



30-025-42691

ConocoPhillips

Lea County, New Mexico (NAD 27)

VGEU

224H

Wellbore #1

Plan: Design #2

Standard Planning Report

25 June, 2015

 **MS Energy Services.**
WWW.MSENERGYSERVICES.COM

JUL 15 2015

Database:	EDM 5000.1 Conroe DB	Local Co-ordinate Reference:	Well 224H
Company:	ConocoPhillips	TVD Reference:	WELL @ 3880.00usft (Precision 194)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	WELL @ 3880.00usft (Precision 194)
Site:	VGEU	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Project	Lea County, New Mexico (NAD 27)		
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		

Well	224H				
Well Position	+N/-S	655,716.37 usft	Northing:	655,716.37 usft	Latitude: 32° 47' 58.336 N
	+E/-W	771,437.74 usft	Easting:	771,437.74 usft	Longitude: 103° 26' 59.914 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 3,866.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	09/01/15	7.17	60.70	48,552

Design	Design #2				
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Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	240.34

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth (usft)	(°)	(°)	Depth (usft)	(usft)	(usft)	Rate (°/100usft)	Rate (°/100usft)	Rate (°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,071.34	0.00	0.00	5,071.34	0.00	0.00	0.00	0.00	0.00	0.00	
6,404.67	80.00	240.34	6,011.76	-390.50	-685.71	6.00	6.00	0.00	240.34	PBHL v2 - VGEU 2:
6,604.67	80.00	240.34	6,046.49	-487.97	-856.87	0.00	0.00	0.00	0.00	
6,771.34	90.00	240.34	6,061.00	-570.03	-1,000.96	6.00	6.00	0.00	0.00	
9,292.35	90.00	240.34	6,061.00	-1,817.58	-3,191.65	0.00	0.00	0.00	0.00	PBHL v2 - VGEU 2:

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Local Co-ordinate Reference: Well 224H
TVD Reference: WELL @ 3880.00usft (Precision 194)
MD Reference: WELL @ 3880.00usft (Precision 194)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
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
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
1,580.00	0.00	0.00	1,580.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,681.00	0.00	0.00	1,681.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
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
2,300.00	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
2,724.00	0.00	0.00	2,724.00	0.00	0.00	0.00	0.00	0.00	0.00
Tansil									
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,856.00	0.00	0.00	2,856.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
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
3,133.00	0.00	0.00	3,133.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
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
3,684.00	0.00	0.00	3,684.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
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

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Planned 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)
4,038.00	0.00	0.00	4,038.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
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
4,351.00	0.00	0.00	4,351.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
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
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
5,071.34	0.00	0.00	5,071.34	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 6.00°/100' Build									
5,100.00	1.72	240.34	5,100.00	-0.21	-0.37	0.43	6.00	6.00	0.00
5,150.00	4.72	240.34	5,149.91	-1.60	-2.81	3.24	6.00	6.00	0.00
5,200.00	7.72	240.34	5,199.61	-4.28	-7.52	8.65	6.00	6.00	0.00
5,250.00	10.72	240.34	5,248.96	-8.25	-14.48	16.66	6.00	6.00	0.00
5,300.00	13.72	240.34	5,297.82	-13.48	-23.68	27.25	6.00	6.00	0.00
5,350.00	16.72	240.34	5,346.06	-19.98	-35.08	40.37	6.00	6.00	0.00
5,400.00	19.72	240.34	5,393.55	-27.71	-48.66	56.00	6.00	6.00	0.00
5,450.00	22.72	240.34	5,440.15	-36.67	-64.39	74.10	6.00	6.00	0.00
5,500.00	25.72	240.34	5,485.75	-46.82	-82.21	94.61	6.00	6.00	0.00
5,550.00	28.72	240.34	5,530.21	-58.13	-102.08	117.47	6.00	6.00	0.00
5,600.00	31.72	240.34	5,573.41	-70.59	-123.95	142.64	6.00	6.00	0.00
5,650.00	34.72	240.34	5,615.23	-84.14	-147.75	170.03	6.00	6.00	0.00
5,700.00	37.72	240.34	5,655.56	-98.76	-173.42	199.57	6.00	6.00	0.00
5,750.00	40.72	240.34	5,694.30	-114.40	-200.89	231.18	6.00	6.00	0.00
5,800.00	43.72	240.34	5,731.32	-131.03	-230.08	264.77	6.00	6.00	0.00
5,850.00	46.72	240.34	5,766.54	-148.59	-260.92	300.26	6.00	6.00	0.00
5,900.00	49.72	240.34	5,799.85	-167.04	-293.31	337.54	6.00	6.00	0.00
5,900.24	49.72	240.34	5,800.00	-167.13	-293.47	337.72	0.00	0.00	0.00
Lower San Andres									
5,950.00	52.72	240.34	5,831.16	-186.32	-327.18	376.51	6.03	6.03	0.00
6,000.00	55.72	240.34	5,860.39	-206.39	-362.42	417.07	6.00	6.00	0.00
6,050.00	58.72	240.34	5,887.46	-227.19	-398.95	459.10	6.00	6.00	0.00
6,100.00	61.72	240.34	5,912.29	-248.67	-436.66	502.50	6.00	6.00	0.00
6,150.00	64.72	240.34	5,934.81	-270.75	-475.44	547.13	6.00	6.00	0.00
6,184.55	66.79	240.34	5,949.00	-286.34	-502.81	578.63	6.00	6.00	0.00
Glorieta									
6,200.00	67.72	240.34	5,954.97	-293.39	-515.19	592.88	6.00	6.00	0.00
6,250.00	70.72	240.34	5,972.71	-316.52	-555.81	639.62	6.00	6.00	0.00
6,300.00	73.72	240.34	5,987.98	-340.08	-597.18	687.23	6.00	6.00	0.00
6,350.00	76.72	240.34	6,000.73	-364.00	-639.19	735.57	6.00	6.00	0.00
6,404.67	80.00	240.34	6,011.76	-390.50	-685.71	789.11	6.00	6.00	0.00
Begin 80.00° Tangent									
6,500.00	80.00	240.34	6,028.32	-436.96	-767.29	882.99	0.00	0.00	0.00
6,515.46	80.00	240.34	6,031.00	-444.49	-780.52	898.21	0.00	0.00	0.00
Upper Paddock									
6,604.67	80.00	240.34	6,046.49	-487.97	-856.87	986.07	0.00	0.00	0.00
Begin 6.00°/100' Build									

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Site: VGEU
Well: 224H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well 224H
TVD Reference: WELL @ 3880.00usft (Precision 194)
MD Reference: WELL @ 3880.00usft (Precision 194)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
6,650.00	82.72	240.34	6,053.30	-510.14	-895.80	1,030.88	6.00	6.00	0.00
6,700.00	85.72	240.34	6,058.34	-534.76	-939.03	1,080.62	6.00	6.00	0.00
6,750.00	88.72	240.34	6,060.76	-559.47	-982.42	1,130.55	6.00	6.00	0.00
6,771.34	90.00	240.34	6,061.00	-570.03	-1,000.96	1,151.89	6.00	6.00	0.00
Begin 90.00° Lateral									
6,800.00	90.00	240.34	6,061.00	-584.21	-1,025.87	1,180.55	0.00	0.00	0.00
6,900.00	90.00	240.34	6,061.00	-633.70	-1,112.76	1,280.55	0.00	0.00	0.00
7,000.00	90.00	240.34	6,061.00	-683.18	-1,199.66	1,380.55	0.00	0.00	0.00
7,100.00	90.00	240.34	6,061.00	-732.67	-1,286.56	1,480.55	0.00	0.00	0.00
7,200.00	90.00	240.34	6,061.00	-782.15	-1,373.45	1,580.55	0.00	0.00	0.00
7,300.00	90.00	240.34	6,061.00	-831.64	-1,460.35	1,680.55	0.00	0.00	0.00
7,400.00	90.00	240.34	6,061.00	-881.13	-1,547.25	1,780.55	0.00	0.00	0.00
7,500.00	90.00	240.34	6,061.00	-930.61	-1,634.15	1,880.55	0.00	0.00	0.00
7,600.00	90.00	240.34	6,061.00	-980.10	-1,721.04	1,980.55	0.00	0.00	0.00
7,700.00	90.00	240.34	6,061.00	-1,029.59	-1,807.94	2,080.55	0.00	0.00	0.00
7,800.00	90.00	240.34	6,061.00	-1,079.07	-1,894.84	2,180.55	0.00	0.00	0.00
7,900.00	90.00	240.34	6,061.00	-1,128.56	-1,981.73	2,280.55	0.00	0.00	0.00
8,000.00	90.00	240.34	6,061.00	-1,178.04	-2,068.63	2,380.55	0.00	0.00	0.00
8,100.00	90.00	240.34	6,061.00	-1,227.53	-2,155.53	2,480.55	0.00	0.00	0.00
8,200.00	90.00	240.34	6,061.00	-1,277.02	-2,242.43	2,580.55	0.00	0.00	0.00
8,300.00	90.00	240.34	6,061.00	-1,326.50	-2,329.32	2,680.55	0.00	0.00	0.00
8,400.00	90.00	240.34	6,061.00	-1,375.99	-2,416.22	2,780.55	0.00	0.00	0.00
8,500.00	90.00	240.34	6,061.00	-1,425.47	-2,503.12	2,880.55	0.00	0.00	0.00
8,600.00	90.00	240.34	6,061.00	-1,474.96	-2,590.01	2,980.55	0.00	0.00	0.00
8,700.00	90.00	240.34	6,061.00	-1,524.45	-2,676.91	3,080.55	0.00	0.00	0.00
8,800.00	90.00	240.34	6,061.00	-1,573.93	-2,763.81	3,180.55	0.00	0.00	0.00
8,900.00	90.00	240.34	6,061.00	-1,623.42	-2,850.71	3,280.55	0.00	0.00	0.00
9,000.00	90.00	240.34	6,061.00	-1,672.91	-2,937.60	3,380.55	0.00	0.00	0.00
9,100.00	90.00	240.34	6,061.00	-1,722.39	-3,024.50	3,480.55	0.00	0.00	0.00
9,200.00	90.00	240.34	6,061.00	-1,771.88	-3,111.40	3,580.55	0.00	0.00	0.00
9,292.35	90.00	240.34	6,061.00	-1,817.58	-3,191.65	3,672.90	0.00	0.00	0.00
PBHL - 5 1/2"									

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
PBHL v2 - VGEU 224	0.00	240.34	6,061.00	-1,817.58	-3,191.65	653,898.79	768,246.09	32° 47' 40.614 N	103° 27' 37.479 W
- plan hits target center									
- Rectangle (sides W60.00 H2,521.01 D40.00)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
9,292.35	6,061.00	5 1/2"	5-1/2	6

Database:	EDM 5000.1 Conroe DB	Local Co-ordinate Reference:	Well 224H
Company:	ConocoPhillips	TVD Reference:	WELL @ 3880.00usft (Precision 194)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	WELL @ 3880.00usft (Precision 194)
Site:	VGEU	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,580.00	1,580.00	Rustler		0.00	240.65
1,681.00	1,681.00	Salado		0.00	240.65
2,724.00	2,724.00	Tansil		0.00	240.65
2,856.00	2,856.00	Yates		0.00	240.65
3,133.00	3,133.00	Seven Rivers		0.00	240.65
3,684.00	3,684.00	Queen		0.00	240.65
4,038.00	4,038.00	Grayburg		0.00	240.65
4,351.00	4,351.00	San Andres		0.00	240.65
5,900.24	5,800.00	Lower San Andres		0.00	240.65
6,184.55	5,949.00	Glorieta		0.00	240.65
6,515.46	6,031.00	Upper Paddock		0.00	240.65

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,071.34	5,071.34	0.00	0.00	KOP, 6.00°/100' Build
6,404.67	6,011.76	-390.50	-685.71	Begin 80.00° Tangent
6,604.67	6,046.49	-487.97	-856.87	Begin 6.00°/100' Build
6,771.34	6,061.00	-570.03	-1,000.96	Begin 90.00° Lateral
9,292.35	6,061.00	-1,817.58	-3,191.65	PBHL