

Results of Directional Survey

API number:	30-025-40840		
OGRID:		Operator:	CONOCOPHILLIPS COMPANY
		Property:	BUCK 17 FEDERAL # 5H

surface	ULSTR:	A	20	T 26S	R 32E
				843 FNL	1102 FEL

BH Loc	ULSTR:	A	17	T 26S	R 32E
14446	MD	8825.5	TVD	276 FNL	1124 FEL
				5004 FSL	

Top Perf/OH	ULSTR:	A	20	T 26S	R 32E
9932	MD	8827.0	TVD	493 FSL	1067 FEL

Bot Perf/OH	ULSTR:	A	17	T 26S	R 32E
14263	MD	8838.6	TVD	459 FNL	1119 FEL
				4821 FSL	

	MD	N/S	E/W	VD
	9872	1276.40	38.70	8826.1
TOP PERFS/OH	9932	1336.27	34.68	8827.02
	9963	1367.20	32.60	8827.50
	14226	5627.50	-16.60	8840.90
BOT PERFS/OH	14263	5664.42	-17.37	8838.58
	14317	5718.30	-18.50	8835.20

NEXT TO LAST	14362	5763.10	-19.50	8832.00
LAST READING	14446	5846.90	-21.50	8825.50
TD	14446	5846.90	-21.50	8825.50

Surface Location	843	FN	1102	FE
Projected BHL	5004	FS	1124	FE
Location of				
Top Perfs/OH	493	FS	1067	FE
Bottom Perfs/OH	4821	FS	1119	FE

SUMMARY of Subsurface Locations

Surface Location	A-20-26S-32E	843	FN	1102	FE	Vert. Depth
Top Perfs/OH	A-20-26S-32E	493	FS	1067	FE	8827.02
Bottom Perfs/OH	A-17-26S-32E	4821	FS	1119	FE	8838.58
Projected TD	A-17-26S-32E	5004	FS	1124	FE	8825.50

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Conoco Phillips

Lea County, New Mexico
Sec 20, T26S, 32E
Buck Federal 17 #5H

Wellbore #1

Survey: MWD

DDC Survey Report

12 December, 2012



Company:	Conoco Phillips	Local Co-ordinate Reference:	Well Buck Federal 17 #5H
Project:	Lea County, New Mexico	TVD Reference:	WELL @ 3166.0usft (Precision #827)
Site:	Sec 20, T26S, 32E	MD Reference:	WELL @ 3166.0usft (Precision #827)
Well:	Buck Federal 17 #5H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 6000.1 Single User Db

Project	Lea County, New Mexico		
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		

Site	Sec 20, T26S, 32E			
Site Position:		Northing:	376,829.70 usft	Latitude: 32° 2' 3.859 N
From:	Map	Easting:	698,257.30 usft	Longitude: 103° 41' 36.778 W
Position Uncertainty:	0.0 usft	Spot Radius:	13-3/16 "	Grid Convergence: 0.34 °

Well	Buck Federal 17 #5H			
Well Position	+N/-S	0.0 usft	Northing:	376,358.53 usft
	+E/-W	0.0 usft	Easting:	698,843.49 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft
			Ground Level:	3,150.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2012	7.45	59.95	48,347

Design	Wellbore #1			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.88

Survey Program	Date 12/12/2012			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
199.0	8,188.0	GYRO (Wellbore #1)	MWD default	MWD - Standard
8,247.0	14,446.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,188.0	1.80	215.18	8,186.3	-27.5	46.0	-27.6	0.00	0.00	0.00	
TIE IN @ 8188' MD / 8186' TVD										
8,188.1	1.80	215.18	8,186.4	-27.5	46.0	-27.6	0.00	0.00	0.00	
8,247.0	1.90	220.40	8,245.3	-29.0	44.9	-29.1	0.33	0.17	8.86	
8,292.0	2.50	21.80	8,290.2	-28.7	44.8	-28.8	9.85	1.33	358.67	
8,337.0	8.80	19.40	8,335.0	-24.5	46.3	-24.6	14.01	14.00	-5.33	
8,381.0	14.30	12.00	8,378.1	-16.0	48.5	-16.1	12.92	12.50	-16.82	
8,426.0	19.30	3.50	8,421.2	-3.2	50.1	-3.3	12.35	11.11	-18.89	
8,471.0	24.30	4.60	8,462.9	13.5	51.3	13.4	11.15	11.11	2.44	
8,516.0	29.30	5.30	8,503.1	33.7	53.1	33.6	11.13	11.11	1.56	

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Well:	Buck Federal 17 #5H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Buid Rate (°/100usft)	Turn Rate (°/100usft)
8,560.0	34.00	4.80	8,540.5	56.7	55.1	56.6	10.70	10.68	-1.14
8,605.0	38.50	2.80	8,576.8	83.2	58.9	83.1	10.34	10.00	-4.44
8,650.0	43.80	0.70	8,610.7	112.8	57.7	112.7	12.17	11.78	-4.67
8,694.0	49.20	359.70	8,641.0	144.7	57.8	144.6	12.38	12.27	-2.27
8,739.0	52.80	359.80	8,669.3	179.7	57.7	179.6	8.00	8.00	0.22
8,784.0	55.80	358.60	8,695.5	216.2	57.2	216.1	7.01	6.67	-2.67
8,829.0	59.20	356.70	8,719.7	254.1	55.6	254.0	8.35	7.56	-4.22
8,873.0	62.10	356.00	8,741.3	292.4	53.1	292.3	6.74	6.59	-1.59
8,918.0	64.60	357.50	8,761.5	332.6	50.9	332.5	6.30	5.56	3.33
8,963.0	67.50	355.80	8,779.7	373.6	48.5	373.5	7.31	6.44	-3.78
9,007.0	72.10	0.50	8,794.9	414.9	47.2	414.8	14.48	10.45	10.68
9,052.0	76.90	2.30	8,806.9	458.2	48.2	458.1	11.34	10.67	4.00
9,097.0	80.40	2.30	8,815.8	502.3	50.0	502.2	7.78	7.78	0.00
9,141.0	84.80	1.80	8,821.5	545.9	51.6	545.8	10.06	10.00	-1.14
9,171.0	87.70	0.70	8,823.4	575.8	52.2	575.7	10.34	9.67	-3.67
9,239.0	90.40	0.00	8,824.6	643.8	52.6	643.7	4.10	3.97	-1.03
9,329.0	91.40	0.20	8,823.1	733.8	52.8	733.7	1.13	1.11	0.22
9,420.0	91.10	358.80	8,821.2	824.7	52.0	824.6	1.57	-0.33	-1.54
CROSSED LEASE LINE @ 9438' MD / 8821' TVD									
9,438.3	90.73	358.70	8,820.9	843.0	51.6	842.9	2.08	-2.00	-0.56
9,510.0	89.30	358.30	8,820.8	914.7	49.7	914.6	2.08	-2.00	-0.56
9,601.0	90.10	0.00	8,821.3	1,005.7	48.4	1,005.6	2.06	0.88	1.87
9,691.0	88.20	357.90	8,822.7	1,095.7	46.7	1,095.6	3.15	-2.11	-2.33
CROSSED HARD LINE @ 9768' MD / 8825' TVD									
9,768.4	88.97	357.56	8,824.6	1,173.0	43.6	1,172.9	1.08	0.99	-0.44
9,782.0	89.10	357.50	8,824.8	1,186.6	43.1	1,186.6	1.08	0.99	-0.44
9,872.0	89.30	356.90	8,826.1	1,276.4	38.7	1,276.4	0.70	0.22	-0.67
9,963.0	88.90	355.40	8,827.5	1,367.2	32.6	1,367.1	1.71	-0.44	-1.65
10,053.0	91.70	357.90	8,827.0	1,457.0	27.3	1,457.0	4.17	3.11	2.78
10,144.0	92.60	357.40	8,823.6	1,547.9	23.6	1,547.9	1.13	0.99	-0.55
10,234.0	92.00	359.80	8,820.0	1,637.8	21.4	1,637.7	2.75	-0.67	2.67
10,325.0	88.60	2.70	8,819.5	1,728.8	23.4	1,728.7	4.91	-3.74	3.19
10,415.0	88.10	0.70	8,822.1	1,818.7	26.0	1,818.6	2.29	-0.56	-2.22
10,506.0	88.50	357.90	8,824.8	1,909.6	24.9	1,909.6	3.11	0.44	-3.08
10,596.0	88.90	358.30	8,826.8	1,999.5	21.9	1,999.5	0.63	0.44	0.44
10,687.0	89.30	357.20	8,828.3	2,090.5	18.4	2,090.4	1.29	0.44	-1.21
10,778.0	90.30	358.60	8,828.6	2,181.4	15.0	2,181.4	1.89	1.10	1.54
10,868.0	91.70	358.80	8,827.0	2,271.4	13.0	2,271.3	1.57	1.56	0.22
10,959.0	89.50	359.00	8,826.1	2,362.3	11.2	2,362.3	2.43	-2.42	0.22
11,050.0	90.10	359.30	8,826.4	2,453.3	9.9	2,453.3	0.74	0.66	0.33
11,141.0	89.50	359.00	8,826.7	2,544.3	8.5	2,544.3	0.74	-0.66	-0.33
11,231.0	90.00	357.90	8,827.1	2,634.3	6.1	2,634.2	1.34	0.56	-1.22
11,322.0	90.40	356.10	8,826.8	2,725.1	1.3	2,725.1	2.03	0.44	-1.98



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Buid Rate (°/100usft)	Turn Rate (°/100usft)
11,413.0	89.10	1.10	8,827.2	2,816.1	-0.9	2,816.1	5.68	-1.43	5.49
11,503.0	89.20	0.90	8,828.5	2,906.1	0.7	2,906.0	0.25	0.11	-0.22
11,594.0	89.00	1.40	8,829.9	2,997.0	2.5	2,997.0	0.59	-0.22	0.55
11,685.0	89.20	0.50	8,831.4	3,088.0	4.0	3,088.0	1.01	0.22	-0.99
11,776.0	90.80	4.80	8,831.4	3,178.9	8.2	3,178.9	5.04	1.76	4.73
11,867.0	90.70	2.30	8,830.2	3,269.7	13.9	3,269.7	2.75	-0.11	-2.75
11,957.0	89.00	357.00	8,830.4	3,359.7	13.3	3,359.6	6.18	-1.89	-5.89
12,048.0	89.70	357.90	8,831.4	3,450.6	9.3	3,450.5	1.25	0.77	0.99
12,139.0	88.60	355.60	8,832.8	3,541.4	4.1	3,541.4	2.80	-1.21	-2.53
12,230.0	88.60	358.60	8,835.0	3,632.2	-0.5	3,632.2	3.30	0.00	3.30
12,321.0	89.50	358.10	8,836.5	3,723.2	-3.1	3,723.2	1.13	0.99	-0.55
12,411.0	87.70	358.30	8,838.7	3,813.1	-5.9	3,813.1	2.01	-2.00	0.22
12,502.0	88.30	0.40	8,841.9	3,904.0	-7.0	3,904.1	2.40	0.68	2.31
12,593.0	90.40	359.50	8,842.9	3,995.0	-7.1	3,995.0	2.51	2.31	-0.99
12,684.0	91.20	0.40	8,841.7	4,086.0	-7.1	4,086.0	1.32	0.88	0.99
12,774.0	91.30	358.80	8,839.7	4,176.0	-7.8	4,176.0	1.78	0.11	-1.78
12,865.0	89.90	359.80	8,838.8	4,267.0	-8.9	4,267.0	1.89	-1.54	1.10
12,956.0	89.40	359.50	8,839.3	4,358.0	-9.4	4,358.0	0.64	-0.55	-0.33
13,046.0	89.00	0.40	8,840.6	4,448.0	-9.5	4,448.0	1.09	-0.44	1.00
13,137.0	88.50	0.40	8,842.5	4,538.9	-8.9	4,539.0	0.55	-0.55	0.00
13,228.0	89.50	1.10	8,844.1	4,629.9	-7.7	4,629.9	1.34	1.10	0.77
13,319.0	89.60	0.90	8,844.9	4,720.9	-6.1	4,720.9	0.25	0.11	-0.22
13,409.0	90.10	0.00	8,845.1	4,810.9	-5.4	4,810.9	1.14	0.56	-1.00
13,500.0	90.80	359.80	8,844.4	4,901.9	-5.5	4,901.9	0.80	0.77	-0.22
13,591.0	88.30	357.70	8,845.1	4,992.9	-7.5	4,992.9	3.59	-2.75	-2.31
13,681.0	88.10	357.70	8,847.9	5,082.7	-11.1	5,082.8	0.22	-0.22	0.00
13,772.0	89.30	0.50	8,850.0	5,173.7	-12.6	5,173.7	3.35	1.32	3.08
13,863.0	90.50	0.40	8,850.1	5,264.7	-11.9	5,264.7	1.32	1.32	-0.11
13,954.0	91.00	0.70	8,848.9	5,355.7	-11.0	5,355.7	0.64	0.55	0.33
14,044.0	91.40	358.40	8,847.1	5,445.6	-11.7	5,445.7	2.59	0.44	-2.56
14,135.0	91.60	358.40	8,844.7	5,536.6	-14.2	5,536.6	0.22	0.22	0.00
14,226.0	93.20	358.60	8,840.9	5,627.5	-18.6	5,627.5	1.77	1.76	0.22
14,317.0	93.90	359.00	8,835.2	5,718.3	-18.5	5,718.3	0.89	0.77	0.44
14,362.0	94.40	358.60	8,832.0	5,763.1	-19.5	5,763.2	1.42	1.11	-0.89
TD @ 14446' MD / 8826' TVD									
14,446.0	94.40	358.60	8,825.5	5,846.9	-21.5	5,846.9	0.00	0.00	0.00



DDC
Survey Report



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Survey Annotations				
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		+N/-S (usft)	+E/-W (usft)	
8,188.1	8,186.4	-27.5	46.0	TIE IN @ 8188' MD / 8186' TVD
9,438.3	8,820.9	843.0	51.6	CROSSED LEASE LINE @ 9438' MD / 8821' TVD
9,768.4	8,824.6	1,173.0	43.6	CROSSED HARD LINE @ 9768' MD / 8825' TVD
14,446.0	8,825.5	5,846.9	-21.5	TD @ 14446' MD / 8826' TVD

Checked By: _____	Approved By: _____	Date: _____
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