



Company: ConocoPhillips
Site: Battle Axe 27 Federal COM
Well: 1H
Project: Lea County, New Mexico (NAD 27)
Rig: H&P 486

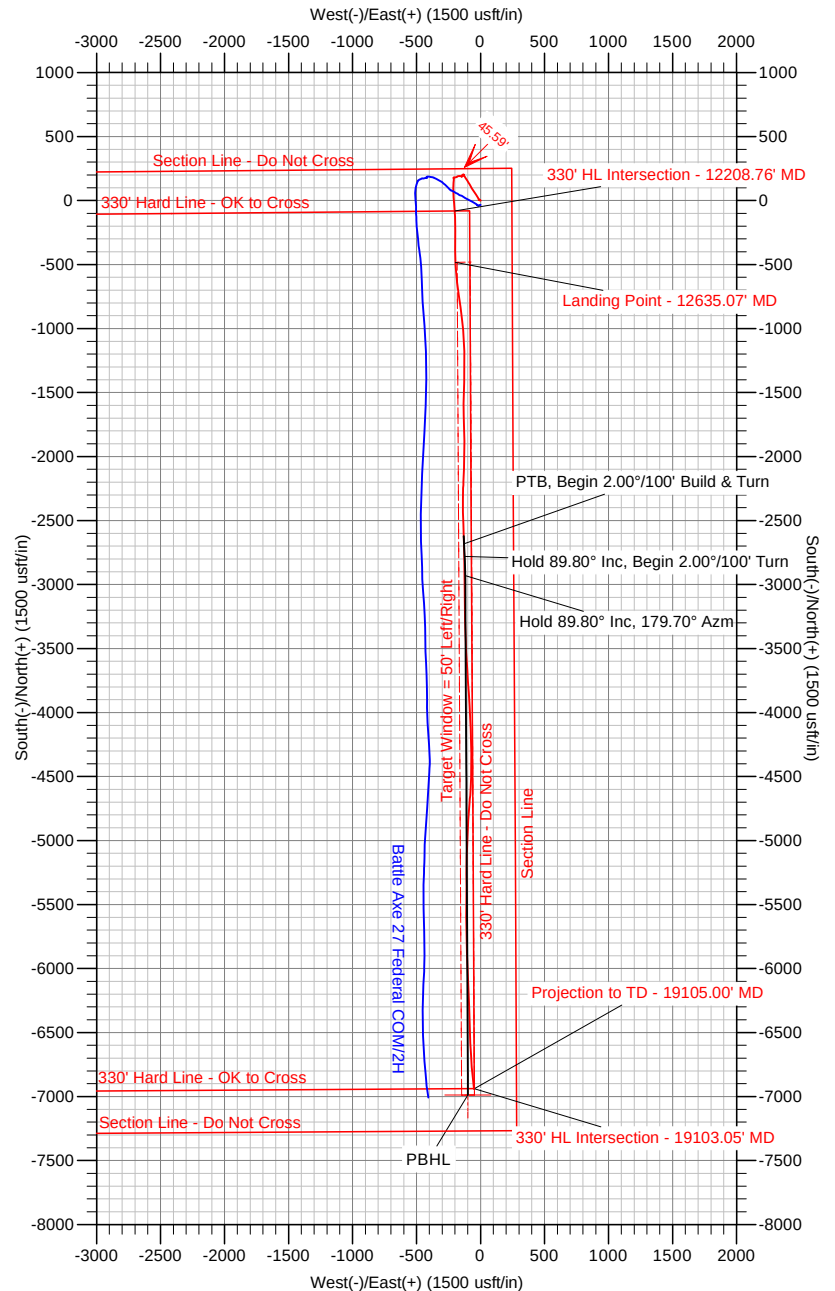
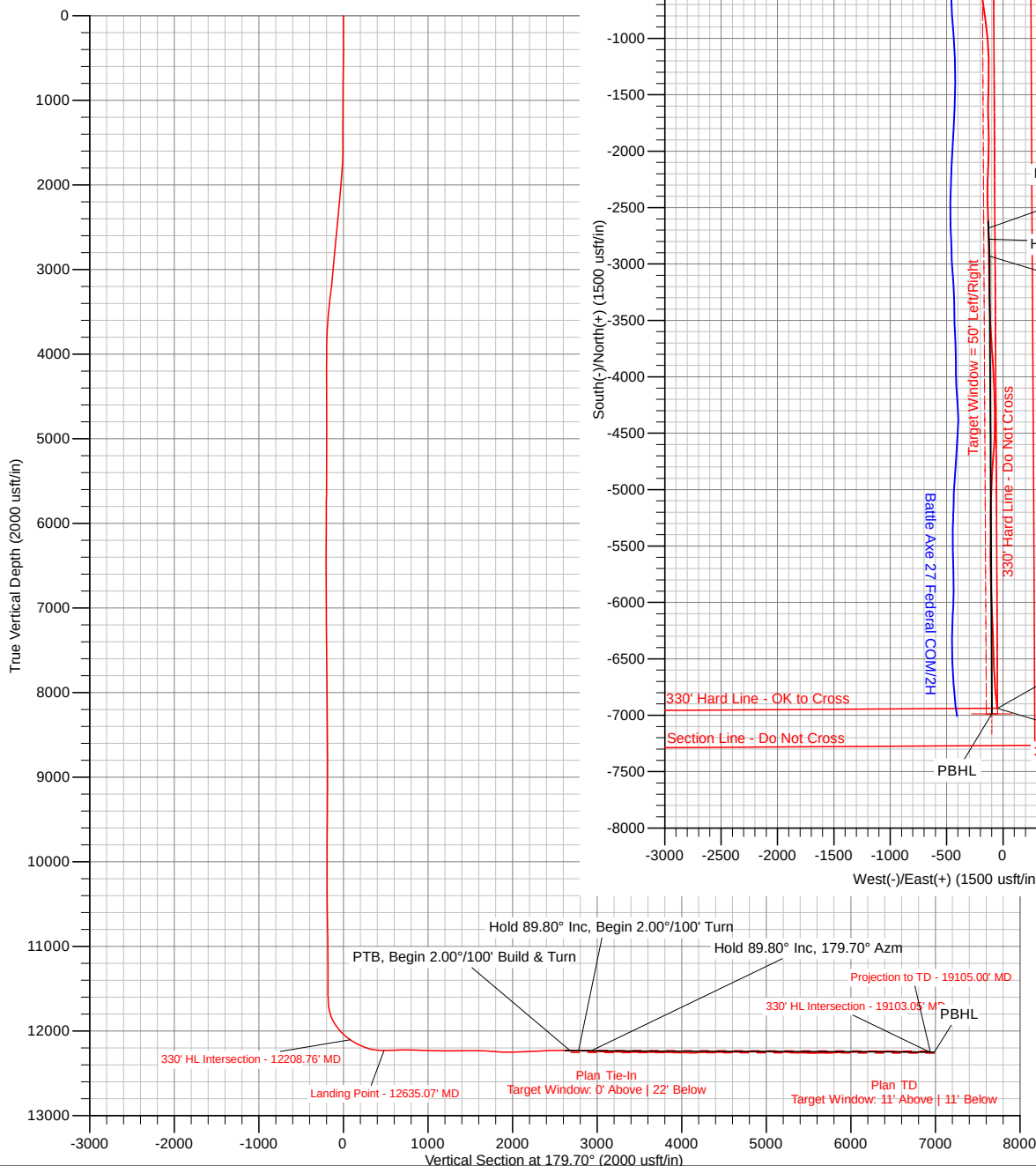


US State Plane 1927 (Exact solution)
New Mexico East 3001

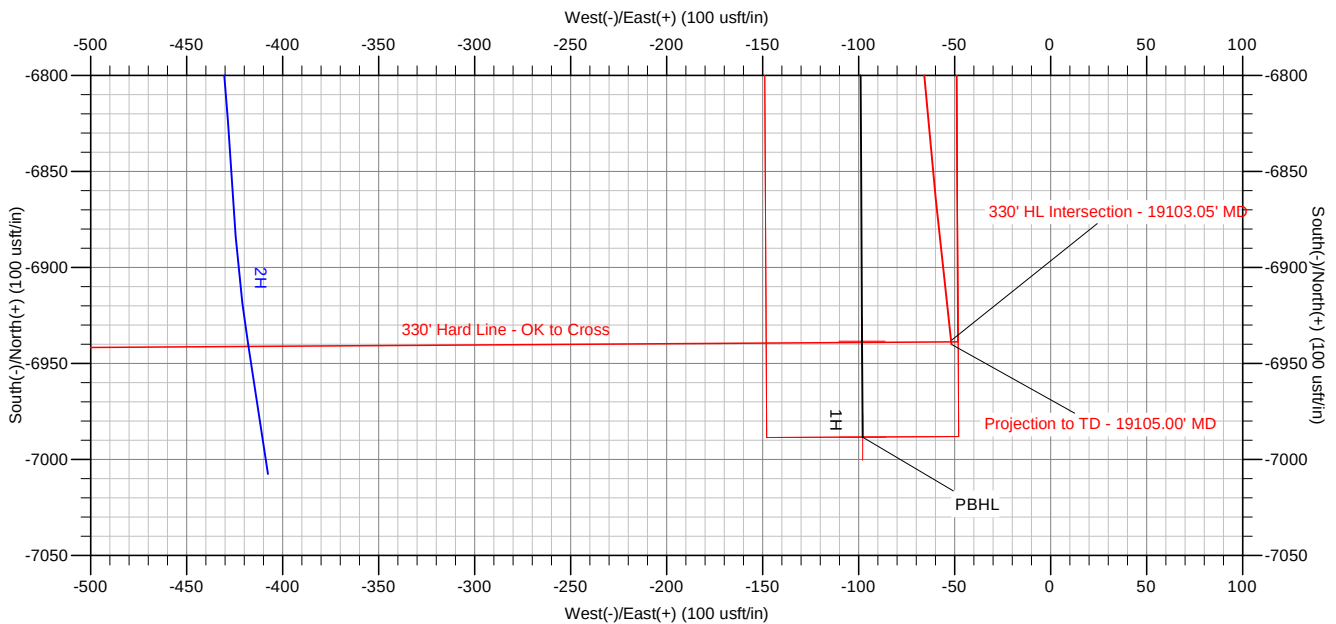
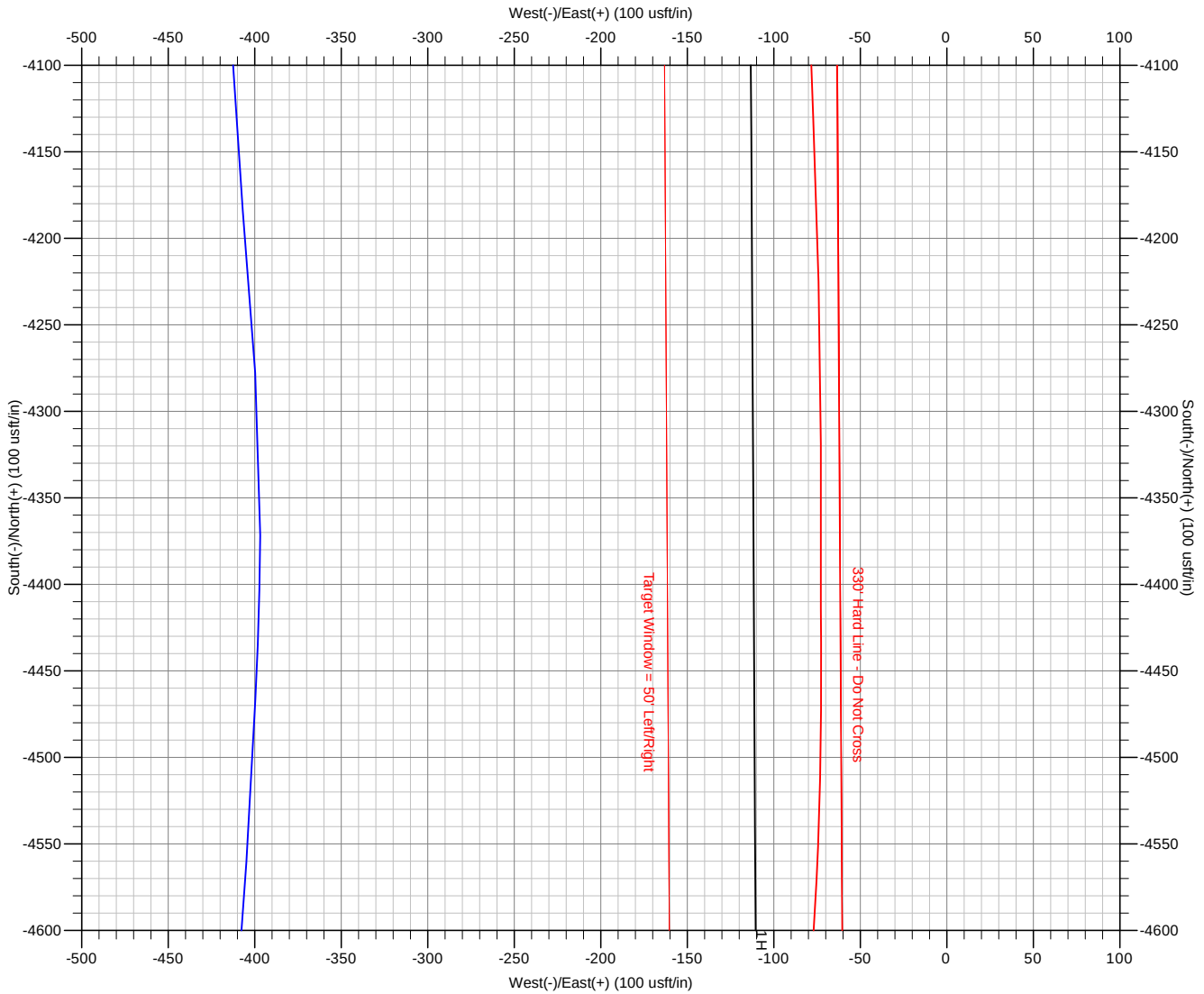
Created By: CJH
Date: 14:26, March 04 2016
Plan: Design #9

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
14781.00	88.10	177.70	12231.68	-2621.67	-131.26	2620.94	0.00	Last Survey
14841.00	88.10	177.70	12233.67	-2681.59	-128.85	2680.87	59.97	PTB, Begin 2.00°/100' Build & Turn
14939.61	89.80	176.70	12235.48	-2780.06	-124.03	2779.37	158.56	Hold 89.80° Inc, Begin 2.00°/100' Turn
15089.48	89.80	179.70	12236.00	-2929.83	-119.32	2929.17	308.42	Hold 89.80° Inc, 179.70° Azm
19148.03	89.80	179.70	12250.00	-6988.31	-97.89	6987.70	4366.95	PBHL



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented.
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ConocoPhillips

Lea County, New Mexico (NAD 27)

Battle Axe 27 Federal COM

1H

Wellbore #1

Design: Surveys

Standard Survey Report

04 March, 2016

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well 1H
Project:	Lea County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3145.00usft (H&P 486)
Site:	Battle Axe 27 Federal COM	MD Reference:	WELL @ 3145.00usft (H&P 486)
Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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	1H			
Well Position	+N/-S	0.00 usft	Northing:	371,693.37 usft
	+E/-W	0.00 usft	Easting:	710,386.76 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft
			Latitude:	32° 1' 12.297 N
			Longitude:	103° 39' 16.249 W
			Ground Level:	3,118.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	02/02/16	7.15	59.71	48,157

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	179.70	

Survey Program	Date	03/04/16			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
13.40	821.40	MS MWD (0' - 821.40' MD) (Wellbore #1)	MWD + IFR1 - OWSG	MWD + IFR1 - OWSG	
967.40	4,447.40	MS MWD (821.40' - 4447.40' MD) (Wellbo	MWD + IFR1 - OWSG	MWD + IFR1 - OWSG	
4,534.00	12,158.00	MS MWD (4447.40' - 12158.00' MD) (Well	MWD + IFR1 - OWSG	MWD + IFR1 - OWSG	
12,264.00	19,105.00	MS MWD (12158.00' - 19105.00' MD) (We	MWD + IFR1 - OWSG	MWD + IFR1 - OWSG	

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	
13.40	0.00	0.00	13.40	0.00	0.00	0.00	0.00	0.00	0.00	
162.40	0.20	171.70	162.40	-0.26	0.04	0.26	0.13	0.13	0.00	
251.40	0.50	260.70	251.40	-0.47	-0.32	0.47	0.60	0.34	100.00	
342.40	1.10	238.30	342.39	-1.00	-1.46	0.99	0.73	0.66	-24.62	
428.40	0.40	325.20	428.38	-1.18	-2.33	1.17	1.34	-0.81	101.05	
519.40	0.90	342.70	519.38	-0.24	-2.73	0.23	0.58	0.55	19.23	
609.40	1.00	312.50	609.37	0.96	-3.52	-0.98	0.56	0.11	-33.56	
698.40	1.10	311.40	698.35	2.05	-4.73	-2.08	0.11	0.11	-1.24	
788.40	1.10	332.40	788.33	3.39	-5.78	-3.42	0.45	0.00	23.33	
821.40	1.00	331.00	821.33	3.92	-6.06	-3.96	0.31	-0.30	-4.24	
874.00	0.78	322.11	873.92	4.61	-6.51	-4.64	0.49	-0.41	-16.91	
10 3/4"										

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well 1H
Project:	Lea County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3145.00usft (H&P 486)
Site:	Battle Axe 27 Federal COM	MD Reference:	WELL @ 3145.00usft (H&P 486)
Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
967.40	0.50	288.80	967.32	5.24	-7.28	-5.28	0.49	-0.30	-35.66
1,011.40	0.80	284.70	1,011.31	5.38	-7.76	-5.42	0.69	0.68	-9.32
1,101.40	0.50	291.20	1,101.31	5.68	-8.74	-5.73	0.34	-0.33	7.22
1,190.40	0.70	274.50	1,190.30	5.87	-9.64	-5.92	0.30	0.22	-18.76
1,280.40	0.50	285.20	1,280.30	6.01	-10.57	-6.07	0.25	-0.22	11.89
1,369.40	0.50	253.00	1,369.29	6.00	-11.31	-6.06	0.31	0.00	-36.18
1,459.40	0.30	232.20	1,459.29	5.74	-11.88	-5.80	0.27	-0.22	-23.11
1,548.40	0.30	287.50	1,548.29	5.67	-12.28	-5.73	0.31	0.00	62.13
1,637.40	1.10	334.80	1,637.28	6.51	-12.87	-6.58	1.04	0.90	53.15
1,727.40	2.90	338.90	1,727.23	9.42	-14.06	-9.49	2.01	2.00	4.56
1,816.40	4.50	333.30	1,816.04	14.64	-16.43	-14.72	1.84	1.80	-6.29
1,906.40	5.10	333.90	1,905.72	21.39	-19.78	-21.49	0.67	0.67	0.67
1,995.40	5.60	328.70	1,994.33	28.65	-23.78	-28.77	0.78	0.56	-5.84
2,085.40	6.20	325.60	2,083.86	36.41	-28.80	-36.56	0.75	0.67	-3.44
2,174.40	5.90	326.20	2,172.36	44.18	-34.06	-44.35	0.34	-0.34	0.67
2,264.40	5.40	325.30	2,261.92	51.50	-39.05	-51.71	0.56	-0.56	-1.00
2,353.40	6.30	325.90	2,350.46	58.99	-44.17	-59.22	1.01	1.01	0.67
2,442.40	7.30	328.00	2,438.83	67.83	-49.90	-68.09	1.16	1.12	2.36
2,532.40	6.70	327.20	2,528.16	77.09	-55.78	-77.38	0.68	-0.67	-0.89
2,621.40	6.20	328.20	2,616.60	85.54	-61.12	-85.86	0.58	-0.56	1.12
2,711.40	5.70	328.30	2,706.11	93.47	-66.03	-93.82	0.56	-0.56	0.11
2,800.40	6.40	330.10	2,794.62	101.53	-70.83	-101.90	0.81	0.79	2.02
2,890.40	7.10	330.40	2,883.99	110.72	-76.08	-111.11	0.78	0.78	0.33
2,979.40	6.40	331.00	2,972.37	119.84	-81.20	-120.26	0.79	-0.79	0.67
3,068.40	5.70	330.90	3,060.88	128.04	-85.75	-128.49	0.79	-0.79	-0.11
3,158.40	6.00	328.20	3,150.41	135.94	-90.40	-136.41	0.45	0.33	-3.00
3,247.40	7.40	323.70	3,238.80	144.52	-96.25	-145.02	1.68	1.57	-5.06
3,337.40	8.40	325.60	3,327.95	154.61	-103.39	-155.15	1.15	1.11	2.11
3,426.40	7.70	328.10	3,416.07	165.04	-110.22	-165.61	0.88	-0.79	2.81
3,515.40	7.10	329.60	3,504.33	174.84	-116.15	-175.45	0.71	-0.67	1.69
3,605.40	5.20	327.40	3,593.80	183.08	-121.16	-183.71	2.13	-2.11	-2.44
3,694.40	4.00	325.00	3,682.52	189.02	-125.12	-189.67	1.37	-1.35	-2.70
3,784.40	2.40	322.30	3,772.37	193.08	-128.07	-193.75	1.79	-1.78	-3.00
3,874.40	1.30	318.00	3,862.33	195.33	-129.91	-196.01	1.23	-1.22	-4.78
3,963.40	1.20	319.50	3,951.30	196.79	-131.19	-197.47	0.12	-0.11	1.69
4,053.40	0.90	334.60	4,041.29	198.14	-132.10	-198.83	0.45	-0.33	16.78
4,142.40	0.30	339.60	4,130.28	198.99	-132.48	-199.68	0.68	-0.67	5.62
4,232.40	0.40	121.80	4,220.28	199.05	-132.30	-199.74	0.74	0.11	158.00
4,321.40	0.20	130.20	4,309.28	198.78	-131.92	-199.47	0.23	-0.22	9.44
4,411.40	0.60	123.80	4,399.28	198.42	-131.40	-199.11	0.45	0.44	-7.11
4,447.40	0.30	132.10	4,435.28	198.25	-131.18	-198.94	0.85	-0.83	23.06
4,534.00	0.20	176.70	4,521.88	197.95	-131.00	-198.63	0.24	-0.12	51.50
4,629.00	0.10	85.80	4,616.88	197.79	-130.91	-198.47	0.24	-0.11	-95.68

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Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Survey										
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4,723.00	0.10	123.30	4,710.88	197.75	-130.76	-198.43	0.07	0.00	39.89	
4,817.00	0.40	94.20	4,804.88	197.68	-130.36	-198.36	0.34	0.32	-30.96	
4,911.00	0.90	80.50	4,898.87	197.78	-129.31	-198.45	0.55	0.53	-14.57	
5,006.00	0.20	46.90	4,993.86	198.02	-128.45	-198.69	0.78	-0.74	-35.37	
5,101.00	0.20	44.50	5,088.86	198.25	-128.21	-198.92	0.01	0.00	-2.53	
5,195.00	0.10	12.20	5,182.86	198.45	-128.08	-199.11	0.14	-0.11	-34.36	
5,290.00	0.30	8.20	5,277.86	198.77	-128.03	-199.44	0.21	0.21	-4.21	
5,384.00	0.40	332.60	5,371.86	199.31	-128.14	-199.98	0.25	0.11	-37.87	
5,478.00	0.20	345.70	5,465.86	199.76	-128.34	-200.43	0.22	-0.21	13.94	
5,573.00	0.30	277.00	5,560.86	199.95	-128.62	-200.62	0.31	0.11	-72.32	
5,667.00	0.30	314.90	5,654.86	200.15	-129.04	-200.83	0.21	0.00	40.32	
5,762.00	0.40	305.80	5,749.86	200.52	-129.49	-201.20	0.12	0.11	-9.58	
5,856.00	0.50	270.10	5,843.85	200.71	-130.16	-201.39	0.31	0.11	-37.98	
5,951.00	0.50	294.90	5,938.85	200.89	-130.95	-201.57	0.23	0.00	26.11	
6,045.00	0.40	291.00	6,032.85	201.18	-131.63	-201.87	0.11	-0.11	-4.15	
6,140.00	0.50	323.00	6,127.84	201.63	-132.19	-202.32	0.28	0.11	33.68	
6,234.00	0.40	309.30	6,221.84	202.17	-132.69	-202.86	0.16	-0.11	-14.57	
6,329.00	0.30	348.10	6,316.84	202.62	-133.00	-203.31	0.26	-0.11	40.84	
6,424.00	0.20	286.90	6,411.84	202.91	-133.21	-203.61	0.28	-0.11	-64.42	
6,518.00	0.30	305.10	6,505.84	203.10	-133.57	-203.80	0.13	0.11	19.36	
6,612.00	0.70	268.70	6,599.83	203.23	-134.34	-203.93	0.52	0.43	-38.72	
6,707.00	0.10	214.20	6,694.83	203.15	-134.97	-203.85	0.68	-0.63	-57.37	
6,801.00	0.40	232.80	6,788.83	202.88	-135.28	-203.59	0.33	0.32	19.79	
6,896.00	0.50	230.00	6,883.83	202.41	-135.86	-203.12	0.11	0.11	-2.95	
6,990.00	0.60	222.80	6,977.82	201.79	-136.51	-202.50	0.13	0.11	-7.66	
7,084.00	0.70	226.60	7,071.82	201.03	-137.26	-201.75	0.12	0.11	4.04	
7,179.00	0.90	243.10	7,166.81	200.30	-138.35	-201.02	0.32	0.21	17.37	
7,273.00	1.10	242.30	7,260.79	199.54	-139.80	-200.27	0.21	0.21	-0.85	
7,368.00	1.00	256.80	7,355.78	198.93	-141.42	-199.67	0.30	-0.11	15.26	
7,462.00	1.10	248.40	7,449.76	198.41	-143.06	-199.16	0.19	0.11	-8.94	
7,557.00	0.50	198.50	7,544.75	197.68	-144.03	-198.43	0.91	-0.63	-52.53	
7,651.00	0.50	180.70	7,638.75	196.88	-144.17	-197.63	0.16	0.00	-18.94	
7,746.00	0.60	180.30	7,733.75	195.97	-144.18	-196.72	0.11	0.11	-0.42	
7,841.00	0.40	179.90	7,828.74	195.14	-144.18	-195.89	0.21	-0.21	-0.42	
7,935.00	0.50	172.60	7,922.74	194.41	-144.13	-195.16	0.12	0.11	-7.77	
8,030.00	0.60	193.40	8,017.74	193.51	-144.19	-194.26	0.23	0.11	21.89	
8,124.00	0.70	172.40	8,111.73	192.46	-144.23	-193.22	0.27	0.11	-22.34	
8,219.00	0.70	188.10	8,206.72	191.31	-144.23	-192.07	0.20	0.00	16.53	
8,313.00	0.60	191.50	8,300.72	190.26	-144.41	-191.02	0.11	-0.11	3.62	
8,407.00	0.70	192.20	8,394.71	189.22	-144.63	-189.97	0.11	0.11	0.74	
8,502.00	0.90	196.70	8,489.70	187.94	-144.97	-188.69	0.22	0.21	4.74	
8,596.00	0.60	197.00	8,583.69	186.76	-145.32	-187.52	0.32	-0.32	0.32	
8,690.00	0.60	214.70	8,677.69	185.89	-145.75	-186.65	0.20	0.00	18.83	
8,784.00	0.50	240.00	8,771.68	185.28	-146.38	-186.04	0.28	-0.11	26.91	

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Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)	
8,879.00	0.60	258.60	8,866.68	184.97	-147.23	-185.74	0.21	0.11	19.58	
8,973.00	0.80	4.60	8,960.68	185.53	-147.66	-186.30	1.20	0.21	112.77	
9,068.00	0.80	331.40	9,055.67	186.77	-147.92	-187.54	0.48	0.00	-34.95	
9,163.00	0.90	313.00	9,150.66	187.86	-148.79	-188.64	0.30	0.11	-19.37	
9,257.00	0.90	298.10	9,244.64	188.71	-149.98	-189.50	0.25	0.00	-15.85	
9,352.00	1.00	292.60	9,339.63	189.38	-151.40	-190.17	0.14	0.11	-5.79	
9,446.00	0.80	309.40	9,433.62	190.11	-152.67	-190.91	0.35	-0.21	17.87	
9,540.00	0.90	299.90	9,527.61	190.90	-153.81	-191.70	0.18	0.11	-10.11	
9,635.00	0.90	286.90	9,622.60	191.49	-155.17	-192.30	0.21	0.00	-13.68	
9,729.00	0.70	277.50	9,716.59	191.78	-156.45	-192.59	0.25	-0.21	-10.00	
9,824.00	0.80	287.00	9,811.58	192.05	-157.66	-192.87	0.17	0.11	10.00	
9,918.00	0.40	254.30	9,905.58	192.15	-158.60	-192.98	0.54	-0.43	-34.79	
10,013.00	1.10	252.80	10,000.57	191.79	-159.79	-192.62	0.74	0.74	-1.58	
10,108.00	1.80	264.10	10,095.54	191.37	-162.15	-192.21	0.79	0.74	11.89	
10,202.00	1.40	273.50	10,189.50	191.29	-164.76	-192.15	0.51	-0.43	10.00	
10,296.00	1.80	277.20	10,283.46	191.54	-167.37	-192.41	0.44	0.43	3.94	
10,391.00	1.80	275.90	10,378.42	191.88	-170.34	-192.77	0.04	0.00	-1.37	
10,486.00	2.10	260.70	10,473.36	191.75	-173.54	-192.66	0.63	0.32	-16.00	
10,580.00	1.80	254.80	10,567.31	191.09	-176.66	-192.01	0.38	-0.32	-6.28	
10,675.00	1.40	214.50	10,662.27	189.74	-178.76	-190.67	1.23	-0.42	-42.42	
10,769.00	2.00	225.60	10,756.23	187.65	-180.58	-188.59	0.73	0.64	11.81	
10,864.00	2.10	239.60	10,851.17	185.61	-183.27	-186.56	0.54	0.11	14.74	
10,958.00	2.10	243.60	10,945.11	183.97	-186.30	-184.94	0.16	0.00	4.26	
11,053.00	1.90	246.70	11,040.05	182.57	-189.30	-183.56	0.24	-0.21	3.26	
11,147.00	1.80	255.40	11,134.00	181.58	-192.16	-182.59	0.32	-0.11	9.26	
11,241.00	2.30	265.70	11,227.94	181.07	-195.47	-182.09	0.66	0.53	10.96	
11,336.00	2.80	271.40	11,322.85	180.98	-199.69	-182.03	0.59	0.53	6.00	
11,430.00	3.00	266.30	11,416.73	180.88	-204.44	-181.95	0.35	0.21	-5.43	
11,510.00	2.80	266.30	11,496.62	180.62	-208.48	-181.71	0.25	-0.25	0.00	
11,597.00	0.90	213.60	11,583.58	179.91	-210.98	-181.02	2.72	-2.18	-60.57	
11,628.00	0.90	182.10	11,614.58	179.47	-211.12	-180.57	1.58	0.00	-101.61	
11,691.00	3.30	170.90	11,677.53	177.18	-210.85	-178.28	3.85	3.81	-17.78	
11,723.00	7.30	173.10	11,709.39	174.25	-210.46	-175.35	12.51	12.50	6.88	
11,754.00	11.50	175.70	11,739.96	169.21	-210.00	-170.31	13.61	13.55	8.39	
11,786.00	14.60	179.60	11,771.13	162.00	-209.73	-163.09	10.07	9.69	12.19	
11,818.00	17.90	182.80	11,801.85	153.05	-209.94	-154.15	10.68	10.31	10.00	
11,849.00	21.60	184.10	11,831.02	142.60	-210.58	-143.70	12.02	11.94	4.19	
11,881.00	25.00	182.60	11,860.41	129.96	-211.31	-131.07	10.78	10.63	-4.69	
11,912.00	28.10	181.20	11,888.14	116.12	-211.76	-117.22	10.20	10.00	-4.52	
11,943.00	30.80	180.60	11,915.13	100.88	-212.00	-101.99	8.76	8.71	-1.94	
11,975.00	33.80	180.00	11,942.17	83.78	-212.08	-84.89	9.43	9.38	-1.88	
12,006.00	37.60	179.10	11,967.34	65.70	-211.93	-66.81	12.37	12.26	-2.90	
12,038.00	40.90	177.90	11,992.12	45.46	-211.40	-46.57	10.58	10.31	-3.75	

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well 1H
Project:	Lea County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3145.00usft (H&P 486)
Site:	Battle Axe 27 Federal COM	MD Reference:	WELL @ 3145.00usft (H&P 486)
Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
12,069.00	43.90	176.10	12,015.01	24.59	-210.29	-25.69	10.44	9.68	-5.81
12,101.00	46.90	174.80	12,037.48	1.88	-208.48	-2.97	9.81	9.38	-4.06
12,132.00	49.60	174.50	12,058.12	-21.14	-206.32	20.06	8.74	8.71	-0.97
12,158.00	51.80	174.80	12,074.59	-41.17	-204.45	40.10	8.51	8.46	1.15
12,208.76	55.34	176.20	12,104.73	-81.88	-201.26	80.83	7.31	6.97	2.76
330' HL Intersection - 12208.76' MD									
12,264.00	59.20	177.60	12,134.59	-128.27	-198.76	127.23	7.31	7.00	2.53
12,295.00	61.30	178.50	12,149.97	-155.17	-197.84	154.13	7.23	6.77	2.90
12,327.00	64.50	179.40	12,164.55	-183.65	-197.32	182.61	10.31	10.00	2.81
12,358.00	67.00	179.80	12,177.28	-211.91	-197.13	210.87	8.15	8.06	1.29
12,390.00	69.00	180.00	12,189.27	-241.58	-197.08	240.54	6.28	6.25	0.63
12,421.00	71.50	180.60	12,199.74	-270.75	-197.23	269.71	8.27	8.06	1.94
12,452.00	74.30	181.20	12,208.86	-300.37	-197.70	299.33	9.22	9.03	1.94
12,484.00	77.80	180.50	12,216.57	-331.42	-198.16	330.38	11.14	10.94	-2.19
12,515.00	81.00	179.80	12,222.27	-361.89	-198.24	360.84	10.56	10.32	-2.26
12,547.00	84.10	179.20	12,226.42	-393.61	-197.96	392.57	9.86	9.69	-1.88
12,579.00	86.60	178.50	12,229.01	-425.50	-197.32	424.46	8.11	7.81	-2.19
12,610.00	89.20	177.90	12,230.15	-456.46	-196.34	455.42	8.61	8.39	-1.94
12,635.07	90.00	177.45	12,230.33	-481.51	-195.33	480.48	3.67	3.19	-1.81
Landing Point - 12635.07' MD									
12,704.00	92.20	176.20	12,229.00	-550.31	-191.51	549.30	3.67	3.19	-1.81
12,799.00	91.10	173.40	12,226.27	-644.87	-182.90	643.90	3.17	-1.16	-2.95
12,893.00	90.40	171.10	12,225.04	-738.00	-170.23	737.10	2.56	-0.74	-2.45
12,988.00	88.40	172.10	12,226.03	-831.97	-156.35	831.14	2.35	-2.11	1.05
13,082.00	87.80	174.00	12,229.15	-925.22	-144.98	924.45	2.12	-0.64	2.02
13,176.00	88.20	174.50	12,232.43	-1,018.69	-135.57	1,017.97	0.68	0.43	0.53
13,271.00	89.10	177.80	12,234.67	-1,113.44	-129.20	1,112.74	3.60	0.95	3.47
13,366.00	89.90	179.00	12,235.50	-1,208.39	-126.54	1,207.71	1.52	0.84	1.26
13,460.00	89.00	179.70	12,236.40	-1,302.38	-125.48	1,301.71	1.21	-0.96	0.74
13,555.00	91.70	182.80	12,235.82	-1,397.34	-127.55	1,396.65	4.33	2.84	3.26
13,649.00	90.60	181.30	12,233.93	-1,491.25	-130.91	1,490.55	1.98	-1.17	-1.60
13,744.00	89.30	180.50	12,234.01	-1,586.24	-132.40	1,585.52	1.61	-1.37	-0.84
13,838.00	86.60	178.30	12,237.38	-1,680.16	-131.42	1,679.45	3.70	-2.87	-2.34
13,932.00	86.00	178.40	12,243.44	-1,773.92	-128.72	1,773.22	0.65	-0.64	0.11
14,027.00	86.60	179.40	12,249.57	-1,868.71	-126.90	1,868.02	1.23	0.63	1.05
14,121.00	89.80	180.80	12,252.53	-1,962.64	-127.06	1,961.95	3.72	3.40	1.49
14,215.00	91.00	180.60	12,251.87	-2,056.63	-128.21	2,055.93	1.29	1.28	-0.21
14,310.00	95.50	183.50	12,246.48	-2,151.39	-131.60	2,150.67	5.63	4.74	3.05
14,404.00	92.80	181.00	12,239.68	-2,245.05	-135.28	2,244.31	3.91	-2.87	-2.66
14,498.00	92.70	181.10	12,235.17	-2,338.93	-137.00	2,338.18	0.15	-0.11	0.11
14,593.00	92.70	178.90	12,230.69	-2,433.82	-137.00	2,433.06	2.31	0.00	-2.32
14,687.00	89.00	178.20	12,229.30	-2,527.76	-134.62	2,527.02	4.01	-3.94	-0.74
14,781.00	88.10	177.70	12,231.68	-2,621.67	-131.26	2,620.94	1.10	-0.96	-0.53
14,876.00	89.60	177.60	12,233.59	-2,716.56	-127.36	2,715.86	1.58	1.58	-0.11

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well 1H
Project:	Lea County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3145.00usft (H&P 486)
Site:	Battle Axe 27 Federal COM	MD Reference:	WELL @ 3145.00usft (H&P 486)
Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
14,970.00	87.50	179.80	12,235.96	-2,810.50	-125.23	2,809.81	3.23	-2.23	2.34
15,064.00	88.40	180.50	12,239.33	-2,904.44	-125.48	2,903.74	1.21	0.96	0.74
15,158.00	87.70	179.00	12,242.53	-2,998.38	-125.07	2,997.68	1.76	-0.74	-1.60
15,253.00	89.20	179.90	12,245.10	-3,093.34	-124.16	3,092.64	1.84	1.58	0.95
15,347.00	88.90	178.70	12,246.65	-3,187.31	-123.01	3,186.63	1.32	-0.32	-1.28
15,441.00	89.10	178.20	12,248.29	-3,281.27	-120.46	3,280.59	0.57	0.21	-0.53
15,536.00	89.00	177.70	12,249.87	-3,376.19	-117.07	3,375.53	0.54	-0.11	-0.53
15,630.00	88.90	177.20	12,251.59	-3,470.08	-112.89	3,469.44	0.54	-0.11	-0.53
15,724.00	89.70	177.40	12,252.74	-3,563.97	-108.46	3,563.35	0.88	0.85	0.21
15,819.00	90.40	177.00	12,252.66	-3,658.86	-103.82	3,658.26	0.85	0.74	-0.42
15,913.00	90.00	175.70	12,252.33	-3,752.66	-97.83	3,752.10	1.45	-0.43	-1.38
16,008.00	88.70	175.40	12,253.41	-3,847.37	-90.46	3,846.84	1.40	-1.37	-0.32
16,103.00	88.10	177.60	12,256.06	-3,942.15	-84.67	3,941.65	2.40	-0.63	2.32
16,197.00	88.70	177.40	12,258.68	-4,036.02	-80.57	4,035.54	0.67	0.64	-0.21
16,291.00	91.70	178.40	12,258.36	-4,129.94	-77.12	4,129.48	3.36	3.19	1.06
16,386.00	92.00	177.80	12,255.29	-4,224.84	-73.98	4,224.40	0.71	0.32	-0.63
16,480.00	90.60	180.70	12,253.16	-4,318.80	-72.75	4,318.36	3.43	-1.49	3.09
16,575.00	89.10	179.30	12,253.41	-4,413.79	-72.75	4,413.35	2.16	-1.58	-1.47
16,669.00	90.50	181.10	12,253.73	-4,507.79	-73.07	4,507.34	2.43	1.49	1.91
16,764.00	91.50	183.70	12,252.08	-4,602.68	-77.05	4,602.21	2.93	1.05	2.74
16,858.00	93.90	186.20	12,247.65	-4,696.21	-85.15	4,695.70	3.68	2.55	2.66
16,952.00	89.00	182.90	12,245.27	-4,789.84	-92.60	4,789.29	6.28	-5.21	-3.51
17,047.00	90.70	183.00	12,245.52	-4,884.71	-97.49	4,884.13	1.79	1.79	0.11
17,142.00	89.90	182.60	12,245.02	-4,979.60	-102.13	4,978.99	0.94	-0.84	-0.42
17,236.00	88.50	182.10	12,246.33	-5,073.51	-105.98	5,072.88	1.58	-1.49	-0.53
17,331.00	88.60	181.60	12,248.74	-5,168.43	-109.05	5,167.78	0.54	0.11	-0.53
17,425.00	86.40	179.40	12,252.84	-5,262.32	-109.87	5,261.67	3.31	-2.34	-2.34
17,520.00	89.00	180.10	12,256.65	-5,357.23	-109.45	5,356.59	2.83	2.74	0.74
17,614.00	88.90	180.30	12,258.37	-5,451.22	-109.78	5,450.57	0.24	-0.11	0.21
17,707.00	90.00	180.30	12,259.26	-5,544.21	-110.27	5,543.56	1.18	1.18	0.00
17,803.00	89.60	179.10	12,259.60	-5,640.21	-109.77	5,639.56	1.32	-0.42	-1.25
17,897.00	89.70	179.80	12,260.17	-5,734.20	-108.86	5,733.55	0.75	0.11	0.74
17,992.00	92.30	179.10	12,258.52	-5,829.17	-107.95	5,828.53	2.83	2.74	-0.74
18,086.00	94.00	178.10	12,253.35	-5,923.00	-105.66	5,922.36	2.10	1.81	-1.06
18,181.00	92.20	177.50	12,248.21	-6,017.79	-102.02	6,017.17	2.00	-1.89	-0.63
18,275.00	90.90	176.90	12,245.67	-6,111.64	-97.43	6,111.04	1.52	-1.38	-0.64
18,370.00	90.90	176.70	12,244.18	-6,206.48	-92.13	6,205.91	0.21	0.00	-0.21
18,464.00	90.00	177.60	12,243.44	-6,300.36	-87.45	6,299.81	1.35	-0.96	0.96
18,558.00	90.10	179.40	12,243.36	-6,394.32	-84.99	6,393.79	1.92	0.11	1.91
18,652.00	88.50	178.40	12,244.51	-6,488.29	-83.19	6,487.77	2.01	-1.70	-1.06
18,746.00	87.80	177.20	12,247.54	-6,582.17	-79.58	6,581.66	1.48	-0.74	-1.28
18,841.00	89.20	176.80	12,250.03	-6,677.00	-74.61	6,676.52	1.53	1.47	-0.42
18,935.00	89.70	175.60	12,250.93	-6,770.79	-68.38	6,770.34	1.38	0.53	-1.28

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well 1H
Project:	Lea County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3145.00usft (H&P 486)
Site:	Battle Axe 27 Federal COM	MD Reference:	WELL @ 3145.00usft (H&P 486)
Well:	1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)	
19,029.00	89.50	173.80	12,251.59	-6,864.38	-59.70	6,863.98	1.93	-0.21	-1.91	
19,103.05	89.50	173.80	12,252.23	-6,938.00	-51.70	6,937.63	0.00	0.00	0.00	
330' HL Intersection - 19103.05' MD										
19,105.00	89.50	173.80	12,252.25	-6,939.94	-51.49	6,939.57	0.00	0.00	0.00	
Projection to TD - 19105.00' MD										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
874.00	873.92	10 3/4"		10-3/4	12-1/4

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
12,208.76	12,104.73	-81.88	-201.26	330' HL Intersection - 12208.76' MD	
12,635.07	12,230.33	-481.51	-195.33	Landing Point - 12635.07' MD	
19,103.05	12,252.23	-6,938.00	-51.70	330' HL Intersection - 19103.05' MD	
19,105.00	12,252.25	-6,939.94	-51.49	Projection to TD - 19105.00' MD	