

ConocoPhillips RBU Gold Data

Niobrara Central Zone

Grande

Grande 4-65 20-19 2AH

Grande 4-65 20-19 2AH

Plan: Design D

Standard Planning Report

15 September, 2018

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Grande 4-65 20-19 2AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5689.40ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5689.40ft (25' RKB)
Site:	Grande	North Reference:	True
Well:	Grande 4-65 20-19 2AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Grande 4-65 20-19 2AH		
Design:	Design D		

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	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 2AH					
Well Position	+N/-S	-925.60 ft	Northing:	1,678,727.211 usft	Latitude:	39° 41' 38.457 N
	+E/-W	11,438.19 ft	Easting:	3,232,015.367 usft	Longitude:	104° 40' 31.814 W
Position Uncertainty		2.00 ft	Wellhead Elevation:	5,664.40 ft	Ground Level:	5,664.40 ft

Wellbore	Grande 4-65 20-19 2AH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2018	12/1/2018	8.14	66.28	51,851.32928278

Design	Design D			
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	266.91

Plan Survey Tool Program		Date	9/15/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,199.00	Design D (Grande 4-65 20-19 2A)	Gyro-BM-MS	Gyro - bat/mem drop m/s
2	2,199.00	4,970.95	Design D (Grande 4-65 20-19 2A)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
3	4,970.95	6,883.95	Design D (Grande 4-65 20-19 2A)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
4	6,883.95	7,805.25	Design D (Grande 4-65 20-19 2A)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
5	7,805.25	8,469.42	Design D (Grande 4-65 20-19 2A)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic
6	8,469.42	18,302.99	Design D (Grande 4-65 20-19 2A)	MWD+IFR_No SAG	MWD + IFR (No SAG) correctic

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5689.40ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5689.40ft (25' RKB)
Site:	Grande	North Reference:	True
Well:	Grande 4-65 20-19 2AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Grande 4-65 20-19 2AH		
Design:	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	
4,970.95	0.00	0.00	4,970.95	0.00	0.00	0.00	0.00	0.00	0.00	
6,883.95	28.70	236.04	6,804.98	-262.03	-389.11	1.50	1.50	0.00	236.04	
7,805.25	28.70	236.04	7,613.13	-509.12	-756.02	0.00	0.00	0.00	0.00	
8,469.42	89.87	270.05	7,943.00	-609.38	-1,280.45	10.00	9.21	5.12	37.61	Grande 4-65 20-19 2A
18,302.99	89.87	270.05	7,966.00	-600.80	-11,113.99	0.00	0.00	0.00	0.00	Grande 4-65 20-19 2A

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Site:	Grande	North Reference:	True
Well:	Grande 4-65 20-19 2AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Grande 4-65 20-19 2AH		
Design:	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: 925' FNL, 819' 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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Wellbore:	Grande 4-65 20-19 2AH		
Design:	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
4,970.95	0.00	0.00	4,970.95	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.44	236.04	5,000.00	-0.06	-0.09	0.09	1.50	1.50	0.00
5,100.00	1.94	236.04	5,099.98	-1.22	-1.81	1.87	1.50	1.50	0.00
5,200.00	3.44	236.04	5,199.86	-3.83	-5.69	5.89	1.50	1.50	0.00
5,300.00	4.94	236.04	5,299.59	-7.91	-11.75	12.16	1.50	1.50	0.00
5,400.00	6.44	236.04	5,399.10	-13.45	-19.97	20.66	1.50	1.50	0.00
5,500.00	7.94	236.04	5,498.31	-20.43	-30.34	31.40	1.50	1.50	0.00
5,600.00	9.44	236.04	5,597.16	-28.87	-42.87	44.36	1.50	1.50	0.00
5,700.00	10.94	236.04	5,695.58	-38.74	-57.53	59.54	1.50	1.50	0.00
5,800.00	12.44	236.04	5,793.51	-50.06	-74.33	76.93	1.50	1.50	0.00
5,900.00	13.94	236.04	5,890.87	-62.80	-93.25	96.51	1.50	1.50	0.00
6,000.00	15.44	236.04	5,987.60	-76.96	-114.28	118.27	1.50	1.50	0.00
6,100.00	16.94	236.04	6,083.63	-92.53	-137.40	142.20	1.50	1.50	0.00
6,200.00	18.44	236.04	6,178.90	-109.50	-162.60	168.27	1.50	1.50	0.00
6,300.00	19.94	236.04	6,273.35	-127.85	-189.86	196.48	1.50	1.50	0.00
6,400.00	21.44	236.04	6,366.90	-147.58	-219.16	226.80	1.50	1.50	0.00
6,500.00	22.94	236.04	6,459.49	-168.68	-250.48	259.22	1.50	1.50	0.00
6,600.00	24.44	236.04	6,551.06	-191.11	-283.80	293.70	1.50	1.50	0.00
6,700.00	25.94	236.04	6,641.55	-214.88	-319.09	330.23	1.50	1.50	0.00
6,800.00	27.44	236.04	6,730.90	-239.97	-356.34	368.78	1.50	1.50	0.00
6,883.95	28.70	236.04	6,804.98	-262.03	-389.10	402.68	1.50	1.50	0.00
EOB: 1187' FNL, 430' FWL									
6,900.00	28.70	236.04	6,819.06	-266.33	-395.50	409.30	0.00	0.00	0.00
7,000.00	28.70	236.04	6,906.77	-293.15	-435.32	450.51	0.00	0.00	0.00
7,100.00	28.70	236.04	6,994.49	-319.97	-475.15	491.73	0.00	0.00	0.00
7,200.00	28.70	236.04	7,082.21	-346.79	-514.98	532.94	0.00	0.00	0.00
7,300.00	28.70	236.04	7,169.93	-373.61	-554.80	574.16	0.00	0.00	0.00
7,400.00	28.70	236.04	7,257.65	-400.43	-594.63	615.38	0.00	0.00	0.00
7,500.00	28.70	236.04	7,345.37	-427.25	-634.45	656.59	0.00	0.00	0.00
7,600.00	28.70	236.04	7,433.09	-454.07	-674.28	697.81	0.00	0.00	0.00
7,700.00	28.70	236.04	7,520.81	-480.89	-714.11	739.02	0.00	0.00	0.00
7,805.25	28.70	236.04	7,613.13	-509.12	-756.02	782.40	0.00	0.00	0.00
KOP: 1434' FNL, 63' FWL									
7,850.00	32.35	241.15	7,651.68	-520.90	-775.43	802.42	10.00	8.16	11.41
7,900.00	36.62	245.74	7,692.89	-533.49	-800.76	828.39	10.00	8.55	9.18
7,950.00	41.04	249.48	7,731.84	-545.38	-829.74	857.97	10.00	8.84	7.48
8,000.00	45.56	252.60	7,768.22	-556.48	-862.17	890.95	10.00	9.04	6.25
8,050.00	50.15	255.27	7,801.77	-566.70	-897.79	927.07	10.00	9.18	5.34
8,082.62	53.18	256.83	7,822.00	-572.86	-922.61	952.19	10.00	9.28	4.77
Niobrara Top									
8,100.00	54.80	257.60	7,832.22	-575.97	-936.32	966.05	10.00	9.32	4.48
8,150.00	59.48	259.68	7,859.34	-584.22	-977.49	1,007.60	10.00	9.37	4.16
8,200.00	64.20	261.57	7,882.94	-591.38	-1,020.97	1,051.40	10.00	9.43	3.77
8,250.00	68.93	263.31	7,902.82	-597.40	-1,066.43	1,097.13	10.00	9.48	3.48
8,300.00	73.69	264.95	7,918.83	-602.24	-1,113.53	1,144.42	10.00	9.51	3.27
8,350.00	78.46	266.50	7,930.87	-605.85	-1,161.91	1,192.92	10.00	9.53	3.11
8,361.17	79.52	266.84	7,933.00	-606.49	-1,172.86	1,203.89	10.00	9.54	3.04
C Chalk Top									
8,400.00	83.23	268.01	7,938.82	-608.21	-1,211.20	1,242.27	10.00	9.55	3.00
8,450.00	88.01	269.48	7,942.64	-609.30	-1,261.03	1,292.08	10.00	9.56	2.95

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Wellbore:	Grande 4-65 20-19 2AH		
Design:	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)
8,469.42	89.87	270.05	7,943.00	-609.38	-1,280.45	1,311.47	10.00	9.56	2.93
BPI/LP: 1531' FNL, 460' FEL									
8,500.00	89.87	270.05	7,943.07	-609.35	-1,311.03	1,342.01	0.00	0.00	0.00
8,600.00	89.87	270.05	7,943.31	-609.26	-1,411.03	1,441.86	0.00	0.00	0.00
8,700.00	89.87	270.05	7,943.54	-609.18	-1,511.03	1,541.71	0.00	0.00	0.00
8,800.00	89.87	270.05	7,943.77	-609.09	-1,611.03	1,641.55	0.00	0.00	0.00
8,900.00	89.87	270.05	7,944.01	-609.00	-1,711.02	1,741.40	0.00	0.00	0.00
9,000.00	89.87	270.05	7,944.24	-608.92	-1,811.02	1,841.25	0.00	0.00	0.00
9,100.00	89.87	270.05	7,944.48	-608.83	-1,911.02	1,941.10	0.00	0.00	0.00
9,200.00	89.87	270.05	7,944.71	-608.74	-2,011.02	2,040.95	0.00	0.00	0.00
9,300.00	89.87	270.05	7,944.94	-608.65	-2,111.02	2,140.80	0.00	0.00	0.00
9,400.00	89.87	270.05	7,945.18	-608.57	-2,211.02	2,240.65	0.00	0.00	0.00
9,500.00	89.87	270.05	7,945.41	-608.48	-2,311.02	2,340.50	0.00	0.00	0.00
9,600.00	89.87	270.05	7,945.64	-608.39	-2,411.02	2,440.35	0.00	0.00	0.00
9,700.00	89.87	270.05	7,945.88	-608.31	-2,511.02	2,540.20	0.00	0.00	0.00
9,800.00	89.87	270.05	7,946.11	-608.22	-2,611.02	2,640.05	0.00	0.00	0.00
9,900.00	89.87	270.05	7,946.35	-608.13	-2,711.02	2,739.90	0.00	0.00	0.00
10,000.00	89.87	270.05	7,946.58	-608.04	-2,811.02	2,839.74	0.00	0.00	0.00
10,100.00	89.87	270.05	7,946.81	-607.96	-2,911.02	2,939.59	0.00	0.00	0.00
10,200.00	89.87	270.05	7,947.05	-607.87	-3,011.02	3,039.44	0.00	0.00	0.00
10,300.00	89.87	270.05	7,947.28	-607.78	-3,111.02	3,139.29	0.00	0.00	0.00
10,400.00	89.87	270.05	7,947.52	-607.70	-3,211.02	3,239.14	0.00	0.00	0.00
10,500.00	89.87	270.05	7,947.75	-607.61	-3,311.02	3,338.99	0.00	0.00	0.00
10,600.00	89.87	270.05	7,947.98	-607.52	-3,411.02	3,438.84	0.00	0.00	0.00
10,700.00	89.87	270.05	7,948.22	-607.43	-3,511.02	3,538.69	0.00	0.00	0.00
10,800.00	89.87	270.05	7,948.45	-607.35	-3,611.02	3,638.54	0.00	0.00	0.00
10,900.00	89.87	270.05	7,948.69	-607.26	-3,711.02	3,738.39	0.00	0.00	0.00
11,000.00	89.87	270.05	7,948.92	-607.17	-3,811.02	3,838.24	0.00	0.00	0.00
11,100.00	89.87	270.05	7,949.15	-607.08	-3,911.02	3,938.09	0.00	0.00	0.00
11,200.00	89.87	270.05	7,949.39	-607.00	-4,011.02	4,037.94	0.00	0.00	0.00
11,300.00	89.87	270.05	7,949.62	-606.91	-4,111.02	4,137.78	0.00	0.00	0.00
11,400.00	89.87	270.05	7,949.85	-606.82	-4,211.02	4,237.63	0.00	0.00	0.00
11,500.00	89.87	270.05	7,950.09	-606.74	-4,311.02	4,337.48	0.00	0.00	0.00
11,600.00	89.87	270.05	7,950.32	-606.65	-4,411.02	4,437.33	0.00	0.00	0.00
11,700.00	89.87	270.05	7,950.56	-606.56	-4,511.02	4,537.18	0.00	0.00	0.00
11,800.00	89.87	270.05	7,950.79	-606.47	-4,611.02	4,637.03	0.00	0.00	0.00
11,900.00	89.87	270.05	7,951.02	-606.39	-4,711.02	4,736.88	0.00	0.00	0.00
12,000.00	89.87	270.05	7,951.26	-606.30	-4,811.02	4,836.73	0.00	0.00	0.00
12,100.00	89.87	270.05	7,951.49	-606.21	-4,911.01	4,936.58	0.00	0.00	0.00
12,200.00	89.87	270.05	7,951.73	-606.13	-5,011.01	5,036.43	0.00	0.00	0.00
12,300.00	89.87	270.05	7,951.96	-606.04	-5,111.01	5,136.28	0.00	0.00	0.00
12,400.00	89.87	270.05	7,952.19	-605.95	-5,211.01	5,236.13	0.00	0.00	0.00
12,500.00	89.87	270.05	7,952.43	-605.86	-5,311.01	5,335.97	0.00	0.00	0.00
12,600.00	89.87	270.05	7,952.66	-605.78	-5,411.01	5,435.82	0.00	0.00	0.00
12,700.00	89.87	270.05	7,952.90	-605.69	-5,511.01	5,535.67	0.00	0.00	0.00
12,800.00	89.87	270.05	7,953.13	-605.60	-5,611.01	5,635.52	0.00	0.00	0.00
12,900.00	89.87	270.05	7,953.36	-605.51	-5,711.01	5,735.37	0.00	0.00	0.00
13,000.00	89.87	270.05	7,953.60	-605.43	-5,811.01	5,835.22	0.00	0.00	0.00
13,100.00	89.87	270.05	7,953.83	-605.34	-5,911.01	5,935.07	0.00	0.00	0.00
13,200.00	89.87	270.05	7,954.06	-605.25	-6,011.01	6,034.92	0.00	0.00	0.00
13,300.00	89.87	270.05	7,954.30	-605.17	-6,111.01	6,134.77	0.00	0.00	0.00
13,400.00	89.87	270.05	7,954.53	-605.08	-6,211.01	6,234.62	0.00	0.00	0.00
13,500.00	89.87	270.05	7,954.77	-604.99	-6,311.01	6,334.47	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Grande 4-65 20-19 2AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5689.40ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5689.40ft (25' RKB)
Site:	Grande	North Reference:	True
Well:	Grande 4-65 20-19 2AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Grande 4-65 20-19 2AH		
Design:	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)
13,600.00	89.87	270.05	7,955.00	-604.90	-6,411.01	6,434.32	0.00	0.00	0.00
13,700.00	89.87	270.05	7,955.23	-604.82	-6,511.01	6,534.16	0.00	0.00	0.00
13,800.00	89.87	270.05	7,955.47	-604.73	-6,611.01	6,634.01	0.00	0.00	0.00
13,900.00	89.87	270.05	7,955.70	-604.64	-6,711.01	6,733.86	0.00	0.00	0.00
14,000.00	89.87	270.05	7,955.94	-604.56	-6,811.01	6,833.71	0.00	0.00	0.00
14,100.00	89.87	270.05	7,956.17	-604.47	-6,911.01	6,933.56	0.00	0.00	0.00
14,200.00	89.87	270.05	7,956.40	-604.38	-7,011.01	7,033.41	0.00	0.00	0.00
14,300.00	89.87	270.05	7,956.64	-604.29	-7,111.01	7,133.26	0.00	0.00	0.00
14,400.00	89.87	270.05	7,956.87	-604.21	-7,211.01	7,233.11	0.00	0.00	0.00
14,500.00	89.87	270.05	7,957.11	-604.12	-7,311.01	7,332.96	0.00	0.00	0.00
14,600.00	89.87	270.05	7,957.34	-604.03	-7,411.01	7,432.81	0.00	0.00	0.00
14,700.00	89.87	270.05	7,957.57	-603.94	-7,511.01	7,532.66	0.00	0.00	0.00
14,800.00	89.87	270.05	7,957.81	-603.86	-7,611.01	7,632.51	0.00	0.00	0.00
14,900.00	89.87	270.05	7,958.04	-603.77	-7,711.01	7,732.36	0.00	0.00	0.00
15,000.00	89.87	270.05	7,958.27	-603.68	-7,811.01	7,832.20	0.00	0.00	0.00
15,100.00	89.87	270.05	7,958.51	-603.60	-7,911.01	7,932.05	0.00	0.00	0.00
15,200.00	89.87	270.05	7,958.74	-603.51	-8,011.01	8,031.90	0.00	0.00	0.00
15,300.00	89.87	270.05	7,958.98	-603.42	-8,111.00	8,131.75	0.00	0.00	0.00
15,400.00	89.87	270.05	7,959.21	-603.33	-8,211.00	8,231.60	0.00	0.00	0.00
15,500.00	89.87	270.05	7,959.44	-603.25	-8,311.00	8,331.45	0.00	0.00	0.00
15,600.00	89.87	270.05	7,959.68	-603.16	-8,411.00	8,431.30	0.00	0.00	0.00
15,700.00	89.87	270.05	7,959.91	-603.07	-8,511.00	8,531.15	0.00	0.00	0.00
15,800.00	89.87	270.05	7,960.15	-602.99	-8,611.00	8,631.00	0.00	0.00	0.00
15,900.00	89.87	270.05	7,960.38	-602.90	-8,711.00	8,730.85	0.00	0.00	0.00
16,000.00	89.87	270.05	7,960.61	-602.81	-8,811.00	8,830.70	0.00	0.00	0.00
16,100.00	89.87	270.05	7,960.85	-602.72	-8,911.00	8,930.55	0.00	0.00	0.00
16,200.00	89.87	270.05	7,961.08	-602.64	-9,011.00	9,030.39	0.00	0.00	0.00
16,300.00	89.87	270.05	7,961.32	-602.55	-9,111.00	9,130.24	0.00	0.00	0.00
16,400.00	89.87	270.05	7,961.55	-602.46	-9,211.00	9,230.09	0.00	0.00	0.00
16,500.00	89.87	270.05	7,961.78	-602.37	-9,311.00	9,329.94	0.00	0.00	0.00
16,600.00	89.87	270.05	7,962.02	-602.29	-9,411.00	9,429.79	0.00	0.00	0.00
16,700.00	89.87	270.05	7,962.25	-602.20	-9,511.00	9,529.64	0.00	0.00	0.00
16,800.00	89.87	270.05	7,962.48	-602.11	-9,611.00	9,629.49	0.00	0.00	0.00
16,900.00	89.87	270.05	7,962.72	-602.03	-9,711.00	9,729.34	0.00	0.00	0.00
17,000.00	89.87	270.05	7,962.95	-601.94	-9,811.00	9,829.19	0.00	0.00	0.00
17,100.00	89.87	270.05	7,963.19	-601.85	-9,911.00	9,929.04	0.00	0.00	0.00
17,200.00	89.87	270.05	7,963.42	-601.76	-10,011.00	10,028.89	0.00	0.00	0.00
17,300.00	89.87	270.05	7,963.65	-601.68	-10,111.00	10,128.74	0.00	0.00	0.00
17,400.00	89.87	270.05	7,963.89	-601.59	-10,211.00	10,228.58	0.00	0.00	0.00
17,500.00	89.87	270.05	7,964.12	-601.50	-10,311.00	10,328.43	0.00	0.00	0.00
17,600.00	89.87	270.05	7,964.36	-601.42	-10,411.00	10,428.28	0.00	0.00	0.00
17,700.00	89.87	270.05	7,964.59	-601.33	-10,511.00	10,528.13	0.00	0.00	0.00
17,800.00	89.87	270.05	7,964.82	-601.24	-10,611.00	10,627.98	0.00	0.00	0.00
17,900.00	89.87	270.05	7,965.06	-601.15	-10,711.00	10,727.83	0.00	0.00	0.00
18,000.00	89.87	270.05	7,965.29	-601.07	-10,811.00	10,827.68	0.00	0.00	0.00
18,100.00	89.87	270.05	7,965.53	-600.98	-10,911.00	10,927.53	0.00	0.00	0.00
18,200.00	89.87	270.05	7,965.76	-600.89	-11,011.00	11,027.38	0.00	0.00	0.00
18,302.99	89.87	270.05	7,966.00	-600.80	-11,113.99	11,130.21	0.00	0.00	0.00
BHL: 1531' FNL, 325' FWL - 5-1/2" Casing									

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Grande 4-65 20-19 2AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5689.40ft (25' RKB)
Project:	Niobrara Central Zone	MD Reference:	25' RKB @ 5689.40ft (25' RKB)
Site:	Grande	North Reference:	True
Well:	Grande 4-65 20-19 2AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Grande 4-65 20-19 2AH		
Design:	Design D		

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									
Grande 4-65 20-19 2AH	0.00	0.00	7,943.00	-609.38	-1,280.45	1,678,106.244	3,230,740.519	39° 41' 32.435 N	104° 40' 48.194 W
- plan hits target center									
- Point									
Grande 4-65 20-19 2AH	0.00	0.00	7,966.00	-600.80	-11,113.99	1,678,025.576	3,220,907.428	39° 41' 32.496 N	104° 42' 53.989 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(ft)	(ft)		(")	(")	
2,199.00	2,199.00	9-5/8" Casing	9-5/8	12-1/4	
18,302.99	7,966.00	5-1/2" Casing	5-1/2	8-1/2	

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
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	
8,082.62	7,822.00	Niobrara Top		0.00	
8,361.17	7,933.00	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: 925' FNL, 819' FWL	
6,883.95	6,804.98	-262.03	-389.10	EOB: 1187' FNL, 430' FWL	
7,805.25	7,613.13	-509.12	-756.02	KOP: 1434' FNL, 63' FWL	
8,469.42	7,943.00	-609.38	-1,280.45	BPI/LP: 1531' FNL, 460' FEL	
18,302.99	7,966.00	-600.80	-11,113.99	BHL: 1531' FNL, 325' FWL	