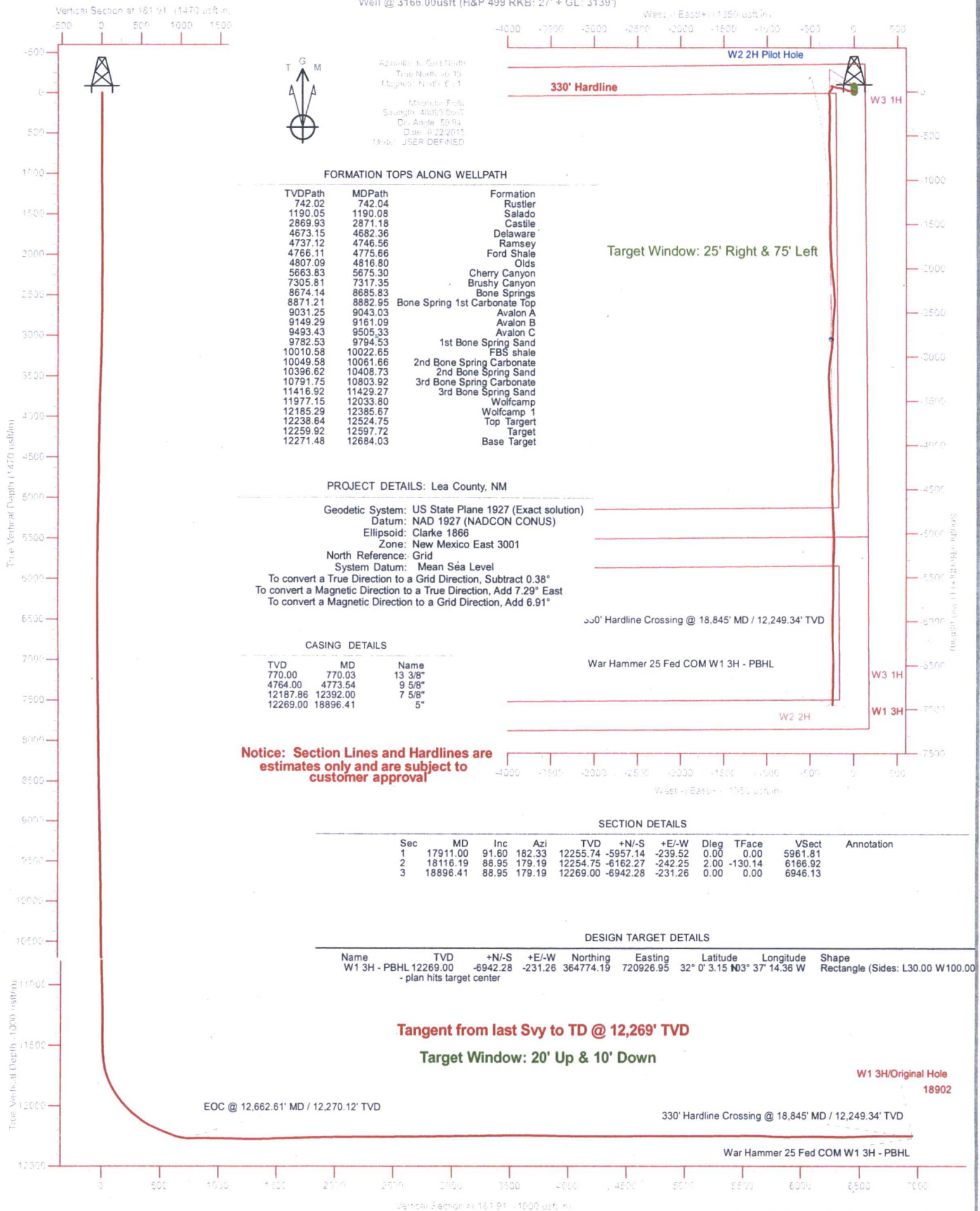


Plan: Design #10 (W1 3H/Original Hole)
Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')





ConocoPhillips

Lea County, NM

War Hammer 25 Fed Com

W1 3H

Original Hole

Survey: Survey #1

HOBBS OCD

SEP 19 2017

RECEIVED

Standard Survey Report

06 July, 2015

gyro/data
Precision Wellbore Placement

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
TVD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
MD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodata NWDB

Project	Lea County, NM		
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	War Hammer 25 Fed Com				
Site Position:		Northing:	371,782.24 usft	Latitude:	32° 1' 12.49 N
From:	Map	Easting:	721,157.76 usft	Longitude:	103° 37' 11.14 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.38 °

Well	W1 3H					
Well Position	+N/-S	0.00 usft	Northing:	371,716.47 usft	Latitude:	32° 1' 11.84 N
	+E/-W	0.00 usft	Easting:	721,158.21 usft	Longitude:	103° 37' 11.14 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,139.00 usft

Wellbore	Original Hole					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	User Defined	6/22/2015	7.29	59.94	48,093	

Design	Original Hole					
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	179.66		

Survey Program	Date 7/6/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
133.00	18,902.00	Survey #1 (Original Hole)	MWD - ISCWSA - COP	MWD - Standard ISCWSA COP	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12335.00									
1.00	0.00	21.90	1.00	0.00	0.00	0.00	0.30	0.30	0.00
770.00 - 4764.00 - 12065.00									
133.00	0.40	21.90	133.00	0.43	0.17	-0.43	0.30	0.30	0.00
196.00	0.50	71.10	196.00	0.72	0.52	-0.72	0.61	0.16	78.10
258.00	0.40	107.90	258.00	0.74	0.98	-0.74	0.48	-0.16	59.35
319.00	0.50	77.90	318.99	0.74	1.44	-0.73	0.41	0.16	-49.18
381.00	0.50	88.50	380.99	0.80	1.97	-0.79	0.15	0.00	17.10

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
TVD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
MD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodatab NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
467.00	0.60	117.10	466.99	0.60	2.75	-0.59	0.34	0.12	33.26
552.00	0.80	113.30	551.98	0.17	3.69	-0.14	0.24	0.24	-4.47
637.00	0.50	117.70	636.98	-0.24	4.57	0.27	0.36	-0.35	5.18
722.00	0.40	144.90	721.97	-0.66	5.06	0.69	0.27	-0.12	32.00
765.00	0.40	143.70	764.97	-0.90	5.24	0.93	0.02	0.00	-2.79
885.00	0.40	134.73	884.97	-1.53	5.79	1.57	0.05	0.00	-7.47
976.00	0.30	141.82	975.97	-1.94	6.16	1.98	0.12	-0.11	7.79
1,066.00	0.20	198.24	1,065.97	-2.28	6.25	2.31	0.28	-0.11	62.69
1,157.00	0.10	127.19	1,156.97	-2.48	6.27	2.51	0.21	-0.11	-78.08
1,249.00	0.20	152.29	1,248.97	-2.67	6.41	2.70	0.13	0.11	27.28
1,344.00	0.30	179.51	1,343.97	-3.06	6.49	3.10	0.16	0.11	28.65
1,438.00	0.30	206.39	1,437.96	-3.53	6.38	3.57	0.15	0.00	28.60
1,532.00	0.50	236.54	1,531.96	-3.98	5.93	4.01	0.30	0.21	32.07
1,627.00	0.50	240.34	1,626.96	-4.41	5.22	4.44	0.03	0.00	4.00
1,721.00	0.60	275.55	1,720.95	-4.56	4.37	4.59	0.37	0.11	37.46
1,815.00	0.50	248.23	1,814.95	-4.67	3.50	4.69	0.30	-0.11	-29.06
1,909.00	0.70	271.23	1,908.94	-4.81	2.55	4.82	0.33	0.21	24.47
2,004.00	0.50	273.78	2,003.94	-4.77	1.56	4.78	0.21	-0.21	2.68
2,098.00	0.40	270.09	2,097.94	-4.74	0.82	4.75	0.11	-0.11	-3.93
2,192.00	0.60	266.36	2,191.93	-4.77	0.00	4.77	0.22	0.21	-3.97
2,287.00	0.40	254.13	2,286.93	-4.89	-0.82	4.89	0.24	-0.21	-12.87
2,381.00	0.60	277.95	2,380.93	-4.92	-1.62	4.91	0.30	0.21	25.34
2,475.00	1.70	290.74	2,474.91	-4.35	-3.41	4.33	1.19	1.17	13.61
2,570.00	3.10	289.26	2,569.82	-3.01	-7.15	2.97	1.48	1.47	-1.56
2,664.00	4.30	281.35	2,663.62	-1.48	-13.01	1.40	1.38	1.28	-8.41
2,758.00	5.40	284.52	2,757.28	0.33	-20.75	-0.45	1.20	1.17	3.37
2,852.00	5.70	285.49	2,850.84	2.68	-29.53	-2.86	0.33	0.32	1.03
2,947.00	5.40	286.69	2,945.40	5.23	-38.35	-5.45	0.34	-0.32	1.26
3,041.00	5.30	282.73	3,038.99	7.45	-46.83	-7.73	0.41	-0.11	-4.21
3,135.00	5.10	280.23	3,132.60	9.15	-55.17	-9.48	0.32	-0.21	-2.66
3,230.00	4.60	280.01	3,227.26	10.56	-63.08	-10.94	0.53	-0.53	-0.23
3,324.00	4.00	288.46	3,321.00	12.26	-69.90	-12.67	0.93	-0.64	8.99
3,419.00	4.80	293.80	3,415.72	14.91	-76.68	-15.37	0.95	0.84	5.62
3,513.00	6.40	292.43	3,509.27	18.50	-85.12	-19.00	1.71	1.70	-1.46
3,607.00	6.30	296.96	3,602.69	22.83	-94.56	-23.39	0.54	-0.11	4.82
3,702.00	6.30	293.36	3,697.12	27.26	-103.99	-27.88	0.42	0.00	-3.79
3,796.00	6.30	284.79	3,790.55	30.63	-113.72	-31.30	1.00	0.00	-9.12
3,890.00	6.40	280.78	3,883.98	32.92	-123.85	-33.66	0.48	0.11	-4.27
3,985.00	5.50	283.52	3,978.46	34.98	-133.48	-35.77	0.99	-0.95	2.88
4,079.00	4.40	280.97	4,072.11	36.72	-141.40	-37.55	1.19	-1.17	-2.71
4,173.00	5.50	282.14	4,165.76	38.35	-149.34	-39.24	1.18	1.17	1.24
4,267.00	5.10	279.37	4,259.36	39.98	-157.87	-40.91	0.51	-0.43	-2.95

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodatab NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,362.00	5.30	275.72	4,353.97	41.10	-166.40	-42.09	0.41	0.21	-3.84
4,456.00	5.20	273.43	4,447.57	41.79	-174.97	-42.83	0.25	-0.11	-2.44
4,550.00	4.60	269.27	4,541.23	42.00	-182.99	-43.08	0.74	-0.64	-4.43
4,645.00	4.70	281.55	4,635.92	42.73	-190.61	-43.86	1.05	0.11	12.93
4,728.00	4.90	288.98	4,718.63	44.56	-197.30	-45.73	0.79	0.24	8.95
4,832.00	5.12	285.37	4,822.23	47.24	-205.97	-48.46	0.37	0.21	-3.47
4,895.00	5.08	285.65	4,884.98	48.73	-211.37	-49.99	0.07	-0.06	0.44
4,989.00	5.23	287.98	4,978.60	51.18	-219.45	-52.48	0.27	0.16	2.48
5,084.00	4.26	296.42	5,073.28	54.08	-226.73	-55.43	1.26	-1.02	8.88
5,178.00	4.08	282.26	5,167.03	56.35	-233.13	-57.73	1.11	-0.19	-15.06
5,273.00	3.11	282.85	5,261.84	57.64	-238.94	-59.06	1.02	-1.02	0.62
5,367.00	2.88	278.34	5,355.71	58.55	-243.76	-59.99	0.35	-0.24	-4.80
5,461.00	2.93	280.16	5,449.59	59.32	-248.46	-60.79	0.11	0.05	1.94
5,556.00	0.92	292.39	5,544.53	60.03	-251.56	-61.53	2.15	-2.12	12.87
5,650.00	0.47	288.21	5,638.53	60.44	-252.62	-61.94	0.48	-0.48	-4.45
5,744.00	0.55	291.17	5,732.52	60.73	-253.41	-62.23	0.09	0.09	3.15
5,839.00	0.48	291.20	5,827.52	61.03	-254.21	-62.54	0.07	-0.07	0.03
5,933.00	0.43	298.78	5,921.52	61.35	-254.88	-62.86	0.08	-0.05	8.06
6,028.00	0.37	299.18	6,016.51	61.67	-255.46	-63.18	0.06	-0.06	0.42
6,122.00	0.40	308.95	6,110.51	62.02	-255.98	-63.54	0.08	0.03	10.39
6,216.00	0.24	335.26	6,204.51	62.41	-256.32	-63.93	0.23	-0.17	27.99
6,311.00	0.10	316.51	6,299.51	62.65	-256.46	-64.17	0.16	-0.15	-19.74
6,405.00	0.04	343.10	6,393.51	62.74	-256.53	-64.26	0.07	-0.06	28.29
6,500.00	0.16	108.54	6,488.51	62.73	-256.41	-64.25	0.20	0.13	132.04
6,594.00	0.31	73.48	6,582.51	62.76	-256.04	-64.28	0.21	0.16	-37.30
6,689.00	0.41	79.77	6,677.51	62.89	-255.46	-64.41	0.11	0.11	6.62
6,783.00	0.51	99.71	6,771.50	62.88	-254.72	-64.39	0.20	0.11	21.21
6,877.00	0.84	102.63	6,865.50	62.66	-253.63	-64.16	0.35	0.35	3.11
6,971.00	0.89	105.69	6,959.49	62.31	-252.26	-63.81	0.07	0.05	3.26
7,066.00	0.89	95.47	7,054.47	62.04	-250.81	-63.53	0.17	0.00	-10.76
7,160.00	0.76	90.78	7,148.47	61.96	-249.46	-63.44	0.16	-0.14	-4.99
7,255.00	0.76	102.02	7,243.46	61.82	-248.22	-63.30	0.16	0.00	11.83
7,349.00	0.52	109.32	7,337.45	61.55	-247.21	-63.02	0.27	-0.26	7.77
7,443.00	0.45	161.93	7,431.45	61.06	-246.69	-62.52	0.46	-0.07	55.97
7,537.00	0.65	159.75	7,525.44	60.21	-246.39	-61.67	0.21	0.21	-2.32
7,631.00	0.74	155.90	7,619.44	59.16	-245.96	-60.61	0.11	0.10	-4.10
7,726.00	0.76	165.50	7,714.43	57.99	-245.55	-59.44	0.13	0.02	10.11
7,820.00	0.88	167.00	7,808.42	56.68	-245.23	-58.13	0.13	0.13	1.60
7,914.00	0.82	162.77	7,902.41	55.33	-244.87	-56.79	0.09	-0.06	-4.50
8,008.00	0.76	168.00	7,996.40	54.08	-244.54	-55.53	0.10	-0.06	5.56
8,103.00	0.73	186.27	8,091.39	52.86	-244.47	-54.31	0.25	-0.03	19.23
8,197.00	0.71	187.12	8,185.38	51.69	-244.61	-53.14	0.02	-0.02	0.90

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
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MD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodatab NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,291.00	0.75	175.54	8,279.38	50.50	-244.64	-51.95	0.16	0.04	-12.32
8,385.00	0.96	174.30	8,373.37	49.10	-244.51	-50.55	0.22	0.22	-1.32
8,480.00	0.97	188.64	8,468.35	47.51	-244.55	-48.97	0.25	0.01	15.09
8,574.00	1.08	197.55	8,562.34	45.88	-244.94	-47.34	0.21	0.12	9.48
8,669.00	1.36	200.47	8,657.32	43.97	-245.60	-45.43	0.30	0.29	3.07
8,763.00	1.41	204.92	8,751.29	41.88	-246.48	-43.34	0.13	0.05	4.73
8,857.00	1.23	218.51	8,845.26	40.04	-247.60	-41.51	0.38	-0.19	14.46
8,951.00	1.06	225.51	8,939.25	38.64	-248.84	-40.12	0.23	-0.18	7.45
9,046.00	1.19	212.81	9,034.23	37.20	-250.01	-38.68	0.30	0.14	-13.37
9,140.00	1.22	207.88	9,128.21	35.49	-251.00	-36.98	0.11	0.03	-5.24
9,234.00	1.90	195.54	9,222.17	33.11	-251.89	-34.60	0.80	0.72	-13.13
9,329.00	1.39	214.78	9,317.13	30.64	-252.97	-32.14	0.78	-0.54	20.25
9,423.00	1.14	209.22	9,411.11	28.89	-254.07	-30.40	0.30	-0.27	-5.91
9,517.00	1.05	228.16	9,505.09	27.50	-255.17	-29.01	0.39	-0.10	20.15
9,612.00	1.42	218.79	9,600.07	26.00	-256.56	-27.52	0.44	0.39	-9.86
9,706.00	1.62	214.57	9,694.04	24.00	-258.04	-25.53	0.24	0.21	-4.49
9,827.00	1.67	233.29	9,814.99	21.54	-260.43	-23.08	0.44	0.04	15.47
9,922.00	1.30	244.65	9,909.96	20.25	-262.51	-21.81	0.50	-0.39	11.96
10,016.00	1.19	242.50	10,003.93	19.34	-264.34	-20.91	0.13	-0.12	-2.29
10,111.00	1.33	253.84	10,098.91	18.58	-266.27	-20.16	0.30	0.15	11.94
10,205.00	0.65	249.38	10,192.90	18.09	-267.82	-19.68	0.73	-0.72	-4.74
10,299.00	0.40	232.15	10,286.89	17.70	-268.58	-19.29	0.31	-0.27	-18.33
10,394.00	0.41	182.02	10,381.89	17.16	-268.85	-18.75	0.36	0.01	-52.77
10,488.00	0.81	174.91	10,475.89	16.16	-268.80	-17.75	0.43	0.43	-7.56
10,582.00	1.05	163.85	10,569.87	14.67	-268.51	-16.26	0.32	0.26	-11.77
10,677.00	1.05	173.47	10,664.86	12.97	-268.17	-14.56	0.19	0.00	10.13
10,771.00	1.50	189.12	10,758.83	10.90	-268.26	-12.49	0.60	0.48	16.65
10,865.00	0.97	207.32	10,852.81	8.98	-268.82	-10.57	0.69	-0.56	19.36
10,960.00	1.16	191.78	10,947.80	7.32	-269.39	-8.92	0.36	0.20	-16.36
11,054.00	1.79	205.48	11,041.76	5.06	-270.21	-6.67	0.76	0.67	14.57
11,148.00	2.03	219.61	11,135.71	2.45	-271.91	-4.07	0.56	0.26	15.03
11,242.00	0.95	245.11	11,229.68	0.84	-273.68	-2.47	1.32	-1.15	27.13
11,337.00	1.07	275.81	11,324.67	0.60	-275.27	-2.24	0.58	0.13	32.32
11,431.00	0.80	252.46	11,418.65	0.49	-276.77	-2.14	0.49	-0.29	-24.84
11,526.00	2.31	212.44	11,513.62	-1.32	-278.43	-0.33	1.87	1.59	-42.13
11,557.00	3.89	201.13	11,544.57	-2.83	-279.14	1.17	5.44	5.10	-36.48
11,620.00	5.24	197.21	11,607.37	-7.57	-280.77	5.91	2.20	2.14	-6.22
11,651.00	7.64	193.43	11,638.17	-10.93	-281.66	9.26	7.86	7.74	-12.19
11,682.00	11.20	188.34	11,668.75	-15.91	-282.58	14.24	11.78	11.48	-16.42
11,714.00	15.04	183.14	11,699.91	-23.14	-283.26	21.46	12.54	12.00	-16.25
11,745.00	17.76	176.42	11,729.65	-31.87	-283.18	30.19	10.68	8.77	-21.68
11,777.00	20.63	173.25	11,759.87	-42.35	-282.22	40.67	9.54	8.97	-9.91

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
TVD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
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Database: Gyrodata NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,808.00	23.20	171.89	11,788.63	-53.82	-280.71	52.15	8.45	8.29	-4.39
11,840.00	26.00	171.71	11,817.72	-67.00	-278.81	65.34	8.75	8.75	-0.56
11,871.00	29.10	173.22	11,845.20	-81.21	-276.94	79.57	10.25	10.00	4.87
11,902.00	31.73	177.21	11,871.93	-96.84	-275.65	95.21	10.69	8.48	12.87
11,934.00	34.41	178.72	11,898.75	-114.29	-275.04	112.66	8.76	8.37	4.72
11,965.00	36.72	180.38	11,923.96	-132.32	-274.91	130.69	8.08	7.45	5.35
11,997.00	39.13	181.18	11,949.21	-151.98	-275.18	150.35	7.69	7.53	2.50
12,028.00	41.58	181.79	11,972.83	-172.05	-275.70	170.41	8.01	7.90	1.97
12,060.00	43.63	181.06	11,996.38	-193.70	-276.24	192.06	6.59	6.41	-2.28
12,091.00	45.14	179.62	12,018.53	-215.38	-276.36	213.74	5.85	4.87	-4.65
12,122.00	47.45	178.21	12,039.95	-237.79	-275.93	236.15	8.14	7.45	-4.55
12,154.00	49.82	179.12	12,061.10	-261.80	-275.38	260.16	7.71	7.41	2.84
12,185.00	52.34	179.16	12,080.57	-285.91	-275.02	284.27	8.13	8.13	0.13
12,217.00	53.10	180.26	12,099.95	-311.37	-274.89	309.73	3.62	2.37	3.44
12,248.00	54.90	180.90	12,118.18	-336.45	-275.14	334.81	6.04	5.81	2.06
12,279.00	56.92	181.93	12,135.55	-362.11	-275.78	360.47	7.07	6.52	3.32
12,311.00	60.30	181.80	12,152.22	-389.41	-276.67	387.76	10.57	10.56	-0.41
12,342.00	63.81	181.36	12,166.74	-416.78	-277.42	415.13	11.39	11.32	-1.42
12,417.00	67.43	181.62	12,197.69	-485.06	-279.20	483.39	4.84	4.83	0.35
12,507.00	67.62	181.57	12,232.10	-568.19	-281.51	566.51	0.22	0.21	-0.06
12,544.00	70.74	180.80	12,245.25	-602.76	-282.23	601.08	8.65	8.43	-2.08
12,575.00	74.86	179.57	12,254.41	-632.37	-282.32	630.68	13.82	13.29	-3.97
12,606.00	77.91	178.50	12,261.71	-662.49	-281.81	660.80	10.39	9.84	-3.45
12,638.00	81.92	177.29	12,267.31	-693.96	-280.65	692.29	13.07	12.53	-3.78
12,700.00	89.68	174.36	12,271.85	-755.58	-276.15	753.93	13.37	12.52	-4.73
12,796.00	92.98	177.23	12,269.62	-851.27	-269.11	849.66	4.55	3.44	2.99
12,891.00	87.61	179.21	12,269.13	-946.19	-266.16	944.59	6.02	-5.65	2.08
12,986.00	87.83	179.88	12,272.91	-1,041.11	-265.41	1,039.51	0.74	0.23	0.71
13,080.00	88.67	180.48	12,275.78	-1,135.06	-265.70	1,133.46	1.10	0.89	0.64
13,175.00	89.01	180.51	12,277.71	-1,230.04	-266.52	1,228.43	0.36	0.36	0.03
13,270.00	91.83	180.47	12,277.01	-1,325.02	-267.33	1,323.41	2.97	2.97	-0.04
13,365.00	92.45	180.33	12,273.46	-1,419.95	-268.00	1,418.34	0.67	0.65	-0.15
13,460.00	91.81	179.57	12,269.93	-1,514.89	-267.91	1,513.27	1.05	-0.67	-0.80
13,554.00	91.11	179.38	12,267.54	-1,608.85	-267.05	1,607.24	0.77	-0.74	-0.20
13,649.00	91.58	179.28	12,265.31	-1,703.82	-265.94	1,702.21	0.51	0.49	-0.11
13,744.00	91.95	178.98	12,262.38	-1,798.76	-264.50	1,797.16	0.50	0.39	-0.32
13,839.00	89.87	174.94	12,260.87	-1,893.59	-259.46	1,892.02	4.78	-2.19	-4.25
13,934.00	91.98	173.60	12,259.34	-1,988.10	-249.98	1,986.58	2.63	2.22	-1.41
14,029.00	90.21	175.86	12,257.52	-2,082.67	-241.26	2,081.20	3.02	-1.86	2.38
14,123.00	89.48	175.20	12,257.78	-2,176.38	-233.93	2,174.95	1.05	-0.78	-0.70
14,218.00	90.46	174.24	12,257.83	-2,270.98	-225.19	2,269.60	1.44	1.03	-1.01
14,313.00	90.18	178.77	12,257.30	-2,365.77	-219.40	2,364.43	4.78	-0.29	4.77

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
TVD Reference: Well @ 3166.00usft (H&P 499 RKB 27' + GL: 3139')
MD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodata NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,408.00	90.10	186.76	12,257.06	-2,460.58	-223.98	2,459.21	8.41	-0.08	8.41
14,503.00	90.68	183.30	12,256.42	-2,555.20	-232.31	2,553.78	3.69	0.61	-3.64
14,598.00	89.62	182.16	12,256.17	-2,650.09	-236.83	2,648.64	1.64	-1.12	-1.20
14,693.00	90.29	180.42	12,256.24	-2,745.06	-238.97	2,743.60	1.96	0.71	-1.83
14,787.00	91.78	185.27	12,254.54	-2,838.90	-243.63	2,837.41	5.40	1.59	5.16
14,882.00	91.41	189.02	12,251.90	-2,933.11	-255.44	2,931.54	3.96	-0.39	3.95
14,977.00	90.49	188.07	12,250.32	-3,027.04	-269.56	3,025.39	1.39	-0.97	-1.00
15,072.00	90.38	183.91	12,249.60	-3,121.50	-279.47	3,119.78	4.38	-0.12	-4.38
15,167.00	90.38	181.42	12,248.97	-3,216.39	-283.88	3,214.64	2.62	0.00	-2.62
15,262.00	90.32	177.43	12,248.39	-3,311.36	-282.93	3,309.62	4.20	-0.06	-4.20
15,357.00	90.74	177.41	12,247.51	-3,406.26	-278.65	3,404.55	0.44	0.44	-0.02
15,451.00	90.55	176.82	12,246.45	-3,500.13	-273.92	3,498.45	0.66	-0.20	-0.63
15,546.00	90.38	176.36	12,245.68	-3,594.96	-268.27	3,593.31	0.52	-0.18	-0.48
15,641.00	88.64	177.17	12,246.50	-3,689.80	-262.91	3,688.18	2.02	-1.83	0.85
15,736.00	89.68	177.23	12,247.89	-3,784.68	-258.27	3,783.08	1.10	1.09	0.06
15,831.00	88.75	176.04	12,249.19	-3,879.50	-252.70	3,877.93	1.59	-0.98	-1.25
15,926.00	89.34	179.57	12,250.77	-3,974.40	-249.06	3,972.86	3.77	0.62	3.72
16,021.00	89.03	174.98	12,252.13	-4,069.26	-244.55	4,067.74	4.84	-0.33	-4.83
16,115.00	89.96	174.97	12,252.95	-4,162.90	-236.31	4,161.42	0.99	0.99	-0.01
16,210.00	90.01	183.99	12,252.98	-4,257.79	-235.45	4,256.32	9.49	0.05	9.49
16,305.00	90.35	184.61	12,252.68	-4,352.53	-242.57	4,351.01	0.74	0.36	0.65
16,400.00	90.49	180.85	12,251.98	-4,447.40	-247.10	4,445.85	3.96	0.15	-3.96
16,495.00	90.52	179.73	12,251.15	-4,542.39	-247.58	4,540.84	1.18	0.03	-1.18
16,584.00	90.04	179.02	12,250.71	-4,631.38	-246.61	4,629.84	0.96	-0.54	-0.80
16,679.00	90.57	176.57	12,250.21	-4,726.31	-242.95	4,724.78	2.64	0.56	-2.58
16,774.00	88.73	173.21	12,250.79	-4,820.91	-234.49	4,819.43	4.03	-1.94	-3.54
16,869.00	90.10	180.70	12,251.76	-4,915.70	-229.45	4,914.25	8.01	1.44	7.88
16,964.00	90.77	178.46	12,251.04	-5,010.69	-228.76	5,009.24	2.46	0.71	-2.36
17,058.00	89.37	177.99	12,250.92	-5,104.64	-225.84	5,103.21	1.57	-1.49	-0.50
17,153.00	90.71	183.79	12,250.86	-5,199.59	-227.32	5,198.14	6.27	1.41	6.11
17,248.00	90.55	180.88	12,249.81	-5,294.49	-231.19	5,293.03	3.07	-0.17	-3.06
17,343.00	90.15	180.54	12,249.23	-5,389.48	-232.37	5,388.01	0.55	-0.42	-0.36
17,438.00	90.66	180.56	12,248.56	-5,484.47	-233.28	5,482.99	0.54	0.54	0.02
17,533.00	90.71	180.63	12,247.42	-5,579.46	-234.26	5,577.97	0.09	0.05	0.07
17,627.00	86.40	179.42	12,249.79	-5,673.41	-234.31	5,671.92	4.76	-4.59	-1.29
17,722.00	87.29	180.81	12,255.02	-5,768.26	-234.50	5,766.77	1.74	0.94	1.46
17,817.00	90.13	181.48	12,257.16	-5,863.21	-236.39	5,861.70	3.07	2.99	0.71
17,911.00	91.60	182.33	12,255.74	-5,957.14	-239.52	5,955.62	1.81	1.56	0.90
18,007.00	90.52	179.24	12,253.97	-6,053.10	-240.83	6,051.57	3.41	-1.12	-3.22
18,102.00	89.15	178.36	12,254.24	-6,148.08	-238.84	6,146.55	1.71	-1.44	-0.93
18,196.00	89.01	178.26	12,255.75	-6,242.03	-236.07	6,240.51	0.18	-0.15	-0.11
18,291.00	88.39	178.59	12,257.90	-6,336.96	-233.46	6,335.47	0.74	-0.65	0.35

Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W1 3H
Wellbore: Original Hole
Design: Original Hole

Local Co-ordinate Reference: Well W1 3H
TVD Reference: Well @ 3166.00usft (H&P 499 RKB: 27' + GL: 3139')
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Gyrodata NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
18,386.00	92.76	179.67	12,256.95	-6,431.92	-232.02	6,430.43	4.74	4.60	1.14
18,481.00	92.51	179.93	12,252.58	-6,526.82	-231.69	6,525.33	0.38	-0.26	0.27
18,576.00	91.53	180.71	12,249.23	-6,621.76	-232.22	6,620.27	1.32	-1.03	0.82
18,670.00	89.68	181.10	12,248.24	-6,715.74	-233.70	6,714.23	2.01	-1.97	0.41
18,766.00	89.73	181.03	12,248.74	-6,811.72	-235.49	6,810.20	0.09	0.05	-0.07
18,849.00	89.37	181.38	12,249.39	-6,894.70	-237.23	6,893.17	0.60	-0.43	0.42
18,902.00	89.37	181.38	12,249.97	-6,947.68	-238.51	6,946.14	0.00	0.00	0.00

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
0.00	0.00	12335.00	5.00	5.50
1.00	1.00	770.00	133.00	133.00
1.00	1.00	4764.00	95.00	95.00
1.00	1.00	12065.00	75.00	75.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,086.00	12,257.53	-2,139.50	-236.94	Proj to bit @ 14181' MD/90.46 Inc/174.24 Azi

Checked By: _____ Approved By: _____ Date: _____