

ConocoPhillips RBU Gold Data

Niobrara North Zone

Crow

Crow 3-64 29-30 3CH

Crow 3-64 29-30 3CH

Plan: Design B

Standard Planning Report

17 April, 2018



ConocoPhillips

Adams County, Colorado

Crow 3-64 29-30 3CH

Design B

Ground Level: 5533.30
Surface Location Latitude: 39° 45' 27.910 N
Surface Location Longitude: 104° 33' 57.310 W
North Reference: True
25' RKB @ 5558.30ft (25' RKB)

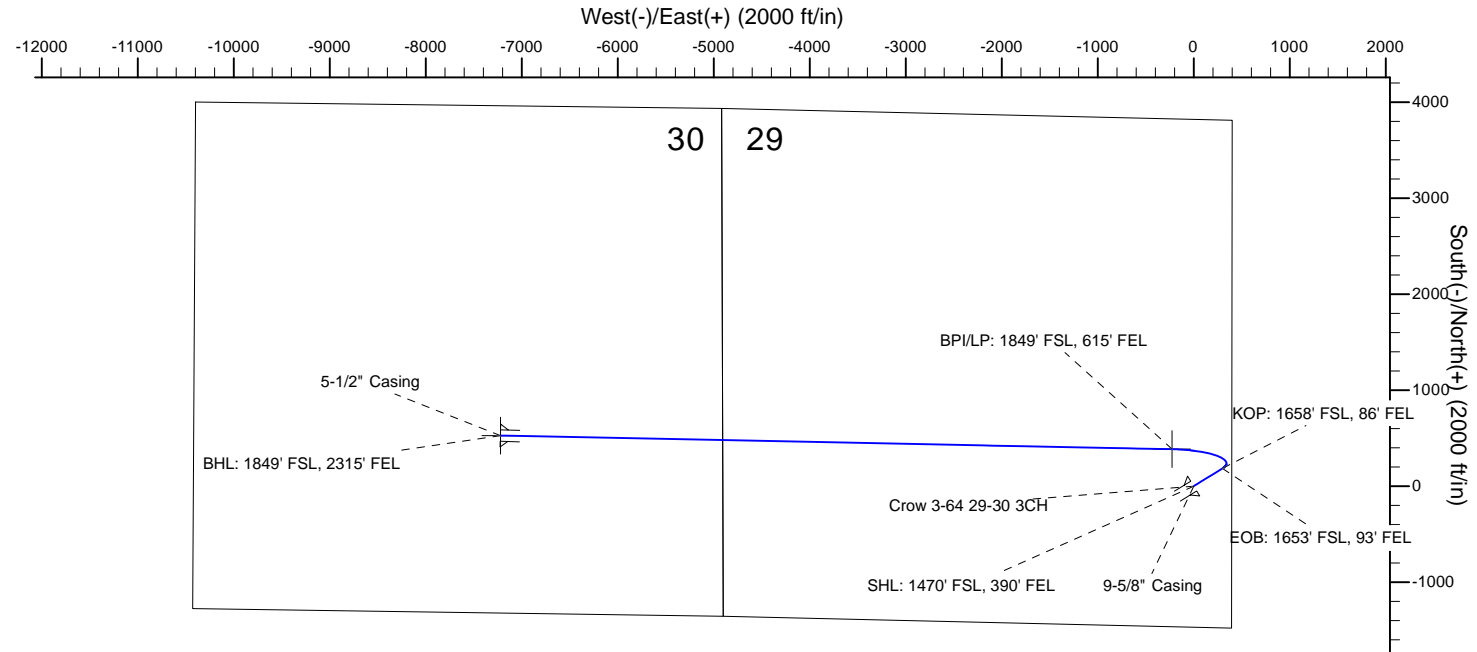
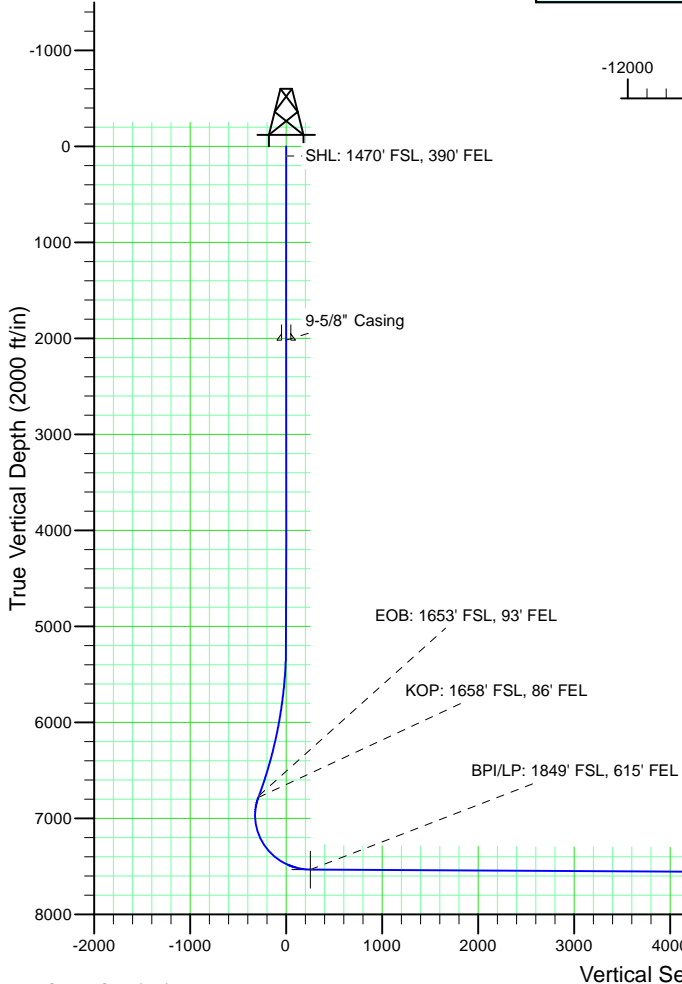
North American Datum 1983
GRS 1980
US State Plane 1983
Colorado Northern Zone

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
5170.10	0.00	0.00	5170.10	0.00	0.00	0.00	0.00
6816.50	24.70	58.32	6765.99	183.49	297.30	1.50	-283.18
6834.85	24.70	58.32	6782.67	187.52	303.82	0.00	-289.39
7937.25	89.68	271.16	7534.00	384.52	-225.70	10.00	253.04
14936.16	89.68	271.16	7573.00	526.21	-7223.06	0.00	7242.20

Casing Depths

TVD	MD	Name	Size
2019.00	2019.00	9-5/8" Casing	9-5/8
7573.00	14936.16	5-1/2" Casing	5-1/2



Wellbore Targets			
Name	TVD	Latitude	Longitude
Crow 3-64 29-30 3CH BPI	7534.00	39° 45' 31.710 N	104° 34' 0.200 W
Crow 3-64 29-30 3CH BHL	7573.00	39° 45' 33.100 N	104° 35' 29.800 W

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Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Crow 3-64 29-30 3CH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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		Crow			
Site Position: From: Position Uncertainty:	Lat/Long	Northing:	1,156,068.070 usft	Latitude:	39° 45' 28.730 N
		Easting:	3,262,484.102 usft	Longitude:	104° 33' 58.920 W
		Slot Radius:	13-3/16 "	Grid Convergence:	0.60 °

Well	Crow 3-64 29-30 3CH					
Well Position	+N-S	-82.98 ft	Northing:	1,155,986.418 usft	Latitude:	39° 45' 27.910 N
	+E-W	125.74 ft	Easting:	3,262,610.705 usft	Longitude:	104° 33' 57.310 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	5,533.30 ft	Ground Level:	5,533.30 ft

Wellbore	Crow 3-64 29-30 3CH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2017	12/1/2018	8.10	66.36	51,892.63822727

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	274.17	

Plan Survey Tool Program	Date	4/17/2018			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,019.00	Design B (Crow 3-64 29-30 3CH)Gyro-BM-MS		
			Gyro - bat/mem drop m/s		
2	2,019.00	5,170.10	Design B (Crow 3-64 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
3	5,170.10	6,816.50	Design B (Crow 3-64 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
4	6,816.50	6,834.85	Design B (Crow 3-64 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
5	6,834.85	7,937.25	Design B (Crow 3-64 29-30 3CH)MWD+IFR_No SAG		
			MWD + IFR (No SAG) corre		
6	7,937.25	14,936.16	Design B (Crow 3-64 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 Crow 3-64 29-30 3CH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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	
5,170.10	0.00	0.00	5,170.10	0.00	0.00	0.00	0.00	0.00	0.00	
6,816.50	24.70	58.32	6,765.99	183.49	297.30	1.50	1.50	0.00	58.32	
6,834.85	24.70	58.32	6,782.67	187.52	303.82	0.00	0.00	0.00	0.00	
7,937.25	89.68	271.16	7,534.00	384.52	-225.70	10.00	5.89	-13.35	-144.69	Crow 3-64 29-30 3CH
14,936.16	89.68	271.16	7,573.00	526.21	-7,223.06	0.00	0.00	0.00	0.00	Crow 3-64 29-30 3CH

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Planning Report

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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: 1470' FSL, 390' 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
1,571.00	0.00	0.00	1,571.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Top									
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
1,819.00	0.00	0.00	1,819.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Top - Fox Hills Base									
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
2,019.00	0.00	0.00	2,019.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing - 9-5/8" Casing									
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
2,300.00	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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Planning Report

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Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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)
4,700.00	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
5,170.10	0.00	0.00	5,170.10	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.45	58.32	5,200.00	0.06	0.10	-0.09	1.50	1.50	0.00
5,300.00	1.95	58.32	5,299.98	1.16	1.88	-1.79	1.50	1.50	0.00
5,400.00	3.45	58.32	5,399.86	3.63	5.89	-5.61	1.50	1.50	0.00
5,500.00	4.95	58.32	5,499.59	7.48	12.12	-11.54	1.50	1.50	0.00
5,600.00	6.45	58.32	5,599.09	12.69	20.57	-19.59	1.50	1.50	0.00
5,700.00	7.95	58.32	5,698.30	19.27	31.23	-29.75	1.50	1.50	0.00
5,800.00	9.45	58.32	5,797.15	27.22	44.10	-42.00	1.50	1.50	0.00
5,900.00	10.95	58.32	5,895.57	36.52	59.16	-56.35	1.50	1.50	0.00
6,000.00	12.45	58.32	5,993.49	47.16	76.42	-72.79	1.50	1.50	0.00
6,100.00	13.95	58.32	6,090.84	59.16	95.85	-91.30	1.50	1.50	0.00
6,200.00	15.45	58.32	6,187.57	72.48	117.44	-111.86	1.50	1.50	0.00
6,300.00	16.95	58.32	6,283.59	87.13	141.18	-134.47	1.50	1.50	0.00
6,400.00	18.45	58.32	6,378.86	103.10	167.05	-159.11	1.50	1.50	0.00
6,500.00	19.95	58.32	6,473.29	120.37	195.03	-185.77	1.50	1.50	0.00
6,600.00	21.45	58.32	6,566.84	138.93	225.11	-214.42	1.50	1.50	0.00
6,700.00	22.95	58.32	6,659.42	158.78	257.26	-245.04	1.50	1.50	0.00
6,800.00	24.45	58.32	6,750.99	179.89	291.46	-277.62	1.50	1.50	0.00
6,816.50	24.70	58.32	6,765.99	183.49	297.30	-283.18	1.50	1.50	0.00
EOB: 1653' FSL, 93' FEL									
6,834.85	24.70	58.32	6,782.66	187.52	303.82	-289.39	0.00	0.00	0.00
KOP: 1658' FSL, 86' FEL									
6,850.00	23.48	56.12	6,796.50	190.86	309.02	-294.33	10.00	-8.06	-14.51
6,900.00	19.72	47.11	6,842.99	202.16	323.48	-307.93	10.00	-7.51	-18.02
6,950.00	16.60	34.50	6,890.51	213.80	333.71	-317.29	10.00	-6.23	-25.22
7,000.00	14.54	17.44	6,938.70	225.68	339.64	-322.34	10.00	-4.13	-34.12
7,050.00	14.01	357.17	6,987.19	237.72	341.22	-323.05	10.00	-1.07	-40.53
7,100.00	15.16	337.75	7,035.60	249.82	338.45	-319.40	10.00	2.32	-38.84
7,150.00	17.68	322.39	7,083.58	261.90	331.33	-311.43	10.00	5.04	-30.72
7,200.00	21.08	311.29	7,130.76	273.86	319.93	-299.19	10.00	6.80	-22.21
7,250.00	25.00	303.33	7,176.77	285.60	304.34	-282.78	10.00	7.84	-15.91
7,300.00	29.24	297.48	7,221.27	297.05	284.66	-262.33	10.00	8.47	-11.70
7,350.00	33.67	293.02	7,263.92	308.11	261.06	-237.98	10.00	8.86	-8.92
7,400.00	38.22	289.50	7,304.39	318.70	233.70	-209.93	10.00	9.11	-7.04
7,450.00	42.86	286.63	7,342.38	328.74	202.81	-178.39	10.00	9.28	-5.73
7,500.00	47.56	284.23	7,377.60	338.15	168.61	-143.59	10.00	9.40	-4.81
7,518.70	49.33	283.43	7,390.00	341.49	155.02	-129.80	10.00	9.46	-4.31
Niobrara Top									
7,550.00	52.31	282.17	7,409.77	346.86	131.36	-105.81	10.00	9.50	-4.02
7,600.00	57.08	280.35	7,438.66	354.81	91.35	-65.33	10.00	9.55	-3.63
7,650.00	61.88	278.72	7,464.04	361.93	48.89	-22.46	10.00	9.60	-3.26
7,700.00	66.70	277.23	7,485.73	368.16	4.28	22.48	10.00	9.63	-2.98
7,750.00	71.53	275.85	7,503.55	373.48	-42.11	69.14	10.00	9.66	-2.77
7,800.00	76.37	274.54	7,517.37	377.82	-89.95	117.17	10.00	9.68	-2.62
7,831.66	79.44	273.74	7,524.00	380.05	-120.83	148.12	10.00	9.69	-2.53
C Chalk Top									
7,850.00	81.22	273.28	7,527.08	381.16	-138.87	166.20	10.00	9.70	-2.49
7,900.00	86.07	272.06	7,532.62	383.47	-188.49	215.86	10.00	9.70	-2.45

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Crow 3-64 29-30 3CH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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)
7,937.25	89.68	271.16	7,534.00	384.52	-225.69	253.04	10.00	9.70	-2.42
BPI/LP: 1849' FSL, 615' FEL									
8,000.00	89.68	271.16	7,534.35	385.79	-288.43	315.70	0.00	0.00	0.00
8,100.00	89.68	271.16	7,534.91	387.81	-388.41	415.56	0.00	0.00	0.00
8,200.00	89.68	271.16	7,535.46	389.84	-488.39	515.42	0.00	0.00	0.00
8,300.00	89.68	271.16	7,536.02	391.86	-588.36	615.28	0.00	0.00	0.00
8,400.00	89.68	271.16	7,536.58	393.89	-688.34	715.14	0.00	0.00	0.00
8,500.00	89.68	271.16	7,537.14	395.91	-788.32	815.00	0.00	0.00	0.00
8,600.00	89.68	271.16	7,537.69	397.94	-888.30	914.86	0.00	0.00	0.00
8,700.00	89.68	271.16	7,538.25	399.96	-988.28	1,014.72	0.00	0.00	0.00
8,800.00	89.68	271.16	7,538.81	401.99	-1,088.25	1,114.58	0.00	0.00	0.00
8,900.00	89.68	271.16	7,539.36	404.01	-1,188.23	1,214.45	0.00	0.00	0.00
9,000.00	89.68	271.16	7,539.92	406.03	-1,288.21	1,314.31	0.00	0.00	0.00
9,100.00	89.68	271.16	7,540.48	408.06	-1,388.19	1,414.17	0.00	0.00	0.00
9,200.00	89.68	271.16	7,541.04	410.08	-1,488.17	1,514.03	0.00	0.00	0.00
9,300.00	89.68	271.16	7,541.59	412.11	-1,588.14	1,613.89	0.00	0.00	0.00
9,400.00	89.68	271.16	7,542.15	414.13	-1,688.12	1,713.75	0.00	0.00	0.00
9,500.00	89.68	271.16	7,542.71	416.16	-1,788.10	1,813.61	0.00	0.00	0.00
9,600.00	89.68	271.16	7,543.27	418.18	-1,888.08	1,913.47	0.00	0.00	0.00
9,700.00	89.68	271.16	7,543.82	420.21	-1,988.06	2,013.33	0.00	0.00	0.00
9,800.00	89.68	271.16	7,544.38	422.23	-2,088.03	2,113.19	0.00	0.00	0.00
9,900.00	89.68	271.16	7,544.94	424.25	-2,188.01	2,213.05	0.00	0.00	0.00
10,000.00	89.68	271.16	7,545.49	426.28	-2,287.99	2,312.91	0.00	0.00	0.00
10,100.00	89.68	271.16	7,546.05	428.30	-2,387.97	2,412.78	0.00	0.00	0.00
10,200.00	89.68	271.16	7,546.61	430.33	-2,487.94	2,512.64	0.00	0.00	0.00
10,300.00	89.68	271.16	7,547.17	432.35	-2,587.92	2,612.50	0.00	0.00	0.00
10,400.00	89.68	271.16	7,547.72	434.38	-2,687.90	2,712.36	0.00	0.00	0.00
10,500.00	89.68	271.16	7,548.28	436.40	-2,787.88	2,812.22	0.00	0.00	0.00
10,600.00	89.68	271.16	7,548.84	438.43	-2,887.86	2,912.08	0.00	0.00	0.00
10,700.00	89.68	271.16	7,549.40	440.45	-2,987.83	3,011.94	0.00	0.00	0.00
10,800.00	89.68	271.16	7,549.95	442.48	-3,087.81	3,111.80	0.00	0.00	0.00
10,900.00	89.68	271.16	7,550.51	444.50	-3,187.79	3,211.66	0.00	0.00	0.00
11,000.00	89.68	271.16	7,551.07	446.52	-3,287.77	3,311.52	0.00	0.00	0.00
11,100.00	89.68	271.16	7,551.62	448.55	-3,387.75	3,411.38	0.00	0.00	0.00
11,200.00	89.68	271.16	7,552.18	450.57	-3,487.72	3,511.24	0.00	0.00	0.00
11,300.00	89.68	271.16	7,552.74	452.60	-3,587.70	3,611.10	0.00	0.00	0.00
11,400.00	89.68	271.16	7,553.30	454.62	-3,687.68	3,710.97	0.00	0.00	0.00
11,500.00	89.68	271.16	7,553.85	456.65	-3,787.66	3,810.83	0.00	0.00	0.00
11,600.00	89.68	271.16	7,554.41	458.67	-3,887.64	3,910.69	0.00	0.00	0.00
11,700.00	89.68	271.16	7,554.97	460.70	-3,987.61	4,010.55	0.00	0.00	0.00
11,800.00	89.68	271.16	7,555.52	462.72	-4,087.59	4,110.41	0.00	0.00	0.00
11,900.00	89.68	271.16	7,556.08	464.75	-4,187.57	4,210.27	0.00	0.00	0.00
12,000.00	89.68	271.16	7,556.64	466.77	-4,287.55	4,310.13	0.00	0.00	0.00
12,100.00	89.68	271.16	7,557.20	468.79	-4,387.53	4,409.99	0.00	0.00	0.00
12,200.00	89.68	271.16	7,557.75	470.82	-4,487.50	4,509.85	0.00	0.00	0.00
12,300.00	89.68	271.16	7,558.31	472.84	-4,587.48	4,609.71	0.00	0.00	0.00
12,400.00	89.68	271.16	7,558.87	474.87	-4,687.46	4,709.57	0.00	0.00	0.00
12,500.00	89.68	271.16	7,559.43	476.89	-4,787.44	4,809.43	0.00	0.00	0.00
12,600.00	89.68	271.16	7,559.98	478.92	-4,887.42	4,909.30	0.00	0.00	0.00
12,700.00	89.68	271.16	7,560.54	480.94	-4,987.39	5,009.16	0.00	0.00	0.00
12,800.00	89.68	271.16	7,561.10	482.97	-5,087.37	5,109.02	0.00	0.00	0.00
12,900.00	89.68	271.16	7,561.65	484.99	-5,187.35	5,208.88	0.00	0.00	0.00
13,000.00	89.68	271.16	7,562.21	487.02	-5,287.33	5,308.74	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Crow 3-64 29-30 3CH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
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)
13,100.00	89.68	271.16	7,562.77	489.04	-5,387.31	5,408.60	0.00	0.00	0.00
13,200.00	89.68	271.16	7,563.33	491.06	-5,487.28	5,508.46	0.00	0.00	0.00
13,300.00	89.68	271.16	7,563.88	493.09	-5,587.26	5,608.32	0.00	0.00	0.00
13,400.00	89.68	271.16	7,564.44	495.11	-5,687.24	5,708.18	0.00	0.00	0.00
13,500.00	89.68	271.16	7,565.00	497.14	-5,787.22	5,808.04	0.00	0.00	0.00
13,600.00	89.68	271.16	7,565.55	499.16	-5,887.20	5,907.90	0.00	0.00	0.00
13,700.00	89.68	271.16	7,566.11	501.19	-5,987.17	6,007.76	0.00	0.00	0.00
13,800.00	89.68	271.16	7,566.67	503.21	-6,087.15	6,107.62	0.00	0.00	0.00
13,900.00	89.68	271.16	7,567.23	505.24	-6,187.13	6,207.49	0.00	0.00	0.00
14,000.00	89.68	271.16	7,567.78	507.26	-6,287.11	6,307.35	0.00	0.00	0.00
14,100.00	89.68	271.16	7,568.34	509.28	-6,387.09	6,407.21	0.00	0.00	0.00
14,200.00	89.68	271.16	7,568.90	511.31	-6,487.06	6,507.07	0.00	0.00	0.00
14,300.00	89.68	271.16	7,569.46	513.33	-6,587.04	6,606.93	0.00	0.00	0.00
14,400.00	89.68	271.16	7,570.01	515.36	-6,687.02	6,706.79	0.00	0.00	0.00
14,500.00	89.68	271.16	7,570.57	517.38	-6,787.00	6,806.65	0.00	0.00	0.00
14,600.00	89.68	271.16	7,571.13	519.41	-6,886.97	6,906.51	0.00	0.00	0.00
14,700.00	89.68	271.16	7,571.68	521.43	-6,986.95	7,006.37	0.00	0.00	0.00
14,800.00	89.68	271.16	7,572.24	523.46	-7,086.93	7,106.23	0.00	0.00	0.00
14,900.00	89.68	271.16	7,572.80	525.48	-7,186.91	7,206.09	0.00	0.00	0.00
14,936.16	89.68	271.16	7,573.00	526.21	-7,223.06	7,242.20	0.00	0.00	0.00
BHL: 1849' FSL, 2315' FEL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Crow 3-64 29-30 3CH - hit/miss target - Shape - Point	0.00	0.00	7,534.00	384.52	-225.70	1,156,368.535	3,262,380.970	39° 45' 31.710 N	104° 34' 0.200 W
Crow 3-64 29-30 3CH - plan hits target center - Point	0.00	0.00	7,573.00	526.21	-7,223.06	1,156,436.514	3,255,382.567	39° 45' 33.100 N	104° 35' 29.800 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
2,019.00	2,019.00	9-5/8" Casing	9-5/8	12-1/4	
14,936.16	7,573.00	5-1/2" Casing	5-1/2	8-1/2	

ConocoPhillips

Planning Report

Database:	EDT 14 Central Planning	Local Co-ordinate Reference:	Well Crow 3-64 29-30 3CH
Company:	ConocoPhillips RBU Gold Data	TVD Reference:	25' RKB @ 5558.30ft (25' RKB)
Project:	Niobrara North Zone	MD Reference:	25' RKB @ 5558.30ft (25' RKB)
Site:	Crow	North Reference:	True
Well:	Crow 3-64 29-30 3CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Crow 3-64 29-30 3CH		
Design:	Design B		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,571.00	1,571.00	Fox Hills Top		0.00	
1,819.00	1,819.00	Pierre Top - Fox Hills Base		0.00	
2,019.00	2,019.00	Surface Casing		0.00	
7,518.70	7,390.00	Niobrara Top		0.00	
7,831.66	7,524.00	C Chalk Top		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
100.00	100.00	0.00	0.00	SHL: 1470' FSL, 390' FEL	
6,816.50	6,765.99	183.49	297.30	EOB: 1653' FSL, 93' FEL	
6,834.85	6,782.66	187.52	303.82	KOP: 1658' FSL, 86' FEL	
7,937.25	7,534.00	384.52	-225.69	BPI/LP: 1849' FSL, 615' FEL	
14,936.16	7,573.00	526.21	-7,223.06	BHL: 1849' FSL, 2315' FEL	