

ConocoPhillips RBU Gold Data

Niobrara Central Zone

Cottonwood Creek

Cottonwood Creek 4-65 27-28 3DH

Cottonwood Creek 4-65 27-28 3DH

Plan: Cottonwood Creek 4-65 27-28 3DH

Standard Planning Report

22 August, 2017

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Cottonwood Creek 4-65 27-28 3DH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	27' RKB @ 5776.50ft (27' RKB)
Project:	Niobrara Central Zone	MD Reference:	27' RKB @ 5776.50ft (27' RKB)
Site:	Cottonwood Creek	North Reference:	True
Well:	Cottonwood Creek 4-65 27-28 3DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Cottonwood Creek 4-65 27-28 3DH		
Design:	Cottonwood Creek 4-65 27-28 3DH		

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		Cottonwood Creek			
Site Position: From:		Northing:	1,674,361.118 usft	Latitude:	39° 40' 55.380 N
	Lat/Long	Easting:	3,231,224.950 usft	Longitude:	104° 40' 42.431 W
	Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:

Well	Cottonwood Creek 4-65 27-28 3DH					
Well Position	+N/-S	-4,867.39 ft	Northing:	1,669,576.738 usft	Latitude:	39° 40' 7.260 N
	+E/-W	9,149.99 ft	Easting:	3,240,418.449 usft	Longitude:	104° 38' 45.420 W
Position Uncertainty		2.00 ft	Wellhead Elevation:		Ground Level:	5,749.50 ft

Wellbore	Cottonwood Creek 4-65 27-28 3DH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2017	8/1/2018	8.17	66.29	51,875.47519909

Design	Cottonwood Creek 4-65 27-28 3DH				
Audit Notes:	JM 8/3/2017 Rev B				
Version:		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	277.18	

Plan Survey Tool Program	Date	8/22/2017			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,222.00	Cottonwood Creek 4-65 27-28 3D	Gyro-BM-MS	
				Gyro - bat/mem drop m/s	
2	2,222.00	7,566.20	Cottonwood Creek 4-65 27-28 3D	MWD+IFR1+MS_CoP	
				Fixed:v2:Eagleford, crustal dec	
3	7,566.20	18,101.91	Cottonwood Creek 4-65 27-28 3D	MWD+IFR1+MS_CoP	
				Fixed:v2:Eagleford, crustal dec	

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Design:	Cottonwood Creek 4-65 27-28 3DH		

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	
2,322.00	0.00	0.00	2,322.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,839.16	22.76	58.90	3,799.58	153.62	254.61	1.50	1.50	0.00	58.90	
7,566.20	22.76	58.90	7,236.48	898.42	1,489.05	0.00	0.00	0.00	0.00	
8,654.87	89.53	270.06	7,982.00	1,059.43	953.19	10.00	6.13	-13.67	-146.84	Cottonwood Creek 4-f
18,101.91	89.53	270.06	8,060.00	1,069.93	-8,493.51	0.00	0.00	0.00	0.00	Cottonwood Creek 4-f

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Wellbore:	Cottonwood Creek 4-65 27-28 3DH		
Design:	Cottonwood Creek 4-65 27-28 3DH		

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
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
SL 470' FSL 1410' FEL									
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
1,800.00	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
2,100.00	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
2,222.00	0.00	0.00	2,222.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface									
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,322.00	0.00	0.00	2,322.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.50									
2,400.00	1.17	58.90	2,399.99	0.41	0.68	-0.63	1.50	1.50	0.00
2,500.00	2.67	58.90	2,499.94	2.14	3.55	-3.25	1.50	1.50	0.00
2,600.00	4.17	58.90	2,599.75	5.22	8.66	-7.94	1.50	1.50	0.00
2,700.00	5.67	58.90	2,699.38	9.65	16.00	-14.67	1.50	1.50	0.00
2,800.00	7.17	58.90	2,798.75	15.43	25.58	-23.45	1.50	1.50	0.00
2,900.00	8.67	58.90	2,897.80	22.55	37.37	-34.26	1.50	1.50	0.00
3,000.00	10.17	58.90	2,996.45	31.00	51.39	-47.11	1.50	1.50	0.00
3,100.00	11.67	58.90	3,094.63	40.79	67.61	-61.98	1.50	1.50	0.00
3,200.00	13.17	58.90	3,192.29	51.90	86.02	-78.86	1.50	1.50	0.00
3,300.00	14.67	58.90	3,289.35	64.33	106.62	-97.74	1.50	1.50	0.00
3,400.00	16.17	58.90	3,385.75	78.06	129.38	-118.61	1.50	1.50	0.00
3,500.00	17.67	58.90	3,481.42	93.10	154.30	-141.46	1.50	1.50	0.00
3,600.00	19.17	58.90	3,576.29	109.42	181.36	-166.26	1.50	1.50	0.00
3,700.00	20.67	58.90	3,670.30	127.02	210.53	-193.00	1.50	1.50	0.00
3,800.00	22.17	58.90	3,763.39	145.89	241.80	-221.67	1.50	1.50	0.00
3,839.16	22.76	58.90	3,799.58	153.62	254.61	-233.41	1.50	1.50	0.00
Start 3727.05 hold at 3839.16 MD									
3,900.00	22.76	58.90	3,855.69	165.78	274.76	-251.89	0.00	0.00	0.00
4,000.00	22.76	58.90	3,947.90	185.76	307.88	-282.25	0.00	0.00	0.00
4,100.00	22.76	58.90	4,040.12	205.74	341.00	-312.61	0.00	0.00	0.00
4,200.00	22.76	58.90	4,132.33	225.73	374.12	-342.98	0.00	0.00	0.00
4,300.00	22.76	58.90	4,224.55	245.71	407.24	-373.34	0.00	0.00	0.00
4,400.00	22.76	58.90	4,316.76	265.69	440.37	-403.71	0.00	0.00	0.00
4,500.00	22.76	58.90	4,408.98	285.68	473.49	-434.07	0.00	0.00	0.00
4,600.00	22.76	58.90	4,501.19	305.66	506.61	-464.43	0.00	0.00	0.00

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Wellbore:	Cottonwood Creek 4-65 27-28 3DH		
Design:	Cottonwood Creek 4-65 27-28 3DH		

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	22.76	58.90	4,593.41	325.64	539.73	-494.80	0.00	0.00	0.00
4,800.00	22.76	58.90	4,685.62	345.63	572.85	-525.16	0.00	0.00	0.00
4,900.00	22.76	58.90	4,777.84	365.61	605.97	-555.53	0.00	0.00	0.00
5,000.00	22.76	58.90	4,870.05	385.60	639.09	-585.89	0.00	0.00	0.00
5,100.00	22.76	58.90	4,962.27	405.58	672.21	-616.25	0.00	0.00	0.00
5,200.00	22.76	58.90	5,054.48	425.56	705.34	-646.62	0.00	0.00	0.00
5,300.00	22.76	58.90	5,146.70	445.55	738.46	-676.98	0.00	0.00	0.00
5,400.00	22.76	58.90	5,238.91	465.53	771.58	-707.35	0.00	0.00	0.00
5,500.00	22.76	58.90	5,331.13	485.51	804.70	-737.71	0.00	0.00	0.00
5,600.00	22.76	58.90	5,423.34	505.50	837.82	-768.07	0.00	0.00	0.00
5,700.00	22.76	58.90	5,515.56	525.48	870.94	-798.44	0.00	0.00	0.00
5,800.00	22.76	58.90	5,607.77	545.47	904.06	-828.80	0.00	0.00	0.00
5,900.00	22.76	58.90	5,699.99	565.45	937.19	-859.17	0.00	0.00	0.00
6,000.00	22.76	58.90	5,792.20	585.43	970.31	-889.53	0.00	0.00	0.00
6,100.00	22.76	58.90	5,884.42	605.42	1,003.43	-919.89	0.00	0.00	0.00
6,200.00	22.76	58.90	5,976.63	625.40	1,036.55	-950.26	0.00	0.00	0.00
6,300.00	22.76	58.90	6,068.85	645.38	1,069.67	-980.62	0.00	0.00	0.00
6,400.00	22.76	58.90	6,161.06	665.37	1,102.79	-1,010.99	0.00	0.00	0.00
6,500.00	22.76	58.90	6,253.28	685.35	1,135.91	-1,041.35	0.00	0.00	0.00
6,600.00	22.76	58.90	6,345.49	705.33	1,169.03	-1,071.71	0.00	0.00	0.00
6,700.00	22.76	58.90	6,437.71	725.32	1,202.16	-1,102.08	0.00	0.00	0.00
6,800.00	22.76	58.90	6,529.92	745.30	1,235.28	-1,132.44	0.00	0.00	0.00
6,900.00	22.76	58.90	6,622.14	765.29	1,268.40	-1,162.81	0.00	0.00	0.00
7,000.00	22.76	58.90	6,714.36	785.27	1,301.52	-1,193.17	0.00	0.00	0.00
7,100.00	22.76	58.90	6,806.57	805.25	1,334.64	-1,223.53	0.00	0.00	0.00
7,200.00	22.76	58.90	6,898.79	825.24	1,367.76	-1,253.90	0.00	0.00	0.00
7,300.00	22.76	58.90	6,991.00	845.22	1,400.88	-1,284.26	0.00	0.00	0.00
7,400.00	22.76	58.90	7,083.22	865.20	1,434.00	-1,314.63	0.00	0.00	0.00
7,500.00	22.76	58.90	7,175.43	885.19	1,467.13	-1,344.99	0.00	0.00	0.00
7,566.00	22.76	58.90	7,236.29	898.38	1,488.99	-1,365.03	0.00	0.00	0.00
KOP 1368' FSL 79' FWL									
7,566.20	22.76	58.90	7,236.48	898.42	1,489.05	-1,365.09	0.00	0.00	0.00
Start DLS 10.00 TFO -146.84									
7,600.00	20.01	53.49	7,267.95	905.24	1,499.30	-1,374.41	10.00	-8.13	-16.00
7,650.00	16.36	42.46	7,315.46	915.53	1,510.94	-1,384.67	10.00	-7.29	-22.06
7,700.00	13.58	26.27	7,363.78	925.99	1,518.29	-1,390.66	10.00	-5.57	-32.38
7,750.00	12.25	4.54	7,412.54	936.55	1,521.31	-1,392.33	10.00	-2.65	-43.45
7,800.00	12.85	341.55	7,461.38	947.12	1,519.97	-1,389.68	10.00	1.20	-45.99
7,850.00	15.15	323.05	7,509.91	957.62	1,514.28	-1,382.72	10.00	4.59	-36.99
7,900.00	18.52	310.22	7,557.78	967.98	1,504.28	-1,371.51	10.00	6.74	-25.67
7,950.00	22.49	301.49	7,604.61	978.11	1,490.06	-1,356.13	10.00	7.94	-17.46
8,000.00	26.79	295.35	7,650.06	987.93	1,471.71	-1,336.69	10.00	8.60	-12.28
8,050.00	31.29	290.83	7,693.77	997.38	1,449.38	-1,313.36	10.00	8.99	-9.04
8,100.00	35.90	287.36	7,735.41	1,006.37	1,423.23	-1,286.29	10.00	9.24	-6.94
8,150.00	40.60	284.59	7,774.66	1,014.85	1,393.47	-1,255.71	10.00	9.40	-5.54
8,200.00	45.35	282.31	7,811.24	1,022.75	1,360.33	-1,221.84	10.00	9.50	-4.56
8,250.00	50.15	280.37	7,844.85	1,030.00	1,324.05	-1,184.94	10.00	9.58	-3.87
8,300.00	54.96	278.69	7,875.24	1,036.55	1,284.91	-1,145.29	10.00	9.64	-3.36
8,350.00	59.80	277.20	7,902.18	1,042.35	1,243.21	-1,103.19	10.00	9.68	-2.99
8,400.00	64.66	275.85	7,925.47	1,047.36	1,199.27	-1,058.96	10.00	9.71	-2.71
8,450.00	69.53	274.60	7,944.93	1,051.54	1,153.42	-1,012.95	10.00	9.73	-2.50
8,500.00	74.40	273.43	7,960.41	1,054.86	1,106.01	-965.50	10.00	9.75	-2.34
8,550.00	79.28	272.31	7,971.79	1,057.29	1,057.40	-916.96	10.00	9.76	-2.23

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Planned Survey										
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8,600.00	84.16	271.23	7,978.98	1,058.82	1,007.96	-867.72	10.00	9.77	-2.16	
8,654.00	89.44	270.08	7,981.99	1,059.43	954.06	-814.17	10.00	9.77	-2.12	
BPI 1532' FSL 460' FEL										
8,654.87	89.53	270.06	7,982.00	1,059.43	953.19	-813.31	10.00	9.77	-2.12	
Start 9447.04 hold at 8654.87 MD										
8,700.00	89.53	270.06	7,982.37	1,059.48	908.07	-768.53	0.00	0.00	0.00	
8,800.00	89.53	270.06	7,983.20	1,059.60	808.07	-669.30	0.00	0.00	0.00	
8,900.00	89.53	270.06	7,984.02	1,059.71	708.07	-570.08	0.00	0.00	0.00	
9,000.00	89.53	270.06	7,984.85	1,059.82	608.08	-470.85	0.00	0.00	0.00	
9,100.00	89.53	270.06	7,985.68	1,059.93	508.08	-371.62	0.00	0.00	0.00	
9,200.00	89.53	270.06	7,986.50	1,060.04	408.08	-272.40	0.00	0.00	0.00	
9,300.00	89.53	270.06	7,987.33	1,060.15	308.09	-173.17	0.00	0.00	0.00	
9,400.00	89.53	270.06	7,988.15	1,060.26	208.09	-73.94	0.00	0.00	0.00	
9,500.00	89.53	270.06	7,988.98	1,060.37	108.09	25.28	0.00	0.00	0.00	
9,600.00	89.53	270.06	7,989.80	1,060.48	8.10	124.51	0.00	0.00	0.00	
9,700.00	89.53	270.06	7,990.63	1,060.60	-91.90	223.74	0.00	0.00	0.00	
9,800.00	89.53	270.06	7,991.46	1,060.71	-191.90	322.96	0.00	0.00	0.00	
9,900.00	89.53	270.06	7,992.28	1,060.82	-291.89	422.19	0.00	0.00	0.00	
10,000.00	89.53	270.06	7,993.11	1,060.93	-391.89	521.41	0.00	0.00	0.00	
10,100.00	89.53	270.06	7,993.93	1,061.04	-491.89	620.64	0.00	0.00	0.00	
10,200.00	89.53	270.06	7,994.76	1,061.15	-591.88	719.87	0.00	0.00	0.00	
10,300.00	89.53	270.06	7,995.58	1,061.26	-691.88	819.09	0.00	0.00	0.00	
10,400.00	89.53	270.06	7,996.41	1,061.37	-791.88	918.32	0.00	0.00	0.00	
10,500.00	89.53	270.06	7,997.23	1,061.48	-891.87	1,017.55	0.00	0.00	0.00	
10,600.00	89.53	270.06	7,998.06	1,061.60	-991.87	1,116.77	0.00	0.00	0.00	
10,700.00	89.53	270.06	7,998.89	1,061.71	-1,091.86	1,216.00	0.00	0.00	0.00	
10,800.00	89.53	270.06	7,999.71	1,061.82	-1,191.86	1,315.22	0.00	0.00	0.00	
10,900.00	89.53	270.06	8,000.54	1,061.93	-1,291.86	1,414.45	0.00	0.00	0.00	
11,000.00	89.53	270.06	8,001.36	1,062.04	-1,391.85	1,513.68	0.00	0.00	0.00	
11,100.00	89.53	270.06	8,002.19	1,062.15	-1,491.85	1,612.90	0.00	0.00	0.00	
11,200.00	89.53	270.06	8,003.01	1,062.26	-1,591.85	1,712.13	0.00	0.00	0.00	
11,300.00	89.53	270.06	8,003.84	1,062.37	-1,691.84	1,811.36	0.00	0.00	0.00	
11,400.00	89.53	270.06	8,004.67	1,062.49	-1,791.84	1,910.58	0.00	0.00	0.00	
11,500.00	89.53	270.06	8,005.49	1,062.60	-1,891.84	2,009.81	0.00	0.00	0.00	
11,600.00	89.53	270.06	8,006.32	1,062.71	-1,991.83	2,109.04	0.00	0.00	0.00	
11,700.00	89.53	270.06	8,007.14	1,062.82	-2,091.83	2,208.26	0.00	0.00	0.00	
11,800.00	89.53	270.06	8,007.97	1,062.93	-2,191.83	2,307.49	0.00	0.00	0.00	
11,900.00	89.53	270.06	8,008.79	1,063.04	-2,291.82	2,406.71	0.00	0.00	0.00	
12,000.00	89.53	270.06	8,009.62	1,063.15	-2,391.82	2,505.94	0.00	0.00	0.00	
12,100.00	89.53	270.06	8,010.45	1,063.26	-2,491.82	2,605.17	0.00	0.00	0.00	
12,200.00	89.53	270.06	8,011.27	1,063.37	-2,591.81	2,704.39	0.00	0.00	0.00	
12,300.00	89.53	270.06	8,012.10	1,063.49	-2,691.81	2,803.62	0.00	0.00	0.00	
12,400.00	89.53	270.06	8,012.92	1,063.60	-2,791.81	2,902.85	0.00	0.00	0.00	
12,500.00	89.53	270.06	8,013.75	1,063.71	-2,891.80	3,002.07	0.00	0.00	0.00	
12,600.00	89.53	270.06	8,014.57	1,063.82	-2,991.80	3,101.30	0.00	0.00	0.00	
12,700.00	89.53	270.06	8,015.40	1,063.93	-3,091.80	3,200.53	0.00	0.00	0.00	
12,800.00	89.53	270.06	8,016.22	1,064.04	-3,191.79	3,299.75	0.00	0.00	0.00	
12,900.00	89.53	270.06	8,017.05	1,064.15	-3,291.79	3,398.98	0.00	0.00	0.00	
13,000.00	89.53	270.06	8,017.88	1,064.26	-3,391.79	3,498.20	0.00	0.00	0.00	
13,100.00	89.53	270.06	8,018.70	1,064.37	-3,491.78	3,597.43	0.00	0.00	0.00	
13,200.00	89.53	270.06	8,019.53	1,064.49	-3,591.78	3,696.66	0.00	0.00	0.00	
13,300.00	89.53	270.06	8,020.35	1,064.60	-3,691.77	3,795.88	0.00	0.00	0.00	
13,400.00	89.53	270.06	8,021.18	1,064.71	-3,791.77	3,895.11	0.00	0.00	0.00	
13,500.00	89.53	270.06	8,022.00	1,064.82	-3,891.77	3,994.34	0.00	0.00	0.00	

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Cottonwood Creek 4-65 27-28 3DH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	27' RKB @ 5776.50ft (27' RKB)
Project:	Niobrara Central Zone	MD Reference:	27' RKB @ 5776.50ft (27' RKB)
Site:	Cottonwood Creek	North Reference:	True
Well:	Cottonwood Creek 4-65 27-28 3DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Cottonwood Creek 4-65 27-28 3DH		
Design:	Cottonwood Creek 4-65 27-28 3DH		

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	89.53	270.06	8,022.83	1,064.93	-3,991.76	4,093.56	0.00	0.00	0.00
13,700.00	89.53	270.06	8,023.66	1,065.04	-4,091.76	4,192.79	0.00	0.00	0.00
13,800.00	89.53	270.06	8,024.48	1,065.15	-4,191.76	4,292.02	0.00	0.00	0.00
13,900.00	89.53	270.06	8,025.31	1,065.26	-4,291.75	4,391.24	0.00	0.00	0.00
14,000.00	89.53	270.06	8,026.13	1,065.37	-4,391.75	4,490.47	0.00	0.00	0.00
14,100.00	89.53	270.06	8,026.96	1,065.49	-4,491.75	4,589.69	0.00	0.00	0.00
14,200.00	89.53	270.06	8,027.78	1,065.60	-4,591.74	4,688.92	0.00	0.00	0.00
14,300.00	89.53	270.06	8,028.61	1,065.71	-4,691.74	4,788.15	0.00	0.00	0.00
14,400.00	89.53	270.06	8,029.44	1,065.82	-4,791.74	4,887.37	0.00	0.00	0.00
14,500.00	89.53	270.06	8,030.26	1,065.93	-4,891.73	4,986.60	0.00	0.00	0.00
14,600.00	89.53	270.06	8,031.09	1,066.04	-4,991.73	5,085.83	0.00	0.00	0.00
14,700.00	89.53	270.06	8,031.91	1,066.15	-5,091.73	5,185.05	0.00	0.00	0.00
14,800.00	89.53	270.06	8,032.74	1,066.26	-5,191.72	5,284.28	0.00	0.00	0.00
14,900.00	89.53	270.06	8,033.56	1,066.37	-5,291.72	5,383.50	0.00	0.00	0.00
15,000.00	89.53	270.06	8,034.39	1,066.49	-5,391.72	5,482.73	0.00	0.00	0.00
15,100.00	89.53	270.06	8,035.21	1,066.60	-5,491.71	5,581.96	0.00	0.00	0.00
15,200.00	89.53	270.06	8,036.04	1,066.71	-5,591.71	5,681.18	0.00	0.00	0.00
15,300.00	89.53	270.06	8,036.87	1,066.82	-5,691.71	5,780.41	0.00	0.00	0.00
15,400.00	89.53	270.06	8,037.69	1,066.93	-5,791.70	5,879.64	0.00	0.00	0.00
15,500.00	89.53	270.06	8,038.52	1,067.04	-5,891.70	5,978.86	0.00	0.00	0.00
15,600.00	89.53	270.06	8,039.34	1,067.15	-5,991.69	6,078.09	0.00	0.00	0.00
15,700.00	89.53	270.06	8,040.17	1,067.26	-6,091.69	6,177.32	0.00	0.00	0.00
15,800.00	89.53	270.06	8,040.99	1,067.38	-6,191.69	6,276.54	0.00	0.00	0.00
15,900.00	89.53	270.06	8,041.82	1,067.49	-6,291.68	6,375.77	0.00	0.00	0.00
16,000.00	89.53	270.06	8,042.65	1,067.60	-6,391.68	6,474.99	0.00	0.00	0.00
16,100.00	89.53	270.06	8,043.47	1,067.71	-6,491.68	6,574.22	0.00	0.00	0.00
16,200.00	89.53	270.06	8,044.30	1,067.82	-6,591.67	6,673.45	0.00	0.00	0.00
16,300.00	89.53	270.06	8,045.12	1,067.93	-6,691.67	6,772.67	0.00	0.00	0.00
16,400.00	89.53	270.06	8,045.95	1,068.04	-6,791.67	6,871.90	0.00	0.00	0.00
16,500.00	89.53	270.06	8,046.77	1,068.15	-6,891.66	6,971.13	0.00	0.00	0.00
16,600.00	89.53	270.06	8,047.60	1,068.26	-6,991.66	7,070.35	0.00	0.00	0.00
16,700.00	89.53	270.06	8,048.43	1,068.38	-7,091.66	7,169.58	0.00	0.00	0.00
16,800.00	89.53	270.06	8,049.25	1,068.49	-7,191.65	7,268.81	0.00	0.00	0.00
16,900.00	89.53	270.06	8,050.08	1,068.60	-7,291.65	7,368.03	0.00	0.00	0.00
17,000.00	89.53	270.06	8,050.90	1,068.71	-7,391.65	7,467.26	0.00	0.00	0.00
17,100.00	89.53	270.06	8,051.73	1,068.82	-7,491.64	7,566.48	0.00	0.00	0.00
17,200.00	89.53	270.06	8,052.55	1,068.93	-7,591.64	7,665.71	0.00	0.00	0.00
17,300.00	89.53	270.06	8,053.38	1,069.04	-7,691.64	7,764.94	0.00	0.00	0.00
17,400.00	89.53	270.06	8,054.20	1,069.15	-7,791.63	7,864.16	0.00	0.00	0.00
17,500.00	89.53	270.06	8,055.03	1,069.26	-7,891.63	7,963.39	0.00	0.00	0.00
17,600.00	89.53	270.06	8,055.86	1,069.38	-7,991.63	8,062.62	0.00	0.00	0.00
17,700.00	89.53	270.06	8,056.68	1,069.49	-8,091.62	8,161.84	0.00	0.00	0.00
17,800.00	89.53	270.06	8,057.51	1,069.60	-8,191.62	8,261.07	0.00	0.00	0.00
17,900.00	89.53	270.06	8,058.33	1,069.71	-8,291.62	8,360.29	0.00	0.00	0.00
17,966.00	89.53	270.06	8,058.88	1,069.78	-8,357.61	8,425.78	0.00	0.00	0.00
EPI 1532' FSL 835' FWL									
18,000.00	89.53	270.06	8,059.16	1,069.82	-8,391.61	8,459.52	0.00	0.00	0.00
18,101.00	89.53	270.06	8,059.99	1,069.93	-8,492.61	8,559.74	0.00	0.00	0.00
BHL 1532' FSL 700' FWL									
18,101.91	89.53	270.06	8,060.00	1,069.93	-8,493.51	8,560.64	0.00	0.00	0.00
TD at 18101.91									

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Cottonwood Creek 4-65 27-28 3DH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	27' RKB @ 5776.50ft (27' RKB)
Project:	Niobrara Central Zone	MD Reference:	27' RKB @ 5776.50ft (27' RKB)
Site:	Cottonwood Creek	North Reference:	True
Well:	Cottonwood Creek 4-65 27-28 3DH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Cottonwood Creek 4-65 27-28 3DH		
Design:	Cottonwood Creek 4-65 27-28 3DH		

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									
Cottonwood Creek 4-65	0.00	0.00	7,982.00	1,059.43	953.19	1,670,645.068	3,241,361.626	39° 40' 17.730 N	104° 38' 33.230 W
- plan hits target center									
- Point									
Cottonwood Creek 4-65	0.00	0.00	8,060.00	1,069.93	-8,493.51	1,670,566.760	3,231,915.397	39° 40' 17.820 N	104° 40' 34.040 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(ft)	(ft)		(")	(")	
2,222.00	2,222.00	Surface	9-5/8	12-1/4	
18,101.91	8,060.00	Production	5-1/2	8-1/2	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
1,000.00	1,000.00	0.00	0.00	SL 470' FSL 1410' FEL
2,322.00	2,322.00	0.00	0.00	Start Build 1.50
3,839.16	3,799.58	153.62	254.61	Start 3727.05 hold at 3839.16 MD
7,566.00	7,236.29	898.38	1,488.99	KOP 1368' FSL 79' FWL
7,566.20	7,236.48	898.42	1,489.05	Start DLS 10.00 TFO -146.84
8,654.00	7,981.99	1,059.43	954.06	BPI 1532' FSL 460' FEL
8,654.87	7,982.00	1,059.43	953.19	Start 9447.04 hold at 8654.87 MD
17,966.00	8,058.88	1,069.78	-8,357.61	EPI 1532' FSL 835' FWL
18,101.00	8,059.99	1,069.93	-8,492.61	BHL 1532' FSL 700' FWL
18,101.91	8,060.00	1,069.93	-8,493.51	TD at 18101.91



ConocoPhillips

Arapahoe County, Colorado

Cottonwood Creek 4-65 27-28 3DH

Ground Level: 5749.50
Surface Location Latitude: 39° 40' 7.260 N
Surface Location Longitude: 104° 38' 45.420 W
North Reference: True
27' RKB @ 5776.50ft (27' RKB)

North American Datum 1983
GRS 1980
US State Plane 1983
Colorado Central 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
2322.00	0.00	0.00	2322.00	0.00	0.00	0.00	0.00
3839.16	22.76	58.90	3799.58	153.62	254.61	1.50	-233.41
7566.20	22.76	58.90	7236.48	898.42	1489.05	0.00	-1365.09
8654.87	89.53	270.06	7982.00	1059.43	953.19	10.00	-813.31
18101.91	89.53	270.06	8060.00	1069.93	-8493.51	0.00	8560.64

