

ConocoPhillips MCBU - Permian-Panhandle Gold Data

Planning - NM East State Zone - 3001

ZIA HILLS 20 FEDERAL COM 106H

ZIA HILLS 20 FEDERAL COM 106H

ST01 / 64793

Survey: Phoenix MWD Surveys

Standard Survey Report

30 December, 2019

ConocoPhillips

Survey Report

Company:	ConocoPhillips MCBU - Permian-Panhandle Gold Data	Local Co-ordinate Reference:	Well ZIA HILLS 20 FEDERAL COM 106H
Project:	Planning - NM East State Zone - 3001	TVD Reference:	KB @ 3184.70ft (Nabors 894)
Site:	ZIA HILLS 20 FEDERAL COM 106H	MD Reference:	KB @ 3184.70ft (Nabors 894)
Well:	ZIA HILLS 20 FEDERAL COM 106H	North Reference:	Grid
Wellbore:	ST01 / 64793	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Nabors 894)	Database:	EDT 14 Central Planning

Project	Planning - NM East State Zone - 3001, Permian Basin - New Mexico - East/South East, Planning Project for Permian wells in NM Zone 3001		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		Using geodetic scale factor

Site	ZIA HILLS 20 FEDERAL COM 106H		
Site Position:		Northing:	374,418.670 usft
From:	Map	Easting:	697,886.940 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 1' 40.021 N
		Longitude:	103° 41' 41.246 W
		Grid Convergence:	0.34 °

Well	ZIA HILLS 20 FEDERAL COM 106H		
Well Position	+N/-S	0.00 ft	Northing: 374,418.670 usft
	+E/-W	0.00 ft	Easting: 697,886.940 usft
Position Uncertainty	2.00 ft	Wellhead Elevation:	ft
		Latitude:	32° 1' 40.021 N
		Longitude:	103° 41' 41.246 W
		Ground Level:	3,154.20 ft

Wellbore	ST01 / 64793		
Magnetics	Model Name	Sample Date	Declination (°)
	BGGM2018	6/19/2019	6.87
			Dip Angle (°)
			59.77
			Field Strength (nT)
			47,632.86302496

Design	Surveys (Nabors 894)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.90
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)
	0.00	0.00	0.00
			Direction (°)
			179.18

Survey Program	Date	12/30/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
92.06	1,143.00	VES Gyro Surveys (OH / 64793)	NS-GYRO-MS	North sensing gyrocompassing m/s
1,143.00	11,200.00	Phoenix MWD Surveys (OH / 64793)	MWD+IFR1+MS_CoP	Fixed:v2:Eagleford, crustal dec + 3-axis corr.
11,259.00	21,733.00	Phoenix MWD Surveys (ST01 / 64793)	MWD+IFR1+MS_CoP	Fixed:v2:Eagleford, crustal dec + 3-axis corr.

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)
11,200.00	0.32	163.68	11,194.28	71.65	47.43	-70.96	0.00	0.00	0.00
Tie In									
11,259.00	5.70	157.03	11,253.17	68.79	48.62	-68.09	9.12	9.12	-11.27
First Phoenix MWD Survey - ST01									
11,307.00	10.24	157.69	11,300.70	62.65	51.17	-61.91	9.46	9.46	1.38
11,354.00	15.34	162.42	11,346.52	52.85	54.64	-52.06	11.07	10.85	10.06
11,401.00	19.36	165.98	11,391.37	39.36	58.41	-38.52	8.84	8.55	7.57
11,448.00	21.29	170.27	11,435.45	23.39	61.74	-22.50	5.19	4.11	9.13

ConocoPhillips

Survey Report

Company:	ConocoPhillips MCBU - Permian-Panhandle Gold Data	Local Co-ordinate Reference:	Well ZIA HILLS 20 FEDERAL COM 106H
Project:	Planning - NM East State Zone - 3001	TVD Reference:	KB @ 3184.70ft (Nabors 894)
Site:	ZIA HILLS 20 FEDERAL COM 106H	MD Reference:	KB @ 3184.70ft (Nabors 894)
Well:	ZIA HILLS 20 FEDERAL COM 106H	North Reference:	Grid
Wellbore:	ST01 / 64793	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Nabors 894)	Database:	EDT 14 Central Planning

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)
11,496.00	26.55	170.37	11,479.31	4.21	65.00	-3.28	10.96	10.96	0.21
11,543.00	31.72	171.01	11,520.35	-18.37	68.70	19.35	11.02	11.00	1.36
11,582.00	35.56	175.34	11,552.81	-39.81	71.22	40.82	11.60	9.85	11.10
11,677.00	41.66	175.85	11,627.01	-98.89	75.75	99.96	6.43	6.42	0.54
11,708.00	44.81	177.20	11,649.60	-120.08	77.03	121.17	10.59	10.16	4.35
11,740.00	47.84	176.40	11,671.69	-143.19	78.33	144.29	9.64	9.47	-2.50
11,772.00	49.97	174.80	11,692.73	-167.23	80.18	168.36	7.65	6.66	-5.00
11,803.00	51.06	176.05	11,712.44	-191.08	82.09	192.23	4.70	3.52	4.03
11,835.00	51.58	177.45	11,732.44	-216.01	83.51	217.19	3.78	1.63	4.38
11,866.00	53.58	177.53	11,751.27	-240.61	84.58	241.80	6.45	6.45	0.26
11,898.00	53.42	177.85	11,770.31	-266.31	85.62	267.51	0.95	-0.50	1.00
11,930.00	52.95	177.05	11,789.48	-291.91	86.76	293.12	2.48	-1.47	-2.50
11,961.00	52.89	177.37	11,808.17	-316.61	87.96	317.83	0.85	-0.19	1.03
11,993.00	54.19	177.69	11,827.19	-342.32	89.07	343.56	4.14	4.06	1.00
12,025.00	56.84	177.72	11,845.31	-368.67	90.13	369.93	8.28	8.28	0.09
12,056.00	58.92	178.17	11,861.79	-394.91	91.07	396.17	6.82	6.71	1.45
12,088.00	60.27	177.27	11,877.98	-422.49	92.17	423.76	4.87	4.22	-2.81
12,119.00	61.90	176.40	11,892.97	-449.58	93.67	450.87	5.80	5.26	-2.81
12,151.00	63.42	176.70	11,907.67	-477.95	95.38	479.27	4.82	4.75	0.94
12,183.00	64.65	177.81	11,921.68	-506.69	96.75	508.02	4.95	3.84	3.47
12,214.00	67.66	178.84	11,934.21	-535.03	97.58	536.37	10.17	9.71	3.32
12,246.00	72.27	177.89	11,945.17	-565.07	98.44	566.42	14.67	14.41	-2.97
12,277.00	72.76	178.82	11,954.48	-594.62	99.29	595.98	3.27	1.58	3.00
12,309.00	74.21	180.00	11,963.58	-625.30	99.60	626.66	5.75	4.53	3.69
12,341.00	76.00	180.87	11,971.81	-656.22	99.37	657.58	6.18	5.59	2.72
12,372.00	81.65	181.22	11,977.81	-686.62	98.81	687.96	18.26	18.23	1.13
12,404.00	87.76	182.28	11,980.76	-718.45	97.84	719.78	19.38	19.09	3.31
12,436.00	89.58	182.68	11,981.51	-750.41	96.45	751.71	5.82	5.69	1.25
12,530.00	88.55	180.94	11,983.04	-844.35	93.49	845.60	2.15	-1.10	-1.85
12,625.00	89.75	178.78	11,984.45	-939.33	93.72	940.57	2.60	1.26	-2.27
12,719.00	89.38	180.09	11,985.16	-1,033.32	94.64	1,034.57	1.45	-0.39	1.39
12,814.00	90.42	180.30	11,985.33	-1,128.32	94.32	1,129.55	1.12	1.09	0.22
12,909.00	88.01	178.47	11,986.63	-1,223.29	95.34	1,224.53	3.19	-2.54	-1.93
13,003.00	92.47	178.92	11,986.24	-1,317.24	97.48	1,318.50	4.77	4.74	0.48
13,098.00	89.44	177.73	11,984.65	-1,412.17	100.26	1,413.47	3.43	-3.19	-1.25
13,192.00	89.87	183.96	11,985.22	-1,506.12	98.87	1,507.38	6.64	0.46	6.63
13,287.00	90.12	186.49	11,985.23	-1,600.71	90.22	1,601.84	2.68	0.26	2.66
13,382.00	88.44	182.49	11,986.42	-1,695.39	82.79	1,696.40	4.57	-1.77	-4.21
13,477.00	89.68	177.24	11,987.98	-1,790.34	83.01	1,791.35	5.68	1.31	-5.53
13,571.00	89.53	171.25	11,988.63	-1,883.83	92.43	1,884.96	6.37	-0.16	-6.37
13,666.00	90.61	177.53	11,988.52	-1,978.32	101.71	1,979.57	6.71	1.14	6.61
13,760.00	89.13	175.67	11,988.73	-2,072.15	107.29	2,073.47	2.53	-1.57	-1.98
13,855.00	88.81	180.92	11,990.44	-2,167.06	110.11	2,168.41	5.54	-0.34	5.53

ConocoPhillips

Survey Report

Company:	ConocoPhillips MCBU - Permian-Panhandle Gold Data	Local Co-ordinate Reference:	Well ZIA HILLS 20 FEDERAL COM 106H
Project:	Planning - NM East State Zone - 3001	TVD Reference:	KB @ 3184.70ft (Nabors 894)
Site:	ZIA HILLS 20 FEDERAL COM 106H	MD Reference:	KB @ 3184.70ft (Nabors 894)
Well:	ZIA HILLS 20 FEDERAL COM 106H	North Reference:	Grid
Wellbore:	ST01 / 64793	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Nabors 894)	Database:	EDT 14 Central Planning

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)
13,950.00	85.12	182.64	11,995.47	-2,261.86	107.17	2,263.16	4.28	-3.88	1.81
14,044.00	89.98	182.44	11,999.48	-2,355.65	103.01	2,356.89	5.17	5.17	-0.21
14,149.00	90.07	180.40	11,999.44	-2,460.62	100.41	2,461.80	1.94	0.09	-1.94
14,243.00	89.58	179.07	11,999.73	-2,554.61	100.84	2,555.79	1.51	-0.52	-1.41
14,338.00	89.62	179.60	12,000.39	-2,649.60	101.94	2,650.79	0.56	0.04	0.56
14,433.00	90.42	179.12	12,000.36	-2,744.60	103.01	2,745.79	0.98	0.84	-0.51
14,527.00	90.10	179.54	11,999.93	-2,838.59	104.10	2,839.79	0.56	-0.34	0.45
14,622.00	89.48	179.67	12,000.28	-2,933.58	104.76	2,934.78	0.67	-0.65	0.14
14,717.00	90.24	179.82	12,000.51	-3,028.58	105.18	3,029.78	0.82	0.80	0.16
14,811.00	90.45	179.95	11,999.94	-3,122.58	105.37	3,123.77	0.26	0.22	0.14
14,906.00	90.12	180.46	11,999.47	-3,217.58	105.03	3,218.75	0.64	-0.35	0.54
15,000.00	91.15	180.42	11,998.43	-3,311.57	104.31	3,312.72	1.10	1.10	-0.04
15,095.00	90.67	180.04	11,996.92	-3,406.56	103.93	3,407.69	0.64	-0.51	-0.40
15,190.00	90.05	178.57	11,996.32	-3,501.54	105.08	3,502.69	1.68	-0.65	-1.55
15,284.00	90.24	179.62	11,996.09	-3,595.53	106.57	3,596.69	1.14	0.20	1.12
15,379.00	90.99	179.86	11,995.07	-3,690.52	107.00	3,691.68	0.83	0.79	0.25
15,473.00	90.73	179.51	11,993.65	-3,784.51	107.51	3,785.66	0.46	-0.28	-0.37
15,568.00	90.13	180.08	11,992.94	-3,879.51	107.85	3,880.65	0.87	-0.63	0.60
15,662.00	90.38	180.08	11,992.52	-3,973.51	107.72	3,974.64	0.27	0.27	0.00
15,757.00	89.75	179.54	11,992.42	-4,068.50	108.04	4,069.63	0.87	-0.66	-0.57
15,851.00	89.93	180.24	11,992.68	-4,162.50	108.22	4,163.63	0.77	0.19	0.74
15,946.00	89.39	179.73	11,993.24	-4,257.50	108.24	4,258.61	0.78	-0.57	-0.54
16,041.00	89.90	179.88	11,993.83	-4,352.50	108.57	4,353.61	0.56	0.54	0.16
16,135.00	89.47	179.64	11,994.35	-4,446.50	108.96	4,447.60	0.52	-0.46	-0.26
16,230.00	89.28	179.30	11,995.38	-4,541.49	109.84	4,542.59	0.41	-0.20	-0.36
16,325.00	89.10	179.03	11,996.73	-4,636.47	111.22	4,637.58	0.34	-0.19	-0.28
16,420.00	88.59	178.75	11,998.64	-4,731.43	113.06	4,732.56	0.61	-0.54	-0.29
16,514.00	89.15	180.03	12,000.50	-4,825.40	114.06	4,826.54	1.49	0.60	1.36
16,609.00	88.71	179.53	12,002.27	-4,920.38	114.43	4,921.52	0.70	-0.46	-0.53
16,703.00	89.18	179.93	12,004.00	-5,014.37	114.87	5,015.50	0.66	0.50	0.43
16,798.00	88.39	179.24	12,006.01	-5,109.34	115.56	5,110.47	1.10	-0.83	-0.73
16,893.00	89.24	179.73	12,007.98	-5,204.32	116.41	5,205.45	1.03	0.89	0.52
16,987.00	89.75	179.11	12,008.81	-5,298.31	117.36	5,299.44	0.85	0.54	-0.66
17,082.00	90.92	179.30	12,008.25	-5,393.29	118.68	5,394.44	1.25	1.23	0.20
17,177.00	89.64	179.75	12,007.79	-5,488.29	119.47	5,489.44	1.43	-1.35	0.47
17,272.00	89.59	181.41	12,008.43	-5,583.28	118.51	5,584.40	1.75	-0.05	1.75
17,366.00	90.79	181.55	12,008.11	-5,677.24	116.08	5,678.32	1.29	1.28	0.15
17,461.00	88.53	180.23	12,008.68	-5,772.22	114.60	5,773.27	2.75	-2.38	-1.39
17,556.00	89.99	179.70	12,009.91	-5,867.21	114.66	5,868.25	1.63	1.54	-0.56
17,650.00	90.15	179.57	12,009.79	-5,961.21	115.26	5,962.25	0.22	0.17	-0.14
17,745.00	88.81	179.70	12,010.65	-6,056.20	115.87	6,057.24	1.42	-1.41	0.14
17,840.00	89.30	179.55	12,012.22	-6,151.19	116.49	6,152.22	0.54	0.52	-0.16

ConocoPhillips

Survey Report

Company:	ConocoPhillips MCBU - Permian-Panhandle Gold Data	Local Co-ordinate Reference:	Well ZIA HILLS 20 FEDERAL COM 106H
Project:	Planning - NM East State Zone - 3001	TVD Reference:	KB @ 3184.70ft (Nabors 894)
Site:	ZIA HILLS 20 FEDERAL COM 106H	MD Reference:	KB @ 3184.70ft (Nabors 894)
Well:	ZIA HILLS 20 FEDERAL COM 106H	North Reference:	Grid
Wellbore:	ST01 / 64793	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Nabors 894)	Database:	EDT 14 Central Planning

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)
17,934.00	89.95	179.72	12,012.83	-6,245.18	117.09	6,246.22	0.71	0.69	0.18
18,029.00	89.02	179.55	12,013.69	-6,340.18	117.69	6,341.21	1.00	-0.98	-0.18
18,123.00	89.18	179.25	12,015.17	-6,434.16	118.68	6,435.20	0.36	0.17	-0.32
18,218.00	89.58	179.71	12,016.19	-6,529.15	119.54	6,530.19	0.64	0.42	0.48
18,313.00	88.33	179.23	12,017.93	-6,624.13	120.42	6,625.17	1.41	-1.32	-0.51
18,408.00	89.73	179.14	12,019.53	-6,719.10	121.77	6,720.16	1.48	1.47	-0.09
18,502.00	89.36	179.34	12,020.28	-6,813.09	123.01	6,814.15	0.45	-0.39	0.21
18,597.00	89.81	180.23	12,020.97	-6,908.09	123.37	6,909.14	1.05	0.47	0.94
18,691.00	89.65	179.32	12,021.41	-7,002.08	123.74	7,003.14	0.98	-0.17	-0.97
18,786.00	90.56	180.02	12,021.24	-7,097.08	124.29	7,098.13	1.21	0.96	0.74
18,880.00	88.81	178.71	12,021.75	-7,191.07	125.33	7,192.12	2.33	-1.86	-1.39
18,975.00	90.15	179.46	12,022.62	-7,286.05	126.85	7,287.12	1.62	1.41	0.79
19,070.00	90.38	179.36	12,022.18	-7,381.04	127.82	7,382.11	0.26	0.24	-0.11
19,164.00	89.50	179.01	12,022.28	-7,475.03	129.16	7,476.11	1.01	-0.94	-0.37
19,259.00	88.41	179.05	12,024.01	-7,570.00	130.77	7,571.10	1.15	-1.15	0.04
19,354.00	91.38	180.06	12,024.18	-7,664.98	131.51	7,666.08	3.30	3.13	1.06
19,448.00	92.07	179.74	12,021.35	-7,758.94	131.67	7,760.03	0.81	0.73	-0.34
19,543.00	90.59	179.24	12,019.15	-7,853.91	132.52	7,855.00	1.64	-1.56	-0.53
19,637.00	89.64	179.56	12,018.96	-7,947.90	133.50	7,949.00	1.07	-1.01	0.34
19,732.00	89.82	179.80	12,019.41	-8,042.90	134.03	8,043.99	0.32	0.19	0.25
19,827.00	88.93	178.79	12,020.44	-8,137.88	135.20	8,138.99	1.42	-0.94	-1.06
19,921.00	88.39	178.86	12,022.64	-8,231.84	137.13	8,232.96	0.58	-0.57	0.07
20,016.00	87.53	178.34	12,026.02	-8,326.75	139.45	8,327.89	1.06	-0.91	-0.55
20,110.00	88.35	179.11	12,029.40	-8,420.66	141.54	8,421.83	1.20	0.87	0.82
20,205.00	90.38	179.38	12,030.45	-8,515.64	142.79	8,516.82	2.16	2.14	0.28
20,300.00	89.78	180.16	12,030.32	-8,610.64	143.17	8,611.81	1.04	-0.63	0.82
20,395.00	89.44	179.36	12,030.97	-8,705.64	143.57	8,706.80	0.91	-0.36	-0.84
20,489.00	89.42	179.44	12,031.90	-8,799.63	144.55	8,800.80	0.09	-0.02	0.09
20,584.00	89.75	180.05	12,032.59	-8,894.62	144.97	8,895.79	0.73	0.35	0.64
20,678.00	89.70	179.15	12,033.04	-8,988.62	145.63	8,989.78	0.96	-0.05	-0.96
20,773.00	89.87	179.45	12,033.40	-9,083.61	146.79	9,084.78	0.36	0.18	0.32
20,868.00	90.02	179.47	12,033.49	-9,178.61	147.69	9,179.78	0.16	0.16	0.02
20,962.00	89.50	179.65	12,033.88	-9,272.60	148.41	9,273.78	0.59	-0.55	0.19
21,057.00	90.21	179.44	12,034.12	-9,367.60	149.16	9,368.78	0.78	0.75	-0.22
21,152.00	88.96	180.57	12,034.81	-9,462.59	149.15	9,463.76	1.77	-1.32	1.19
21,246.00	87.79	181.01	12,037.48	-9,556.55	147.86	9,557.68	1.33	-1.24	0.47
21,341.00	89.58	180.99	12,039.66	-9,651.50	146.20	9,652.61	1.88	1.88	-0.02
21,435.00	89.21	180.99	12,040.65	-9,745.48	144.58	9,746.55	0.39	-0.39	0.00
21,530.00	88.76	180.94	12,042.33	-9,840.45	142.98	9,841.49	0.48	-0.47	-0.05
21,625.00	89.05	181.04	12,044.15	-9,935.42	141.34	9,936.43	0.32	0.31	0.11
21,645.00	89.19	180.82	12,044.46	-9,955.44	141.01	9,956.42	1.30	0.70	-1.10
Final Phoenix MWD Survey - ST01									
21,733.00	89.19	180.82	12,045.70	-10,043.42	139.75	10,044.37	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	ConocoPhillips MCBU - Permian-Panhandle Gold Data	Local Co-ordinate Reference:	Well ZIA HILLS 20 FEDERAL COM 106H
Project:	Planning - NM East State Zone - 3001	TVD Reference:	KB @ 3184.70ft (Nabors 894)
Site:	ZIA HILLS 20 FEDERAL COM 106H	MD Reference:	KB @ 3184.70ft (Nabors 894)
Well:	ZIA HILLS 20 FEDERAL COM 106H	North Reference:	Grid
Wellbore:	ST01 / 64793	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Nabors 894)	Database:	EDT 14 Central Planning

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)
Projection to TD - ST01									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,500.00	1,499.97	Surface	9-5/8	12-1/4	
12,450.00	11,981.63	7 5/8" Casing	7-5/8	9-7/8	
21,833.00		5 1/2" Casing	5-1/2	6-3/4	

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,200.00	11,194.28	71.65	47.43	Tie In	
11,259.00	11,253.17	68.79	48.62	First Phoenix MWD Survey - ST01	
21,645.00	12,044.46	-9,955.44	141.01	Final Phoenix MWD Survey - ST01	
21,733.00	12,045.70	-10,043.42	139.75	Projection to TD - ST01	