
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>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

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
5,089.50	0.00	0.00	5,089.50	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.16	268.85	5,100.00	0.00	-0.01	0.01	1.50	1.50	0.00
5,200.00	1.66	268.85	5,199.98	-0.03	-1.60	1.60	1.50	1.50	0.00
5,300.00	3.16	268.85	5,299.89	-0.12	-5.80	5.80	1.50	1.50	0.00
5,400.00	4.66	268.85	5,399.66	-0.25	-12.61	12.61	1.50	1.50	0.00
5,500.00	6.16	268.85	5,499.21	-0.44	-22.03	22.03	1.50	1.50	0.00
5,600.00	7.66	268.85	5,598.48	-0.68	-34.06	34.06	1.50	1.50	0.00
5,700.00	9.16	268.85	5,697.40	-0.97	-48.67	48.67	1.50	1.50	0.00
5,800.00	10.66	268.85	5,795.91	-1.32	-65.88	65.88	1.50	1.50	0.00
5,900.00	12.16	268.85	5,893.93	-1.71	-85.65	85.65	1.50	1.50	0.00
6,000.00	13.66	268.85	5,991.40	-2.16	-107.98	107.98	1.50	1.50	0.00
6,100.00	15.16	268.85	6,088.25	-2.66	-132.86	132.86	1.50	1.50	0.00
6,200.00	16.66	268.85	6,184.42	-3.20	-160.26	160.26	1.50	1.50	0.00
6,300.00	18.16	268.85	6,279.84	-3.80	-190.17	190.17	1.50	1.50	0.00
6,400.00	19.66	268.85	6,374.44	-4.45	-222.57	222.57	1.50	1.50	0.00
6,500.00	21.16	268.85	6,468.16	-5.15	-257.43	257.43	1.50	1.50	0.00
6,600.00	22.66	268.85	6,560.94	-5.89	-294.73	294.74	1.50	1.50	0.00
6,623.12	23.00	268.85	6,582.25	-6.07	-303.70	303.71	1.50	1.50	0.00
EOB: 891' FNL, 484' FWL									
6,700.00	23.00	268.85	6,653.01	-6.67	-333.74	333.74	0.00	0.00	0.00
6,800.00	23.00	268.85	6,745.06	-7.45	-372.81	372.82	0.00	0.00	0.00
6,900.00	23.00	268.85	6,837.11	-8.23	-411.88	411.89	0.00	0.00	0.00
7,000.00	23.00	268.85	6,929.16	-9.02	-450.96	450.96	0.00	0.00	0.00
7,100.00	23.00	268.85	7,021.20	-9.80	-490.03	490.04	0.00	0.00	0.00
7,200.00	23.00	268.85	7,113.25	-10.58	-529.10	529.11	0.00	0.00	0.00
7,300.00	23.00	268.85	7,205.30	-11.36	-568.17	568.18	0.00	0.00	0.00
7,400.00	23.00	268.85	7,297.35	-12.14	-607.24	607.25	0.00	0.00	0.00
7,500.00	23.00	268.85	7,389.39	-12.92	-646.32	646.33	0.00	0.00	0.00
7,600.00	23.00	268.85	7,481.44	-13.70	-685.39	685.40	0.00	0.00	0.00
7,697.22	23.00	268.85	7,570.93	-14.46	-723.38	723.39	0.00	0.00	0.00
KOP: 896' FNL, 65' FWL									
7,700.00	23.28	268.87	7,573.49	-14.48	-724.47	724.48	10.01	10.01	0.58
7,750.00	28.28	269.11	7,618.49	-14.86	-746.21	746.22	10.00	10.00	0.47
7,800.00	33.28	269.28	7,661.44	-15.22	-771.78	771.79	10.00	10.00	0.34
7,850.00	38.28	269.41	7,701.99	-15.55	-801.01	801.02	10.00	10.00	0.26
7,900.00	43.28	269.51	7,739.84	-15.86	-833.65	833.66	10.00	10.00	0.21
7,950.00	48.28	269.60	7,774.70	-16.14	-869.47	869.48	10.00	10.00	0.17
7,986.33	51.91	269.65	7,798.00	-16.32	-897.34	897.35	10.00	10.00	0.15
Niobrara Top									
8,000.00	53.28	269.67	7,806.30	-16.38	-908.20	908.21	10.00	10.00	0.14
8,050.00	58.28	269.74	7,834.41	-16.59	-949.53	949.54	10.00	10.00	0.13
8,100.00	63.28	269.80	7,858.81	-16.77	-993.15	993.16	10.00	10.00	0.12
8,150.00	68.28	269.85	7,879.32	-16.91	-1,038.73	1,038.74	10.00	10.00	0.11
8,200.00	73.28	269.90	7,895.78	-17.01	-1,085.93	1,085.94	10.00	10.00	0.10
8,250.00	78.28	269.95	7,908.06	-17.08	-1,134.38	1,134.39	10.00	10.00	0.09
8,259.99	79.28	269.96	7,910.00	-17.09	-1,144.17	1,144.19	10.00	10.00	0.09
C Chalk Top									
8,300.00	83.28	269.99	7,916.07	-17.11	-1,183.72	1,183.73	10.00	10.00	0.09
8,350.00	88.28	270.04	7,919.75	-17.09	-1,233.57	1,233.58	10.00	10.00	0.09

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Planned Survey									
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8,364.49	89.73	270.05	7,920.00	-17.08	-1,248.05	1,248.07	10.00	10.00	0.09
BPI/LP: 899' FNL, 460' FEL									
8,400.00	89.73	270.05	7,920.17	-17.05	-1,283.56	1,283.58	0.00	0.00	0.00
8,500.00	89.73	270.05	7,920.65	-16.96	-1,383.56	1,383.58	0.00	0.00	0.00
8,600.00	89.73	270.05	7,921.13	-16.88	-1,483.56	1,483.57	0.00	0.00	0.00
8,700.00	89.73	270.05	7,921.60	-16.79	-1,583.56	1,583.57	0.00	0.00	0.00
8,800.00	89.73	270.05	7,922.08	-16.70	-1,683.56	1,683.57	0.00	0.00	0.00
8,900.00	89.73	270.05	7,922.56	-16.62	-1,783.56	1,783.57	0.00	0.00	0.00
9,000.00	89.73	270.05	7,923.04	-16.53	-1,883.56	1,883.57	0.00	0.00	0.00
9,100.00	89.73	270.05	7,923.52	-16.44	-1,983.56	1,983.57	0.00	0.00	0.00
9,200.00	89.73	270.05	7,923.99	-16.35	-2,083.56	2,083.57	0.00	0.00	0.00
9,300.00	89.73	270.05	7,924.47	-16.27	-2,183.55	2,183.57	0.00	0.00	0.00
9,400.00	89.73	270.05	7,924.95	-16.18	-2,283.55	2,283.56	0.00	0.00	0.00
9,500.00	89.73	270.05	7,925.43	-16.09	-2,383.55	2,383.56	0.00	0.00	0.00
9,600.00	89.73	270.05	7,925.90	-16.01	-2,483.55	2,483.56	0.00	0.00	0.00
9,700.00	89.73	270.05	7,926.38	-15.92	-2,583.55	2,583.56	0.00	0.00	0.00
9,800.00	89.73	270.05	7,926.86	-15.83	-2,683.55	2,683.56	0.00	0.00	0.00
9,900.00	89.73	270.05	7,927.34	-15.74	-2,783.55	2,783.56	0.00	0.00	0.00
10,000.00	89.73	270.05	7,927.82	-15.66	-2,883.55	2,883.56	0.00	0.00	0.00
10,100.00	89.73	270.05	7,928.29	-15.57	-2,983.54	2,983.56	0.00	0.00	0.00
10,200.00	89.73	270.05	7,928.77	-15.48	-3,083.54	3,083.55	0.00	0.00	0.00
10,300.00	89.73	270.05	7,929.25	-15.40	-3,183.54	3,183.55	0.00	0.00	0.00
10,400.00	89.73	270.05	7,929.73	-15.31	-3,283.54	3,283.55	0.00	0.00	0.00
10,500.00	89.73	270.05	7,930.21	-15.22	-3,383.54	3,383.55	0.00	0.00	0.00
10,600.00	89.73	270.05	7,930.68	-15.13	-3,483.54	3,483.55	0.00	0.00	0.00
10,700.00	89.73	270.05	7,931.16	-15.05	-3,583.54	3,583.55	0.00	0.00	0.00
10,800.00	89.73	270.05	7,931.64	-14.96	-3,683.54	3,683.55	0.00	0.00	0.00
10,900.00	89.73	270.05	7,932.12	-14.87	-3,783.54	3,783.55	0.00	0.00	0.00
11,000.00	89.73	270.05	7,932.60	-14.79	-3,883.53	3,883.54	0.00	0.00	0.00
11,100.00	89.73	270.05	7,933.07	-14.70	-3,983.53	3,983.54	0.00	0.00	0.00
11,200.00	89.73	270.05	7,933.55	-14.61	-4,083.53	4,083.54	0.00	0.00	0.00
11,300.00	89.73	270.05	7,934.03	-14.53	-4,183.53	4,183.54	0.00	0.00	0.00
11,400.00	89.73	270.05	7,934.51	-14.44	-4,283.53	4,283.54	0.00	0.00	0.00
11,500.00	89.73	270.05	7,934.99	-14.35	-4,383.53	4,383.54	0.00	0.00	0.00
11,600.00	89.73	270.05	7,935.46	-14.26	-4,483.53	4,483.54	0.00	0.00	0.00
11,700.00	89.73	270.05	7,935.94	-14.18	-4,583.53	4,583.54	0.00	0.00	0.00
11,800.00	89.73	270.05	7,936.42	-14.09	-4,683.52	4,683.53	0.00	0.00	0.00
11,900.00	89.73	270.05	7,936.90	-14.00	-4,783.52	4,783.53	0.00	0.00	0.00
12,000.00	89.73	270.05	7,937.37	-13.92	-4,883.52	4,883.53	0.00	0.00	0.00
12,100.00	89.73	270.05	7,937.85	-13.83	-4,983.52	4,983.53	0.00	0.00	0.00
12,200.00	89.73	270.05	7,938.33	-13.74	-5,083.52	5,083.53	0.00	0.00	0.00
12,300.00	89.73	270.05	7,938.81	-13.65	-5,183.52	5,183.53	0.00	0.00	0.00
12,400.00	89.73	270.05	7,939.29	-13.57	-5,283.52	5,283.53	0.00	0.00	0.00
12,500.00	89.73	270.05	7,939.76	-13.48	-5,383.52	5,383.53	0.00	0.00	0.00
12,600.00	89.73	270.05	7,940.24	-13.39	-5,483.52	5,483.52	0.00	0.00	0.00
12,700.00	89.73	270.05	7,940.72	-13.31	-5,583.51	5,583.52	0.00	0.00	0.00
12,800.00	89.73	270.05	7,941.20	-13.22	-5,683.51	5,683.52	0.00	0.00	0.00
12,900.00	89.73	270.05	7,941.68	-13.13	-5,783.51	5,783.52	0.00	0.00	0.00
13,000.00	89.73	270.05	7,942.15	-13.04	-5,883.51	5,883.52	0.00	0.00	0.00
13,100.00	89.73	270.05	7,942.63	-12.96	-5,983.51	5,983.52	0.00	0.00	0.00
13,200.00	89.73	270.05	7,943.11	-12.87	-6,083.51	6,083.52	0.00	0.00	0.00
13,300.00	89.73	270.05	7,943.59	-12.78	-6,183.51	6,183.51	0.00	0.00	0.00
13,400.00	89.73	270.05	7,944.07	-12.70	-6,283.51	6,283.51	0.00	0.00	0.00

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Grande 4-65 20-19 1CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Site:</b>	Grande	<b>North Reference:</b>	True
<b>Well:</b>	Grande 4-65 20-19 1CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

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	89.73	270.05	7,944.54	-12.61	-6,383.50	6,383.51	0.00	0.00	0.00
13,600.00	89.73	270.05	7,945.02	-12.52	-6,483.50	6,483.51	0.00	0.00	0.00
13,700.00	89.73	270.05	7,945.50	-12.44	-6,583.50	6,583.51	0.00	0.00	0.00
13,800.00	89.73	270.05	7,945.98	-12.35	-6,683.50	6,683.51	0.00	0.00	0.00
13,900.00	89.73	270.05	7,946.45	-12.26	-6,783.50	6,783.51	0.00	0.00	0.00
14,000.00	89.73	270.05	7,946.93	-12.17	-6,883.50	6,883.51	0.00	0.00	0.00
14,100.00	89.73	270.05	7,947.41	-12.09	-6,983.50	6,983.50	0.00	0.00	0.00
14,200.00	89.73	270.05	7,947.89	-12.00	-7,083.50	7,083.50	0.00	0.00	0.00
14,300.00	89.73	270.05	7,948.37	-11.91	-7,183.50	7,183.50	0.00	0.00	0.00
14,400.00	89.73	270.05	7,948.84	-11.83	-7,283.49	7,283.50	0.00	0.00	0.00
14,500.00	89.73	270.05	7,949.32	-11.74	-7,383.49	7,383.50	0.00	0.00	0.00
14,600.00	89.73	270.05	7,949.80	-11.65	-7,483.49	7,483.50	0.00	0.00	0.00
14,700.00	89.73	270.05	7,950.28	-11.56	-7,583.49	7,583.50	0.00	0.00	0.00
14,800.00	89.73	270.05	7,950.76	-11.48	-7,683.49	7,683.50	0.00	0.00	0.00
14,900.00	89.73	270.05	7,951.23	-11.39	-7,783.49	7,783.49	0.00	0.00	0.00
15,000.00	89.73	270.05	7,951.71	-11.30	-7,883.49	7,883.49	0.00	0.00	0.00
15,100.00	89.73	270.05	7,952.19	-11.22	-7,983.49	7,983.49	0.00	0.00	0.00
15,200.00	89.73	270.05	7,952.67	-11.13	-8,083.48	8,083.49	0.00	0.00	0.00
15,300.00	89.73	270.05	7,953.15	-11.04	-8,183.48	8,183.49	0.00	0.00	0.00
15,400.00	89.73	270.05	7,953.62	-10.95	-8,283.48	8,283.49	0.00	0.00	0.00
15,500.00	89.73	270.05	7,954.10	-10.87	-8,383.48	8,383.49	0.00	0.00	0.00
15,600.00	89.73	270.05	7,954.58	-10.78	-8,483.48	8,483.49	0.00	0.00	0.00
15,700.00	89.73	270.05	7,955.06	-10.69	-8,583.48	8,583.48	0.00	0.00	0.00
15,800.00	89.73	270.05	7,955.54	-10.61	-8,683.48	8,683.48	0.00	0.00	0.00
15,900.00	89.73	270.05	7,956.01	-10.52	-8,783.48	8,783.48	0.00	0.00	0.00
16,000.00	89.73	270.05	7,956.49	-10.43	-8,883.48	8,883.48	0.00	0.00	0.00
16,100.00	89.73	270.05	7,956.97	-10.35	-8,983.47	8,983.48	0.00	0.00	0.00
16,200.00	89.73	270.05	7,957.45	-10.26	-9,083.47	9,083.48	0.00	0.00	0.00
16,300.00	89.73	270.05	7,957.92	-10.17	-9,183.47	9,183.48	0.00	0.00	0.00
16,400.00	89.73	270.05	7,958.40	-10.08	-9,283.47	9,283.48	0.00	0.00	0.00
16,500.00	89.73	270.05	7,958.88	-10.00	-9,383.47	9,383.47	0.00	0.00	0.00
16,600.00	89.73	270.05	7,959.36	-9.91	-9,483.47	9,483.47	0.00	0.00	0.00
16,700.00	89.73	270.05	7,959.84	-9.82	-9,583.47	9,583.47	0.00	0.00	0.00
16,800.00	89.73	270.05	7,960.31	-9.74	-9,683.47	9,683.47	0.00	0.00	0.00
16,900.00	89.73	270.05	7,960.79	-9.65	-9,783.46	9,783.47	0.00	0.00	0.00
17,000.00	89.73	270.05	7,961.27	-9.56	-9,883.46	9,883.47	0.00	0.00	0.00
17,100.00	89.73	270.05	7,961.75	-9.47	-9,983.46	9,983.47	0.00	0.00	0.00
17,200.00	89.73	270.05	7,962.23	-9.39	-10,083.46	10,083.47	0.00	0.00	0.00
17,300.00	89.73	270.05	7,962.70	-9.30	-10,183.46	10,183.46	0.00	0.00	0.00
17,400.00	89.73	270.05	7,963.18	-9.21	-10,283.46	10,283.46	0.00	0.00	0.00
17,500.00	89.73	270.05	7,963.66	-9.13	-10,383.46	10,383.46	0.00	0.00	0.00
17,600.00	89.73	270.05	7,964.14	-9.04	-10,483.46	10,483.46	0.00	0.00	0.00
17,700.00	89.73	270.05	7,964.62	-8.95	-10,583.46	10,583.46	0.00	0.00	0.00
17,800.00	89.73	270.05	7,965.09	-8.86	-10,683.45	10,683.46	0.00	0.00	0.00
17,900.00	89.73	270.05	7,965.57	-8.78	-10,783.45	10,783.46	0.00	0.00	0.00
18,000.00	89.73	270.05	7,966.05	-8.69	-10,883.45	10,883.45	0.00	0.00	0.00
18,100.00	89.73	270.05	7,966.53	-8.60	-10,983.45	10,983.45	0.00	0.00	0.00
18,199.03	89.73	270.05	7,967.00	-8.52	-11,082.48	11,082.48	0.00	0.00	0.00
BHL: 899' FNL, 325' FWL									

# ConocoPhillips

## Planning Report

<b>Database:</b>	EDT 14 Central Planning	<b>Local Co-ordinate Reference:</b>	Well Grande 4-65 20-19 1CH
<b>Company:</b>	ConocoPhillips RBU Gold Data	<b>TVD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Project:</b>	Niobrara Central Zone	<b>MD Reference:</b>	25' RKB @ 5689.40ft (25' RKB)
<b>Site:</b>	Grande	<b>North Reference:</b>	True
<b>Well:</b>	Grande 4-65 20-19 1CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Grande 4-65 20-19 1CH		
<b>Design:</b>	Design D		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
Grande 4-65 20-19 1CH	0.00	0.00	7,920.00	-17.08	-1,248.05	1,678,737.863	3,230,736.226	39° 41' 38.677 N	104° 40' 48.176 W
- plan hits target center									
- Point									
Grande 4-65 20-19 1CH	0.00	0.00	7,967.00	-8.52	-11,082.48	1,678,657.186	3,220,902.251	39° 41' 38.738 N	104° 42' 53.986 W
- plan hits target center									
- Point									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	2,199.00	2,199.00	9 5/8" Casing	9-5/8	12-1/4
	18,199.03	7,967.00	5-1/2" Casing	5-1/2	8-1/2

Formations					
	Measured Depth	Vertical Depth		Dip	Dip Direction
	(ft)	(ft)	Name	(°)	(°)
	1,762.00	1,762.00	Fox Hills Top	0.00	
	1,999.00	1,999.00	Pierre Top - Fox Hills Base	0.00	
	2,199.00	2,199.00	Surface Casing	0.00	
	7,986.33	7,798.00	Niobrara Top	0.00	
	8,259.99	7,910.00	C Chalk Top	0.00	

Plan Annotations					
	Measured Depth	Vertical Depth	Local Coordinates		
	(ft)	(ft)	+N/-S	+E/-W	Comment
	(ft)	(ft)	(ft)	(ft)	
	100.00	100.00	0.00	0.00	SHL: 885' FNL, 788' FWL
	6,623.12	6,582.25	-6.07	-303.70	EOB: 891' FNL, 484' FWL
	7,697.22	7,570.93	-14.46	-723.38	KOP: 896' FNL, 65' FWL
	8,364.49	7,920.00	-17.08	-1,248.05	BPI/LP: 899' FNL, 460' FEL
	18,199.03	7,967.00	-8.52	-11,082.48	BHL: 899' FNL, 325' FWL