

ConocoPhillips RBU Gold Data

Niobrara North Zone

Schuh

Schuh 3-65 21-20 3AH

Schuh 3-65 21-20 3AH

Plan: Design B

Standard Planning Report

26 April, 2018



Casing Depths

TVD	MD	Name	Size
2191.00	2191.00	9-5/8" Casing	9-5/8
7893.00	18100.83	5-1/2" Casing	5-1/2

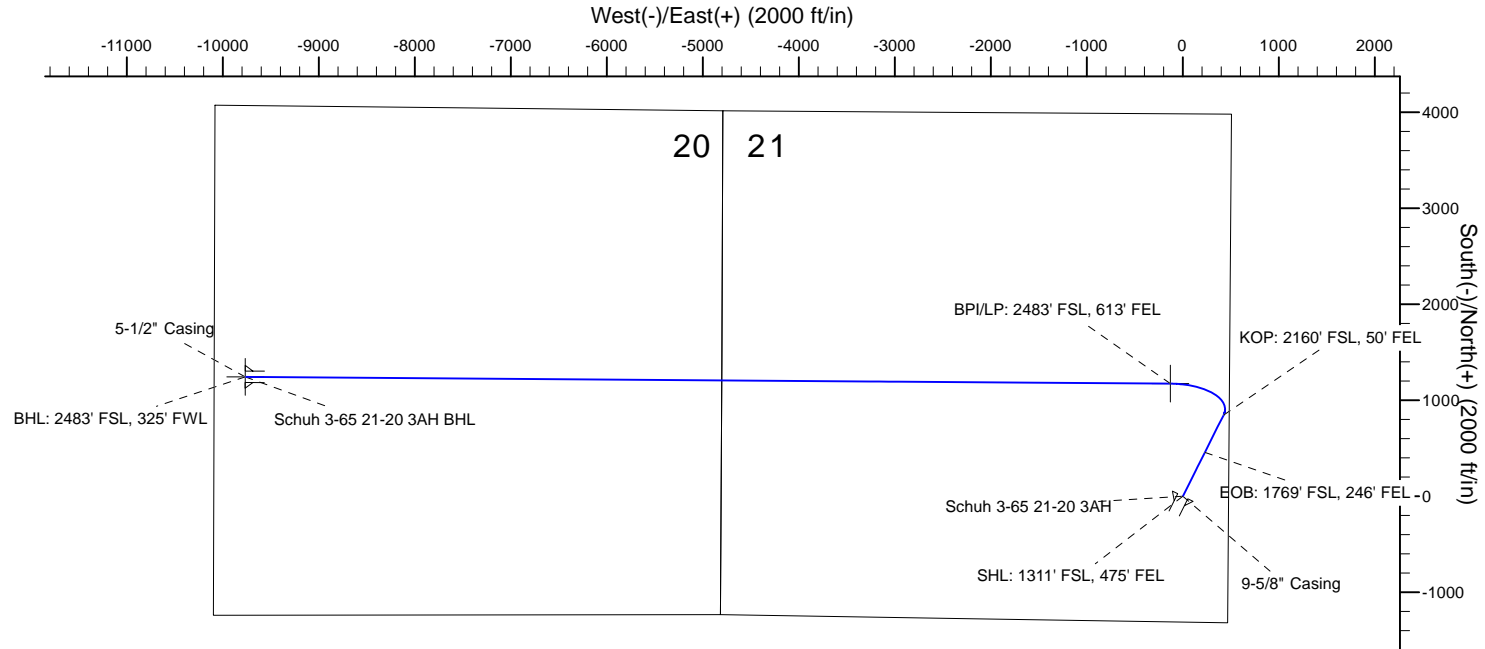
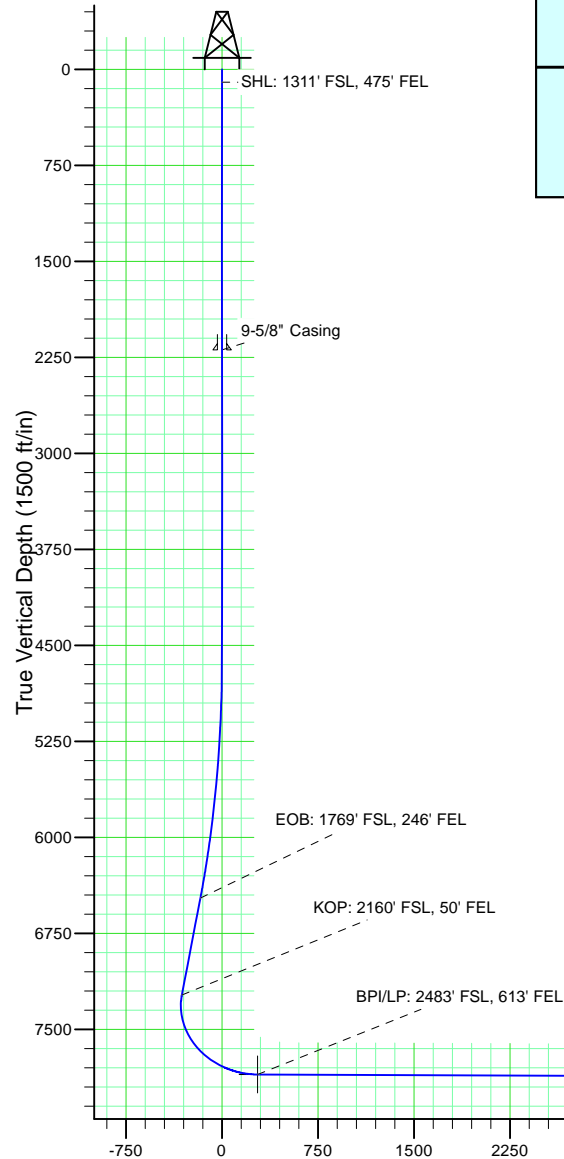
ConocoPhillips Schuh 3-65 21-20 3AH Design B

Ground Level: 5594.40
Surface Location Latitude: 39° 46' 21.540 N
Surface Location Longitude: 104° 39' 40.090 W
North Reference: True
25' RKB @ 5619.40ft (25' RKB)

North American Datum 1983
GRS 1980
US State Plane 1983
Colorado Northern Zone

Well Profile Data

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4563.50	0.00	0.00	4563.50	0.00	0.00	0.00	0.00
6563.77	30.00	26.58	6473.59	457.80	229.00	1.50	-169.34
7438.99	30.00	26.58	7231.53	849.22	424.80	0.00	-314.13
8464.25	89.76	270.41	7853.00	1173.81	-129.61	10.00	276.84
18100.83	89.76	270.41	7893.00	1243.51	-9765.85	0.00	9844.70



Wellbore Targets

Name	TVD	Latitude	Longitude
Schuh 3-65 21-20 3AH BPI	7853.00	39° 46' 33.140 N	104° 39' 41.750 W
Schuh 3-65 21-20 3AH BHL	7893.00	39° 46' 33.810 N	104° 41' 45.170 W

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Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Schuh 3-65 21-20 3AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

Project	Niobrara North Zone, Colorado North Zone, FIPS Zone: 0501		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		Schuh			
Site Position: From: Position Uncertainty:	Lat/Long	Northing:	1,161,145.634 usft	Latitude:	39° 46' 21.540 N
		Easting:	3,235,840.633 usft	Longitude:	104° 39' 39.450 W
		Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well	Schuh 3-65 21-20 3AH					
Well Position	+N-S	-0.04 ft	Northing:	1,161,145.123 usft	Latitude:	39° 46' 21.540 N
	+E-W	-49.97 ft	Easting:	3,235,790.665 usft	Longitude:	104° 39' 40.090 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	5,594.40 ft	Ground Level:	5,594.40 ft

Wellbore	Schuh 3-65 21-20 3AH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2017	12/1/2018	8.16	66.35	51,885.82981167

Design	Design B				
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	277.26	

Plan Survey Tool Program	Date	4/26/2018			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,191.00	Design B (Schuh 3-65 21-20 3AH-Gyro-BM-MS		
			Gyro - bat/mem drop m/s		
2	2,191.00	4,563.50	Design B (Schuh 3-65 21-20 3AH-MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
3	4,563.50	6,563.77	Design B (Schuh 3-65 21-20 3AH-MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
4	6,563.77	7,438.99	Design B (Schuh 3-65 21-20 3AH-MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
5	7,438.99	8,464.25	Design B (Schuh 3-65 21-20 3AH-MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
6	8,464.25	18,100.83	Design B (Schuh 3-65 21-20 3AH-MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Schuh 3-65 21-20 3AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

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	
4,563.50	0.00	0.00	4,563.50	0.00	0.00	0.00	0.00	0.00	0.00	
6,563.77	30.00	26.58	6,473.59	457.80	229.00	1.50	1.50	0.00	26.58	
7,438.99	30.00	26.58	7,231.53	849.22	424.80	0.00	0.00	0.00	0.00	
8,464.25	89.76	270.41	7,853.00	1,173.81	-129.61	10.00	5.83	-11.33	-113.16	Schuh 3-65 21-20 3
18,100.83	89.76	270.41	7,893.00	1,243.51	-9,765.85	0.00	0.00	0.00	0.00	Schuh 3-65 21-20 3

ConocoPhillips

Planning Report

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

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: 1311' FSL, 475' FEL									
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
1,727.00	0.00	0.00	1,727.00	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
1,991.00	0.00	0.00	1,991.00	0.00	0.00	0.00	0.00	0.00	0.00
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
2,191.00	0.00	0.00	2,191.00	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
4,563.50	0.00	0.00	4,563.50	0.00	0.00	0.00	0.00	0.00	0.00

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Planning Report

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

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)
4,600.00	0.55	26.58	4,600.00	0.16	0.08	-0.06	1.50	1.50	0.00
4,700.00	2.05	26.58	4,699.97	2.18	1.09	-0.81	1.50	1.50	0.00
4,800.00	3.55	26.58	4,799.85	6.55	3.27	-2.42	1.50	1.50	0.00
4,900.00	5.05	26.58	4,899.57	13.25	6.63	-4.90	1.50	1.50	0.00
5,000.00	6.55	26.58	4,999.05	22.28	11.15	-8.24	1.50	1.50	0.00
5,100.00	8.05	26.58	5,098.24	33.64	16.83	-12.44	1.50	1.50	0.00
5,200.00	9.55	26.58	5,197.06	47.32	23.67	-17.50	1.50	1.50	0.00
5,300.00	11.05	26.58	5,295.45	63.31	31.67	-23.42	1.50	1.50	0.00
5,400.00	12.55	26.58	5,393.33	81.59	40.81	-30.18	1.50	1.50	0.00
5,500.00	14.05	26.58	5,490.65	102.16	51.10	-37.79	1.50	1.50	0.00
5,600.00	15.55	26.58	5,587.33	125.00	62.53	-46.24	1.50	1.50	0.00
5,700.00	17.05	26.58	5,683.31	150.10	75.08	-55.52	1.50	1.50	0.00
5,800.00	18.55	26.58	5,778.52	177.43	88.76	-65.63	1.50	1.50	0.00
5,900.00	20.05	26.58	5,872.90	206.99	103.54	-76.57	1.50	1.50	0.00
6,000.00	21.55	26.58	5,966.38	238.74	119.43	-88.31	1.50	1.50	0.00
6,100.00	23.05	26.58	6,058.90	272.67	136.40	-100.86	1.50	1.50	0.00
6,200.00	24.55	26.58	6,150.39	308.76	154.45	-114.21	1.50	1.50	0.00
6,300.00	26.05	26.58	6,240.80	346.98	173.57	-128.35	1.50	1.50	0.00
6,400.00	27.55	26.58	6,330.06	387.30	193.74	-143.26	1.50	1.50	0.00
6,500.00	29.05	26.58	6,418.11	429.69	214.94	-158.95	1.50	1.50	0.00
6,563.77	30.00	26.58	6,473.59	457.80	229.00	-169.34	1.50	1.50	0.00
EOB: 1769' FSL, 246' FEL									
6,600.00	30.00	26.58	6,504.97	474.00	237.11	-175.34	0.00	0.00	0.00
6,700.00	30.00	26.58	6,591.57	518.72	259.48	-191.88	0.00	0.00	0.00
6,800.00	30.00	26.58	6,678.17	563.45	281.85	-208.42	0.00	0.00	0.00
6,900.00	30.00	26.58	6,764.77	608.17	304.22	-224.97	0.00	0.00	0.00
7,000.00	30.00	26.58	6,851.36	652.89	326.59	-241.51	0.00	0.00	0.00
7,100.00	30.00	26.58	6,937.96	697.61	348.97	-258.05	0.00	0.00	0.00
7,200.00	30.00	26.58	7,024.56	742.34	371.34	-274.60	0.00	0.00	0.00
7,300.00	30.00	26.58	7,111.16	787.06	393.71	-291.14	0.00	0.00	0.00
7,400.00	30.00	26.58	7,197.76	831.78	416.08	-307.68	0.00	0.00	0.00
7,438.99	30.00	26.58	7,231.53	849.22	424.80	-314.13	0.00	0.00	0.00
KOP: 2160' FSL, 50' FEL									
7,450.00	29.59	24.53	7,241.08	854.15	427.16	-315.85	10.00	-3.79	-18.62
7,500.00	28.12	14.61	7,284.90	876.80	435.26	-321.03	10.00	-2.94	-19.83
7,550.00	27.42	3.97	7,329.17	899.70	439.04	-321.87	10.00	-1.39	-21.28
7,600.00	27.56	353.13	7,373.55	922.68	438.45	-318.39	10.00	0.27	-21.68
7,650.00	28.51	342.67	7,417.71	945.57	433.51	-310.60	10.00	1.91	-20.91
7,700.00	30.21	333.07	7,461.31	968.19	424.25	-298.56	10.00	3.40	-19.21
7,750.00	32.53	324.55	7,504.02	990.37	410.75	-282.36	10.00	4.65	-17.03
7,800.00	35.36	317.15	7,545.51	1,011.95	393.10	-262.13	10.00	5.65	-14.80
7,850.00	38.57	310.78	7,585.47	1,032.75	371.45	-238.02	10.00	6.43	-12.75
7,900.00	42.08	305.27	7,623.60	1,052.62	345.95	-210.22	10.00	7.03	-11.01
7,950.00	45.83	300.49	7,659.60	1,071.40	316.80	-178.93	10.00	7.48	-9.56
8,000.00	49.74	296.29	7,693.19	1,088.96	284.22	-144.40	10.00	7.83	-8.40
8,050.00	53.80	292.56	7,724.14	1,105.16	248.47	-106.88	10.00	8.10	-7.46
8,097.77	57.77	289.35	7,751.00	1,119.26	211.58	-68.51	10.00	8.31	-6.73
Niobrara Top									
8,100.00	57.95	289.20	7,752.19	1,119.88	209.80	-66.67	10.00	8.40	-6.41
8,150.00	62.19	286.14	7,777.13	1,133.01	168.52	-24.06	10.00	8.47	-6.13
8,200.00	66.49	283.31	7,798.78	1,144.44	124.95	20.61	10.00	8.60	-5.66
8,250.00	70.84	280.66	7,816.97	1,154.09	79.40	67.01	10.00	8.70	-5.30
8,300.00	75.22	278.14	7,831.56	1,161.88	32.23	114.79	10.00	8.77	-5.03

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Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

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)	
8,350.00	79.63	275.73	7,842.45	1,167.77	-16.20	163.57	10.00	8.82	-4.83	
8,353.12	79.91	275.58	7,843.00	1,168.07	-19.25	166.63	10.00	8.84	-4.75	
C Chalk Top										
8,400.00	84.06	273.38	7,849.54	1,171.69	-65.52	212.99	10.00	8.86	-4.69	
8,450.00	88.50	271.07	7,852.78	1,173.62	-115.36	262.68	10.00	8.87	-4.62	
8,464.25	89.76	270.41	7,853.00	1,173.81	-129.61	276.84	10.00	8.88	-4.60	
BPI/LP: 2483' FSL, 613' FEL										
8,500.00	89.76	270.41	7,853.15	1,174.06	-165.36	312.33	0.00	0.00	0.00	
8,600.00	89.76	270.41	7,853.56	1,174.79	-265.35	411.62	0.00	0.00	0.00	
8,700.00	89.76	270.41	7,853.98	1,175.51	-365.35	510.90	0.00	0.00	0.00	
8,800.00	89.76	270.41	7,854.39	1,176.23	-465.34	610.19	0.00	0.00	0.00	
8,900.00	89.76	270.41	7,854.81	1,176.96	-565.34	709.48	0.00	0.00	0.00	
9,000.00	89.76	270.41	7,855.22	1,177.68	-665.34	808.77	0.00	0.00	0.00	
9,100.00	89.76	270.41	7,855.64	1,178.40	-765.33	908.05	0.00	0.00	0.00	
9,200.00	89.76	270.41	7,856.05	1,179.13	-865.33	1,007.34	0.00	0.00	0.00	
9,300.00	89.76	270.41	7,856.47	1,179.85	-965.33	1,106.63	0.00	0.00	0.00	
9,400.00	89.76	270.41	7,856.88	1,180.58	-1,065.32	1,205.91	0.00	0.00	0.00	
9,500.00	89.76	270.41	7,857.30	1,181.30	-1,165.32	1,305.20	0.00	0.00	0.00	
9,600.00	89.76	270.41	7,857.71	1,182.02	-1,265.32	1,404.49	0.00	0.00	0.00	
9,700.00	89.76	270.41	7,858.13	1,182.75	-1,365.31	1,503.77	0.00	0.00	0.00	
9,800.00	89.76	270.41	7,858.54	1,183.47	-1,465.31	1,603.06	0.00	0.00	0.00	
9,900.00	89.76	270.41	7,858.96	1,184.19	-1,565.31	1,702.35	0.00	0.00	0.00	
10,000.00	89.76	270.41	7,859.37	1,184.92	-1,665.30	1,801.64	0.00	0.00	0.00	
10,100.00	89.76	270.41	7,859.79	1,185.64	-1,765.30	1,900.92	0.00	0.00	0.00	
10,200.00	89.76	270.41	7,860.21	1,186.36	-1,865.30	2,000.21	0.00	0.00	0.00	
10,300.00	89.76	270.41	7,860.62	1,187.09	-1,965.29	2,099.50	0.00	0.00	0.00	
10,400.00	89.76	270.41	7,861.04	1,187.81	-2,065.29	2,198.78	0.00	0.00	0.00	
10,500.00	89.76	270.41	7,861.45	1,188.53	-2,165.29	2,298.07	0.00	0.00	0.00	
10,600.00	89.76	270.41	7,861.87	1,189.26	-2,265.28	2,397.36	0.00	0.00	0.00	
10,700.00	89.76	270.41	7,862.28	1,189.98	-2,365.28	2,496.64	0.00	0.00	0.00	
10,800.00	89.76	270.41	7,862.70	1,190.70	-2,465.28	2,595.93	0.00	0.00	0.00	
10,900.00	89.76	270.41	7,863.11	1,191.43	-2,565.27	2,695.22	0.00	0.00	0.00	
11,000.00	89.76	270.41	7,863.53	1,192.15	-2,665.27	2,794.50	0.00	0.00	0.00	
11,100.00	89.76	270.41	7,863.94	1,192.87	-2,765.27	2,893.79	0.00	0.00	0.00	
11,200.00	89.76	270.41	7,864.36	1,193.60	-2,865.26	2,993.08	0.00	0.00	0.00	
11,300.00	89.76	270.41	7,864.77	1,194.32	-2,965.26	3,092.37	0.00	0.00	0.00	
11,400.00	89.76	270.41	7,865.19	1,195.04	-3,065.25	3,191.65	0.00	0.00	0.00	
11,500.00	89.76	270.41	7,865.60	1,195.77	-3,165.25	3,290.94	0.00	0.00	0.00	
11,600.00	89.76	270.41	7,866.02	1,196.49	-3,265.25	3,390.23	0.00	0.00	0.00	
11,700.00	89.76	270.41	7,866.43	1,197.21	-3,365.24	3,489.51	0.00	0.00	0.00	
11,800.00	89.76	270.41	7,866.85	1,197.94	-3,465.24	3,588.80	0.00	0.00	0.00	
11,900.00	89.76	270.41	7,867.26	1,198.66	-3,565.24	3,688.09	0.00	0.00	0.00	
12,000.00	89.76	270.41	7,867.68	1,199.38	-3,665.23	3,787.37	0.00	0.00	0.00	
12,100.00	89.76	270.41	7,868.09	1,200.11	-3,765.23	3,886.66	0.00	0.00	0.00	
12,200.00	89.76	270.41	7,868.51	1,200.83	-3,865.23	3,985.95	0.00	0.00	0.00	
12,300.00	89.76	270.41	7,868.92	1,201.55	-3,965.22	4,085.24	0.00	0.00	0.00	
12,400.00	89.76	270.41	7,869.34	1,202.28	-4,065.22	4,184.52	0.00	0.00	0.00	
12,500.00	89.76	270.41	7,869.75	1,203.00	-4,165.22	4,283.81	0.00	0.00	0.00	
12,600.00	89.76	270.41	7,870.17	1,203.72	-4,265.21	4,383.10	0.00	0.00	0.00	
12,700.00	89.76	270.41	7,870.58	1,204.45	-4,365.21	4,482.38	0.00	0.00	0.00	
12,800.00	89.76	270.41	7,871.00	1,205.17	-4,465.21	4,581.67	0.00	0.00	0.00	
12,900.00	89.76	270.41	7,871.41	1,205.89	-4,565.20	4,680.96	0.00	0.00	0.00	
13,000.00	89.76	270.41	7,871.83	1,206.62	-4,665.20	4,780.24	0.00	0.00	0.00	
13,100.00	89.76	270.41	7,872.24	1,207.34	-4,765.20	4,879.53	0.00	0.00	0.00	

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Schuh 3-65 21-20 3AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

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)	
13,200.00	89.76	270.41	7,872.66	1,208.06	-4,865.19	4,978.82	0.00	0.00	0.00	
13,300.00	89.76	270.41	7,873.07	1,208.79	-4,965.19	5,078.11	0.00	0.00	0.00	
13,400.00	89.76	270.41	7,873.49	1,209.51	-5,065.19	5,177.39	0.00	0.00	0.00	
13,500.00	89.76	270.41	7,873.90	1,210.23	-5,165.18	5,276.68	0.00	0.00	0.00	
13,600.00	89.76	270.41	7,874.32	1,210.96	-5,265.18	5,375.97	0.00	0.00	0.00	
13,700.00	89.76	270.41	7,874.73	1,211.68	-5,365.17	5,475.25	0.00	0.00	0.00	
13,800.00	89.76	270.41	7,875.15	1,212.40	-5,465.17	5,574.54	0.00	0.00	0.00	
13,900.00	89.76	270.41	7,875.56	1,213.13	-5,565.17	5,673.83	0.00	0.00	0.00	
14,000.00	89.76	270.41	7,875.98	1,213.85	-5,665.16	5,773.11	0.00	0.00	0.00	
14,100.00	89.76	270.41	7,876.39	1,214.57	-5,765.16	5,872.40	0.00	0.00	0.00	
14,200.00	89.76	270.41	7,876.81	1,215.30	-5,865.16	5,971.69	0.00	0.00	0.00	
14,300.00	89.76	270.41	7,877.22	1,216.02	-5,965.15	6,070.97	0.00	0.00	0.00	
14,400.00	89.76	270.41	7,877.64	1,216.74	-6,065.15	6,170.26	0.00	0.00	0.00	
14,500.00	89.76	270.41	7,878.05	1,217.47	-6,165.15	6,269.55	0.00	0.00	0.00	
14,600.00	89.76	270.41	7,878.47	1,218.19	-6,265.14	6,368.84	0.00	0.00	0.00	
14,700.00	89.76	270.41	7,878.88	1,218.91	-6,365.14	6,468.12	0.00	0.00	0.00	
14,800.00	89.76	270.41	7,879.30	1,219.64	-6,465.14	6,567.41	0.00	0.00	0.00	
14,900.00	89.76	270.41	7,879.71	1,220.36	-6,565.13	6,666.70	0.00	0.00	0.00	
15,000.00	89.76	270.41	7,880.13	1,221.08	-6,665.13	6,765.98	0.00	0.00	0.00	
15,100.00	89.76	270.41	7,880.54	1,221.81	-6,765.13	6,865.27	0.00	0.00	0.00	
15,200.00	89.76	270.41	7,880.96	1,222.53	-6,865.12	6,964.56	0.00	0.00	0.00	
15,300.00	89.76	270.41	7,881.37	1,223.25	-6,965.12	7,063.84	0.00	0.00	0.00	
15,400.00	89.76	270.41	7,881.79	1,223.98	-7,065.12	7,163.13	0.00	0.00	0.00	
15,500.00	89.76	270.41	7,882.20	1,224.70	-7,165.11	7,262.42	0.00	0.00	0.00	
15,600.00	89.76	270.41	7,882.62	1,225.42	-7,265.11	7,361.71	0.00	0.00	0.00	
15,700.00	89.76	270.41	7,883.03	1,226.15	-7,365.11	7,460.99	0.00	0.00	0.00	
15,800.00	89.76	270.41	7,883.45	1,226.87	-7,465.10	7,560.28	0.00	0.00	0.00	
15,900.00	89.76	270.41	7,883.86	1,227.59	-7,565.10	7,659.57	0.00	0.00	0.00	
16,000.00	89.76	270.41	7,884.28	1,228.32	-7,665.09	7,758.85	0.00	0.00	0.00	
16,100.00	89.76	270.41	7,884.70	1,229.04	-7,765.09	7,858.14	0.00	0.00	0.00	
16,200.00	89.76	270.41	7,885.11	1,229.76	-7,865.09	7,957.43	0.00	0.00	0.00	
16,300.00	89.76	270.41	7,885.53	1,230.49	-7,965.08	8,056.71	0.00	0.00	0.00	
16,400.00	89.76	270.41	7,885.94	1,231.21	-8,065.08	8,156.00	0.00	0.00	0.00	
16,500.00	89.76	270.41	7,886.36	1,231.93	-8,165.08	8,255.29	0.00	0.00	0.00	
16,600.00	89.76	270.41	7,886.77	1,232.66	-8,265.07	8,354.57	0.00	0.00	0.00	
16,700.00	89.76	270.41	7,887.19	1,233.38	-8,365.07	8,453.86	0.00	0.00	0.00	
16,800.00	89.76	270.41	7,887.60	1,234.10	-8,465.07	8,553.15	0.00	0.00	0.00	
16,900.00	89.76	270.41	7,888.02	1,234.83	-8,565.06	8,652.44	0.00	0.00	0.00	
17,000.00	89.76	270.41	7,888.43	1,235.55	-8,665.06	8,751.72	0.00	0.00	0.00	
17,100.00	89.76	270.41	7,888.85	1,236.27	-8,765.06	8,851.01	0.00	0.00	0.00	
17,200.00	89.76	270.41	7,889.26	1,237.00	-8,865.05	8,950.30	0.00	0.00	0.00	
17,300.00	89.76	270.41	7,889.68	1,237.72	-8,965.05	9,049.58	0.00	0.00	0.00	
17,400.00	89.76	270.41	7,890.09	1,238.44	-9,065.05	9,148.87	0.00	0.00	0.00	
17,500.00	89.76	270.41	7,890.51	1,239.17	-9,165.04	9,248.16	0.00	0.00	0.00	
17,600.00	89.76	270.41	7,890.92	1,239.89	-9,265.04	9,347.44	0.00	0.00	0.00	
17,700.00	89.76	270.41	7,891.34	1,240.61	-9,365.04	9,446.73	0.00	0.00	0.00	
17,800.00	89.76	270.41	7,891.75	1,241.34	-9,465.03	9,546.02	0.00	0.00	0.00	
17,900.00	89.76	270.41	7,892.17	1,242.06	-9,565.03	9,645.31	0.00	0.00	0.00	
18,000.00	89.76	270.41	7,892.58	1,242.78	-9,665.03	9,744.59	0.00	0.00	0.00	
18,100.83	89.76	270.41	7,893.00	1,243.51	-9,765.85	9,844.70	0.00	0.00	0.00	
BHL: 2483' FSL, 325' FWL										

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Schuh 3-65 21-20 3AH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5619.40ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5619.40ft (25' RKB)
Site:	Schuh	North Reference:	True
Well:	Schuh 3-65 21-20 3AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Schuh 3-65 21-20 3AH		
Design:	Design B		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Schuh 3-65 21-20 3AH - plan hits target center - Point	0.00	0.00	7,853.00	1,173.81	-129.61	1,162,317.638	3,235,649.960	39° 46' 33.140 N	104° 39' 41.750 W
Schuh 3-65 21-20 3AH - plan hits target center - Point	0.00	0.00	7,893.00	1,243.51	-9,765.85	1,162,296.185	3,226,013.595	39° 46' 33.810 N	104° 41' 45.170 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,191.00	2,191.00	9-5/8" Casing	9-5/8	12-1/4
18,100.83	7,893.00	5-1/2" Casing	5-1/2	8-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,727.00	1,727.00	Fox Hills Top		0.00	
1,991.00	1,991.00	Fox Hills Base		0.00	
2,191.00	2,191.00	Surface Casing		0.00	
8,097.77	7,751.00	Niobrara Top		0.00	
8,353.12	7,843.00	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: 1311' FSL, 475' FEL
6,563.77	6,473.59	457.80	229.00	EOB: 1769' FSL, 246' FEL
7,438.99	7,231.53	849.22	424.80	KOP: 2160' FSL, 50' FEL
8,464.25	7,853.00	1,173.81	-129.61	BPI/LP: 2483' FSL, 613' FEL
18,100.83	7,893.00	1,243.51	-9,765.85	BHL: 2483' FSL, 325' FWL