

**HOBBS OCD**

**MAY 16 2016**

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*30-025-42104*

**ConocoPhillips MCBU -  
Permian-Panhandle Gold Data**

Permian-BUCKEYE-NM East State Plane Zone

Vacuum - Field

VACUUM GLORIETA EAST UNIT 114H

3002542104

Sidetrack 1

Design: Sidetrack 1

**Survey Report - Geographic**

04 May, 2016

# ConocoPhillips

## Survey Report - Geographic

<b>Company:</b> ConocoPhillips MCBU - Permian-Panhandle Gold Data	<b>Local Co-ordinate Reference:</b> Well VACUUM GLORIETA EAST UNIT 114H
<b>Project:</b> Permian-BUCKEYE-NM East State Plane Zone	<b>TVD Reference:</b> RKB @ 3954.4usft (194)
<b>Site:</b> Vacuum - Field	<b>MD Reference:</b> RKB @ 3954.4usft (194)
<b>Well:</b> VACUUM GLORIETA EAST UNIT 114H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Sidetrack 1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Sidetrack 1	<b>Database:</b> EDM Central Planning

<b>Project</b> Permian-BUCKEYE-NM East State Plane Zone, Permian Basin; State of New Mexico, Actual Survey Gold Data		
<b>Map System:</b> US State Plane 1927 (Exact solution)	<b>System Datum:</b> Mean Sea Level	
<b>Geo Datum:</b> NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b> New Mexico East 3001	Using geodetic scale factor	

<b>Site</b> Vacuum - Field			
<b>Site Position:</b>	<b>Northing:</b> 0.00 usft	<b>Latitude:</b> 30° 59' 24.512 N	
<b>From:</b> Map	<b>Easting:</b> 0.00 usft	<b>Longitude:</b> 105° 55' 44.137 W	
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.82 °	

<b>Well</b> VACUUM GLORIETA EAST UNIT 114H, Development - Horizontal					
<b>Well Position</b>	<b>+N/-S</b> 0.0 usft	<b>Northing:</b> 657,196.94 usft	<b>Latitude:</b> 32° 48' 13.075 N		
	<b>+E/-W</b> 0.0 usft	<b>Easting:</b> 770,352.42 usft	<b>Longitude:</b> 103° 27' 12.484 W		
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b> 0.0 usft	<b>Ground Level:</b> 3,939.9 usft		

<b>Wellbore</b> Sidetrack 1					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	9/29/2015	7.16	60.70	48,545

<b>Design</b> Sidetrack 1					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 6,381.0			
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	219.09	

<b>Survey Program</b> Date 3/17/2016					
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
128.6	1,621.8	Surface MWD Survey 1 (Original Hole)	GOOD GYRO	GOOD GYRO	
1,805.0	6,381.0	Final MWD Survey 2 (Original Hole)	MWD - OWSG R1	MWD - Standard OWSG	
6,424.0	7,152.0	MWD Survey 3 (Sidetrack 1)	MWD - OWSG R1	MWD - Standard OWSG	
7,267.0	8,174.0	MWD Survey 4 (Sidetrack 1)	MWD - OWSG R1	MWD - Standard OWSG	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.0	0.00	0.00	0.0	0.0	0.0	657,196.94	770,352.42	32° 48' 13.075 N	103° 27' 12.484 W	
128.6	0.49	334.81	128.6	0.5	-0.2	657,197.44	770,352.18	32° 48' 13.079 N	103° 27' 12.487 W	
208.5	0.36	311.04	208.5	1.0	-0.6	657,197.92	770,351.85	32° 48' 13.084 N	103° 27' 12.491 W	
308.0	0.31	308.75	308.0	1.3	-1.0	657,198.29	770,351.40	32° 48' 13.088 N	103° 27' 12.496 W	
426.2	0.24	249.03	426.2	1.5	-1.5	657,198.40	770,350.92	32° 48' 13.089 N	103° 27' 12.501 W	
579.8	0.28	224.72	579.8	1.1	-2.1	657,198.02	770,350.36	32° 48' 13.085 N	103° 27' 12.508 W	
700.4	0.30	247.10	700.4	0.7	-2.6	657,197.69	770,349.86	32° 48' 13.082 N	103° 27' 12.514 W	
835.0	0.19	210.15	835.0	0.4	-3.0	657,197.36	770,349.42	32° 48' 13.079 N	103° 27' 12.519 W	

# ConocoPhillips

## Survey Report - Geographic

<b>Company:</b>	ConocoPhillips MCBU - Permian-Panhandle Gold Data	<b>Local Co-ordinate Reference:</b>	Well VACUUM GLORIETA EAST UNIT 114H
<b>Project:</b>	Permian-BUCKEYE-NM East State Plane Zone	<b>TVD Reference:</b>	RKB @ 3954.4usft (194)
<b>Site:</b>	Vacuum - Field	<b>MD Reference:</b>	RKB @ 3954.4usft (194)
<b>Well:</b>	VACUUM GLORIETA EAST UNIT 114H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack 1	<b>Database:</b>	EDM Central Planning

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
925.0	0.31	196.28	925.0	0.0	-3.1	657,196.99	770,349.28	32° 48' 13.075 N	103° 27' 12.521 W	
1,104.5	0.32	182.66	1,104.5	-0.9	-3.3	657,196.03	770,349.12	32° 48' 13.066 N	103° 27' 12.523 W	
1,241.0	0.41	187.43	1,241.0	-1.8	-3.4	657,195.16	770,349.04	32° 48' 13.057 N	103° 27' 12.524 W	
1,375.8	0.24	197.97	1,375.8	-2.5	-3.5	657,194.42	770,348.89	32° 48' 13.050 N	103° 27' 12.526 W	
1,464.9	0.19	198.35	1,464.9	-2.8	-3.6	657,194.10	770,348.79	32° 48' 13.047 N	103° 27' 12.527 W	
1,551.9	0.18	192.43	1,551.8	-3.1	-3.7	657,193.83	770,348.71	32° 48' 13.044 N	103° 27' 12.528 W	
1,621.8	0.21	225.44	1,621.7	-3.3	-3.8	657,193.63	770,348.60	32° 48' 13.042 N	103° 27' 12.529 W	
1,805.0	0.10	30.70	1,805.0	-3.4	-4.0	657,193.53	770,348.44	32° 48' 13.041 N	103° 27' 12.531 W	
1,990.0	0.20	352.20	1,990.0	-3.0	-3.9	657,193.99	770,348.48	32° 48' 13.046 N	103° 27' 12.530 W	
2,171.0	0.20	25.10	2,171.0	-2.4	-3.8	657,194.59	770,348.57	32° 48' 13.052 N	103° 27' 12.529 W	
2,350.0	0.40	28.80	2,350.0	-1.5	-3.4	657,195.42	770,349.00	32° 48' 13.060 N	103° 27' 12.524 W	
2,529.0	0.50	58.40	2,529.0	-0.6	-2.4	657,196.38	770,349.97	32° 48' 13.069 N	103° 27' 12.513 W	
2,708.0	0.90	76.60	2,708.0	0.2	-0.4	657,197.11	770,352.00	32° 48' 13.076 N	103° 27' 12.489 W	
2,887.0	0.40	350.10	2,886.9	1.1	0.8	657,198.05	770,353.26	32° 48' 13.085 N	103° 27' 12.474 W	
3,066.0	0.60	317.30	3,065.9	2.4	0.1	657,199.36	770,352.52	32° 48' 13.098 N	103° 27' 12.483 W	
3,245.0	0.60	308.90	3,244.9	3.7	-1.3	657,200.64	770,351.15	32° 48' 13.111 N	103° 27' 12.498 W	
3,424.0	0.40	300.70	3,423.9	4.6	-2.5	657,201.54	770,349.89	32° 48' 13.120 N	103° 27' 12.513 W	
3,603.0	0.40	300.20	3,602.9	5.2	-3.6	657,202.18	770,348.81	32° 48' 13.127 N	103° 27' 12.526 W	
3,783.0	0.20	303.80	3,782.9	5.7	-4.4	657,202.67	770,348.00	32° 48' 13.131 N	103° 27' 12.535 W	
3,962.0	0.20	314.00	3,961.9	6.1	-4.9	657,203.06	770,347.52	32° 48' 13.135 N	103° 27' 12.541 W	
4,141.0	0.10	287.60	4,140.9	6.4	-5.3	657,203.32	770,347.15	32° 48' 13.138 N	103° 27' 12.545 W	
4,321.0	0.10	332.30	4,320.9	6.6	-5.5	657,203.51	770,346.92	32° 48' 13.140 N	103° 27' 12.548 W	
4,500.0	0.10	256.20	4,499.9	6.7	-5.7	657,203.61	770,346.70	32° 48' 13.141 N	103° 27' 12.550 W	
4,679.0	0.20	163.90	4,678.9	6.3	-5.8	657,203.27	770,346.63	32° 48' 13.138 N	103° 27' 12.551 W	
4,859.0	0.10	142.40	4,858.9	5.9	-5.6	657,202.85	770,346.82	32° 48' 13.133 N	103° 27' 12.549 W	
4,993.0	0.10	120.40	4,992.9	5.7	-5.4	657,202.69	770,346.99	32° 48' 13.132 N	103° 27' 12.547 W	
5,082.0	2.10	213.80	5,081.9	4.4	-6.3	657,201.30	770,346.15	32° 48' 13.118 N	103° 27' 12.557 W	
5,127.0	5.60	223.30	5,126.8	2.1	-8.2	657,199.02	770,344.18	32° 48' 13.096 N	103° 27' 12.580 W	
5,172.0	8.70	221.30	5,171.4	-2.1	-12.0	657,194.86	770,340.43	32° 48' 13.055 N	103° 27' 12.625 W	
5,217.0	12.20	224.70	5,215.7	-8.0	-17.6	657,188.92	770,334.84	32° 48' 12.997 N	103° 27' 12.691 W	
5,261.0	14.60	223.30	5,258.5	-15.4	-24.7	657,181.58	770,327.76	32° 48' 12.925 N	103° 27' 12.774 W	
5,306.0	16.40	221.80	5,301.8	-24.2	-32.8	657,172.72	770,319.64	32° 48' 12.837 N	103° 27' 12.870 W	
5,351.0	18.40	221.10	5,344.8	-34.3	-41.7	657,162.63	770,310.74	32° 48' 12.738 N	103° 27' 12.976 W	
5,396.0	21.80	219.60	5,387.0	-46.1	-51.7	657,150.83	770,300.74	32° 48' 12.623 N	103° 27' 13.094 W	
5,441.0	25.20	218.90	5,428.3	-60.0	-63.0	657,136.94	770,289.39	32° 48' 12.486 N	103° 27' 13.228 W	
5,485.0	28.10	219.10	5,467.6	-75.3	-75.4	657,121.60	770,276.97	32° 48' 12.335 N	103° 27' 13.375 W	
5,530.0	30.20	219.10	5,506.9	-92.4	-89.3	657,104.59	770,263.15	32° 48' 12.168 N	103° 27' 13.539 W	
5,575.0	31.20	219.60	5,545.6	-110.1	-103.8	657,086.83	770,248.58	32° 48' 11.994 N	103° 27' 13.711 W	
5,620.0	32.50	217.80	5,583.8	-128.7	-118.7	657,068.29	770,233.74	32° 48' 11.811 N	103° 27' 13.887 W	
5,664.0	35.10	216.00	5,620.4	-148.2	-133.4	657,048.72	770,219.06	32° 48' 11.619 N	103° 27' 14.061 W	
5,709.0	38.60	215.40	5,656.4	-170.1	-149.1	657,026.80	770,203.32	32° 48' 11.403 N	103° 27' 14.247 W	
5,754.0	40.90	215.30	5,691.0	-193.6	-165.7	657,003.33	770,186.67	32° 48' 11.172 N	103° 27' 14.445 W	
5,798.0	43.00	216.00	5,723.7	-217.5	-182.9	656,979.43	770,169.53	32° 48' 10.937 N	103° 27' 14.648 W	
5,843.0	44.90	216.70	5,756.1	-242.7	-201.4	656,954.28	770,151.01	32° 48' 10.690 N	103° 27' 14.867 W	
5,888.0	46.80	216.70	5,787.5	-268.5	-220.7	656,928.40	770,131.72	32° 48' 10.436 N	103° 27' 15.096 W	
5,933.0	48.70	216.20	5,817.7	-295.3	-240.5	656,901.60	770,111.93	32° 48' 10.172 N	103° 27' 15.330 W	
5,978.0	51.00	215.60	5,846.7	-323.2	-260.7	656,873.74	770,091.77	32° 48' 9.898 N	103° 27' 15.569 W	
6,023.0	53.60	215.30	5,874.2	-352.2	-281.3	656,844.74	770,071.12	32° 48' 9.613 N	103° 27' 15.814 W	
6,067.0	55.50	215.30	5,899.8	-381.5	-302.0	656,815.49	770,050.41	32° 48' 9.325 N	103° 27' 16.059 W	
6,112.0	57.20	216.40	5,924.7	-411.8	-324.0	656,785.13	770,028.47	32° 48' 9.027 N	103° 27' 16.319 W	
6,157.0	60.20	216.60	5,948.1	-442.7	-346.8	656,754.22	770,005.60	32° 48' 8.723 N	103° 27' 16.590 W	
6,202.0	62.70	216.80	5,969.6	-474.4	-370.4	656,722.54	769,981.98	32° 48' 8.411 N	103° 27' 16.870 W	
6,247.0	64.90	217.10	5,989.4	-506.7	-394.7	656,690.27	769,957.71	32° 48' 8.094 N	103° 27' 17.157 W	
6,291.0	67.20	217.30	6,007.3	-538.7	-419.0	656,658.24	769,933.40	32° 48' 7.779 N	103° 27' 17.445 W	

# ConocoPhillips

## Survey Report - Geographic

<b>Company:</b>	ConocoPhillips MCBU - Permian-Panhandle Gold Data	<b>Local Co-ordinate Reference:</b>	Well VACUUM GLORIETA EAST UNIT 114H
<b>Project:</b>	Permian-BUCKEYE-NM East State Plane Zone	<b>TVD Reference:</b>	RKB @ 3954.4usft (194)
<b>Site:</b>	Vacuum - Field	<b>MD Reference:</b>	RKB @ 3954.4usft (194)
<b>Well:</b>	VACUUM GLORIETA EAST UNIT 114H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack 1	<b>Database:</b>	EDM Central Planning

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,336.0	70.00	217.50	6,023.7	-572.0	-444.5	656,624.96	769,907.95	32° 48' 7.452 N	103° 27' 17.747 W
6,381.0	73.30	217.10	6,037.9	-606.0	-470.3	656,590.99	769,882.07	32° 48' 7.118 N	103° 27' 18.053 W
6,424.0	72.50	218.80	6,050.5	-638.4	-495.6	656,558.58	769,856.80	32° 48' 6.799 N	103° 27' 18.352 W
6,469.0	74.80	220.40	6,063.2	-671.6	-523.1	656,525.32	769,829.28	32° 48' 6.472 N	103° 27' 18.678 W
6,514.0	76.80	221.20	6,074.2	-704.7	-551.6	656,492.30	769,800.77	32° 48' 6.148 N	103° 27' 19.015 W
6,559.0	77.30	221.30	6,084.3	-737.6	-580.6	656,459.33	769,771.86	32° 48' 5.824 N	103° 27' 19.357 W
6,604.0	77.60	221.20	6,094.1	-770.6	-609.5	656,426.30	769,742.90	32° 48' 5.500 N	103° 27' 19.700 W
6,651.0	77.90	221.00	6,104.1	-805.3	-639.7	656,391.69	769,712.70	32° 48' 5.160 N	103° 27' 20.057 W
6,749.0	82.10	219.90	6,121.1	-878.7	-702.3	656,318.26	769,650.11	32° 48' 4.438 N	103° 27' 20.797 W
6,794.0	84.60	220.70	6,126.3	-912.8	-731.2	656,284.18	769,621.20	32° 48' 4.103 N	103° 27' 21.139 W
6,838.0	87.00	222.10	6,129.5	-945.7	-760.2	656,251.27	769,592.18	32° 48' 3.780 N	103° 27' 21.482 W
6,883.0	92.90	221.90	6,129.6	-979.1	-790.3	656,217.84	769,562.09	32° 48' 3.452 N	103° 27' 21.838 W
6,971.0	94.90	220.70	6,123.6	-1,045.1	-848.3	656,151.89	769,504.14	32° 48' 2.804 N	103° 27' 22.523 W
7,061.0	93.60	220.40	6,116.9	-1,113.3	-906.6	656,083.69	769,445.80	32° 48' 2.134 N	103° 27' 23.213 W
7,152.0	93.30	219.70	6,111.4	-1,182.8	-965.1	656,014.16	769,387.35	32° 48' 1.451 N	103° 27' 23.905 W
7,267.0	92.99	219.74	6,105.1	-1,271.1	-1,038.5	655,925.84	769,313.97	32° 48' 0.583 N	103° 27' 24.773 W
7,357.0	93.20	219.80	6,100.3	-1,340.2	-1,095.9	655,856.76	769,256.48	32° 47' 59.904 N	103° 27' 25.453 W
7,448.0	93.50	219.00	6,094.9	-1,410.4	-1,153.6	655,786.57	769,198.82	32° 47' 59.215 N	103° 27' 26.135 W
7,539.0	93.10	218.70	6,089.7	-1,481.1	-1,210.6	655,715.82	769,141.83	32° 47' 58.519 N	103° 27' 26.810 W
7,630.0	93.00	218.20	6,084.9	-1,552.3	-1,267.1	655,644.65	769,085.33	32° 47' 57.820 N	103° 27' 27.479 W
7,721.0	92.90	217.40	6,080.2	-1,624.1	-1,322.8	655,572.84	769,029.63	32° 47' 57.114 N	103° 27' 28.138 W
7,811.0	93.00	218.00	6,075.5	-1,695.2	-1,377.8	655,501.73	768,974.66	32° 47' 56.415 N	103° 27' 28.789 W
7,902.0	93.20	217.80	6,070.6	-1,766.9	-1,433.6	655,430.03	768,918.85	32° 47' 55.710 N	103° 27' 29.450 W
7,993.0	92.80	217.50	6,065.9	-1,838.9	-1,489.1	655,358.08	768,863.34	32° 47' 55.002 N	103° 27' 30.107 W
8,083.0	91.30	219.70	6,062.6	-1,909.2	-1,545.2	655,287.79	768,807.23	32° 47' 54.312 N	103° 27' 30.771 W
8,174.0	90.70	221.00	6,061.0	-1,978.5	-1,604.1	655,218.45	768,748.32	32° 47' 53.630 N	103° 27' 31.468 W
8,255.0	90.70	221.00	6,060.1	-2,039.6	-1,657.2	655,157.33	768,695.18	32° 47' 53.030 N	103° 27' 32.096 W

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,656.2	1,656.2	9 5/8"	9-5/8	12-1/4

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_