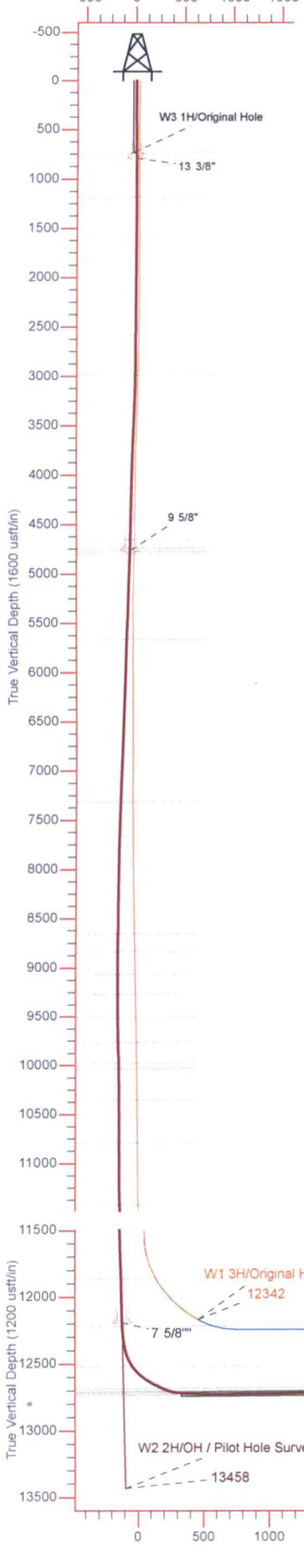


Plan: Design #11 (W2 2H/Original Hole)
Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')

Vertical Section at 181.92° (1600 usft/in)



FORMATION TOPS ALONG WELLPATH

TVDPath	MDPath	Formation
740.57	740.69	Rustler
1185.95	1186.14	Salado
2986.01	2986.40	Castile
4650.37	4656.10	Delaware
4741.39	4747.41	Ramsey
4774.39	4780.52	Ford Shale
4796.40	4802.59	Olds
5657.63	5668.01	Cherry Canyon
7316.09	7334.90	Brushy Canyon
8656.29	8677.80	Bone Springs
8836.29	8857.84	Bone Spring 1st Carbonate Top
9066.29	9087.89	Avalon A
9266.30	9287.99	Avalon B
9511.29	9533.12	Avalon C
9766.26	9788.22	FBS shale
9975.21	9997.33	1st Bone Spring Sand
10035.21	10057.34	2nd Bone Spring Carbonate
10352.19	10374.36	2nd Bone Spring Sand
10791.18	10813.50	3rd Bone Spring Carbonate
11430.13	11453.05	3rd Bone Spring Sand
11861.05	11884.16	Wolfcamp 1
12215.98	12239.26	Wolfcamp 2
12520.42	12560.94	Terminus Upper Target Limit
12682.82	12855.31	Terminus Center Target Limit
12702.45	12914.51	Landing Upper Target Limit
12703.42	12918.29	Terminus Lower Target Limit
12712.13	12962.67	Landing Center Target
12722.18	13105.73	

PROJECT DETAILS: Lea County, NM

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
North Reference: Grid
System Datum: Mean Sea Level
To convert a True Direction to a Grid Direction, Subtract 0.38°
To convert a Magnetic Direction to a True Direction, Add 7.28° East
To convert a Magnetic Direction to a Grid Direction, Add 6.90°

CASING DETAILS

TVD	MD	Name
790.00	790.13	13 3/8"
4764.00	4770.09	9 5/8"
12190.00	12213.27	7 5/8"
12685.00	19617.52	5"

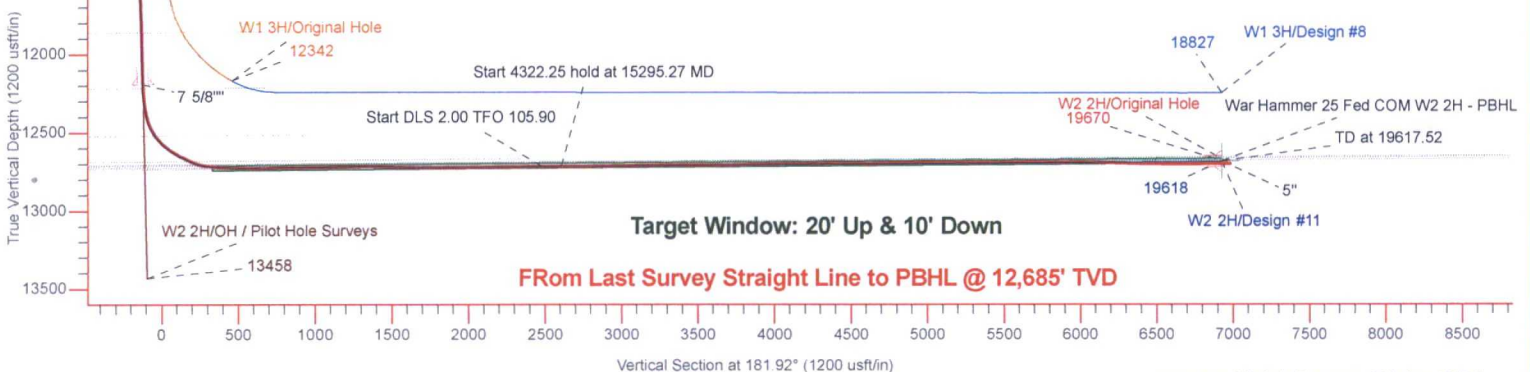
Notice: Section Lines and Hardlines are estimates only and are subject to customer approval

SECTION DETAILS

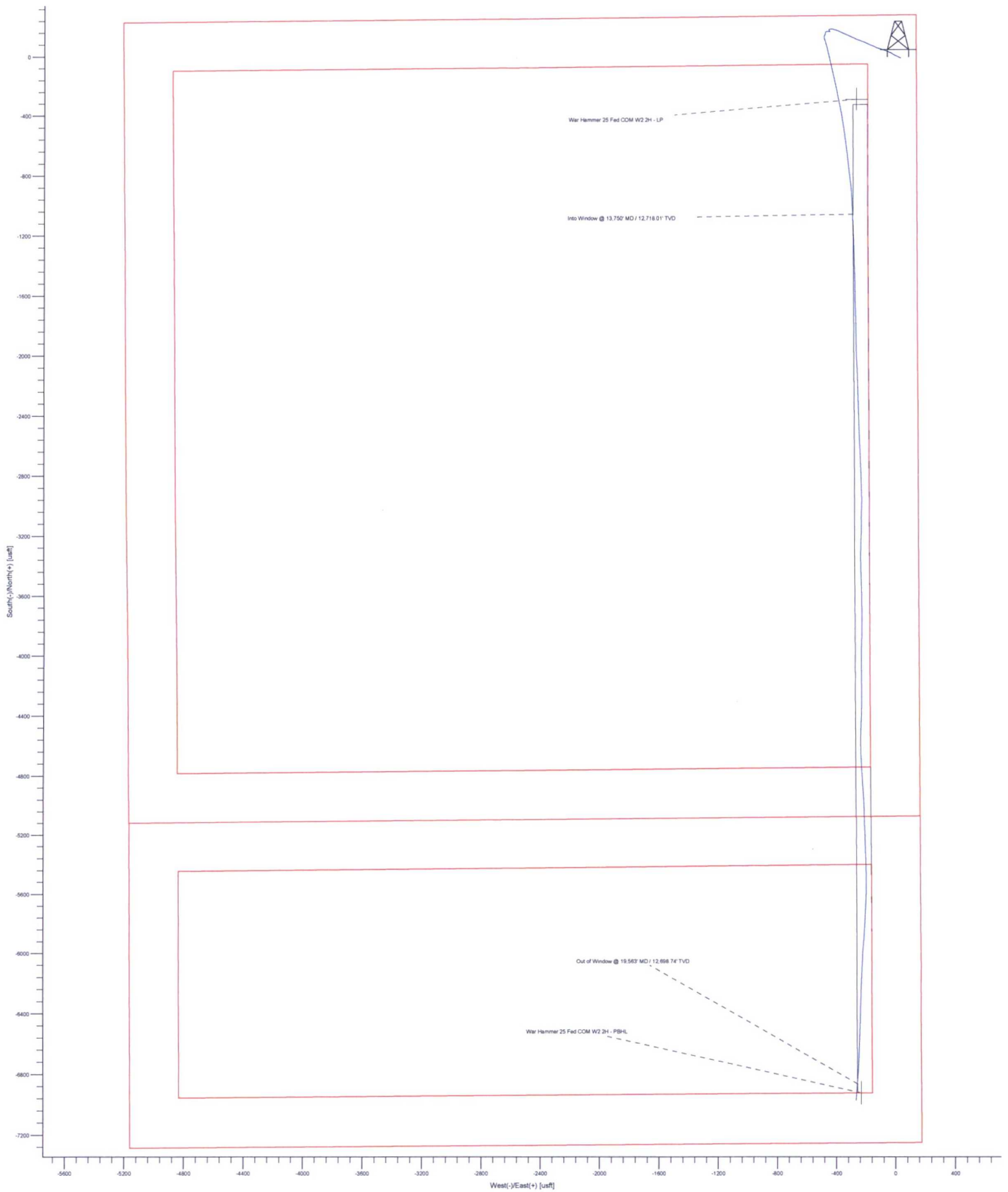
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	15164.00	91.11	177.21	12716.11	-2469.94	-255.49	0.00	0.00	2477.11	Start DLS 2.00 TFO 105.90
2	15295.27	90.39	179.73	12714.40	-2601.15	-252.00	2.00	105.90	2608.13	Start 4322.25 hold at 15295.27 MD
3	19617.52	90.39	179.73	12685.00	-6923.25	-232.00	0.00	0.00	6927.14	TD at 19617.52

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
W2 2H - PBHL	12685.00	-6923.25	-232.00	364826.17	720925.99	32° 0' 3.67" N	03° 37' 14.36" W	Rectangle (Sides: L30.00 W100.00)
- plan hits target center								



Actual: Original Hole (W2 2H/Original Hole)





ConocoPhillips

Lea County, NM

War Hammer 25 Fed Com

W2 2H

Original Hole

Design: Original Hole

Standard Survey Report

22 June, 2015



Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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
From:	Map	Easting:	721,157.76 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 1' 12.49 N
		Longitude:	103° 37' 11.14 W
		Grid Convergence:	0.38 °

Well	W2 2H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 1' 12.17 N
		Longitude:	103° 37' 11.14 W
		Ground Level:	3,139.00 usft

Wellbore	Original Hole		
Magnetics	Model Name	Sample Date	Declination (°)
	User Defined	5/27/2015	7.28
			Dip Angle (°)
			59.88
			Field Strength (nT)
			48,039

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)
	0.00	0.00	0.00
			Direction (°)
			179.57

Survey Program	Date 6/22/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
134.00	745.00	Survey #1 (Original Hole)	MWD - ISCWSA - COP
884.00	19,670.00	Survey #2 (Original Hole)	MWD - ISCWSA - COP
			Description
			MWD - Standard ISCWSA COP
			MWD - Standard ISCWSA COP

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
134.00	0.20	161.40	134.00	-0.22	0.07	0.22	0.15	0.15	0.00
197.00	0.40	91.70	197.00	-0.33	0.33	0.33	0.60	0.32	-110.63
258.00	0.60	97.40	258.00	-0.38	0.86	0.39	0.34	0.33	9.34
320.00	1.00	109.80	319.99	-0.60	1.69	0.62	0.70	0.65	20.00
405.00	1.00	100.90	404.98	-1.00	3.12	1.02	0.18	0.00	-10.47
490.00	1.20	117.10	489.96	-1.54	4.64	1.58	0.43	0.24	19.06
576.00	1.50	115.50	575.94	-2.44	6.45	2.49	0.35	0.35	-1.86

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
660.00	1.50	109.80	659.91	-3.28	8.48	3.35	0.18	0.00	-6.79
745.00	1.50	122.90	744.88	-4.26	10.46	4.34	0.40	0.00	15.41
790.13	1.45	122.09	790.00	-4.89	11.44	4.97	0.12	-0.11	-1.80
13 3/8"									
884.00	1.35	120.21	883.84	-6.08	13.40	6.18	0.12	-0.11	-2.00
975.00	0.89	110.26	974.82	-6.86	14.99	6.97	0.55	-0.51	-10.93
1,066.00	0.74	104.24	1,065.81	-7.25	16.23	7.37	0.19	-0.16	-6.62
1,156.00	0.50	112.86	1,155.81	-7.54	17.15	7.67	0.29	-0.27	9.58
1,249.00	0.51	104.67	1,248.80	-7.81	17.93	7.94	0.08	0.01	-8.81
1,343.00	0.50	106.29	1,342.80	-8.03	18.72	8.17	0.02	-0.01	1.72
1,438.00	0.16	294.65	1,437.80	-8.09	19.00	8.23	0.69	-0.36	-180.67
1,532.00	0.56	304.90	1,531.80	-7.77	18.51	7.91	0.43	0.43	10.90
1,626.00	0.51	296.31	1,625.79	-7.32	17.75	7.46	0.10	-0.05	-9.14
1,721.00	0.75	293.44	1,720.79	-6.89	16.80	7.01	0.25	0.25	-3.02
1,815.00	0.89	292.26	1,814.78	-6.37	15.56	6.48	0.15	0.15	-1.26
1,909.00	0.81	297.03	1,908.77	-5.79	14.30	5.90	0.11	-0.09	5.07
2,003.00	0.84	301.25	2,002.76	-5.13	13.12	5.23	0.07	0.03	4.49
2,097.00	0.92	295.72	2,096.74	-4.44	11.85	4.53	0.12	0.09	-5.88
2,192.00	0.99	293.81	2,191.73	-3.78	10.41	3.86	0.08	0.07	-2.01
2,286.00	1.07	289.68	2,285.72	-3.16	8.84	3.23	0.12	0.09	-4.39
2,380.00	0.99	286.23	2,379.70	-2.64	7.23	2.69	0.11	-0.09	-3.67
2,475.00	0.95	289.21	2,474.69	-2.15	5.70	2.19	0.07	-0.04	3.14
2,569.00	1.02	293.73	2,568.67	-1.55	4.20	1.59	0.11	0.07	4.81
2,663.00	0.97	299.30	2,662.66	-0.83	2.74	0.85	0.12	-0.05	5.93
2,758.00	0.95	306.86	2,757.65	0.04	1.41	-0.03	0.13	-0.02	7.96
2,852.00	0.91	300.25	2,851.63	0.88	0.14	-0.88	0.12	-0.04	-7.03
2,946.00	0.85	289.78	2,945.62	1.49	-1.16	-1.50	0.18	-0.06	-11.14
3,041.00	1.60	302.21	3,040.60	2.44	-2.95	-2.46	0.83	0.79	13.08
3,135.00	2.86	295.13	3,134.53	4.13	-6.18	-4.18	1.37	1.34	-7.53
3,229.00	4.19	292.75	3,228.35	6.46	-11.47	-6.54	1.42	1.41	-2.53
3,324.00	4.19	298.15	3,323.09	9.44	-17.73	-9.57	0.42	0.00	5.68
3,418.00	4.76	298.56	3,416.81	12.92	-24.18	-13.10	0.61	0.61	0.44
3,513.00	4.63	301.86	3,511.49	16.83	-30.90	-17.06	0.32	-0.14	3.47
3,607.00	4.33	307.86	3,605.20	21.01	-36.93	-21.29	0.59	-0.32	6.38
3,701.00	5.37	297.00	3,698.87	25.19	-43.65	-25.51	1.47	1.11	-11.55
3,796.00	5.57	292.88	3,793.43	29.00	-51.86	-29.38	0.46	0.21	-4.34
3,890.00	5.07	294.55	3,887.03	32.50	-59.84	-32.94	0.56	-0.53	1.78
3,984.00	5.08	292.17	3,980.66	35.79	-67.47	-36.30	0.22	0.01	-2.53
4,078.00	4.25	289.68	4,074.35	38.54	-74.60	-39.09	0.91	-0.88	-2.65
4,173.00	3.53	291.00	4,169.13	40.77	-80.65	-41.37	0.76	-0.76	1.39
4,267.00	4.09	290.26	4,262.92	42.97	-86.49	-43.61	0.60	0.60	-0.79
4,361.00	5.23	289.46	4,356.61	45.56	-93.68	-46.26	1.21	1.21	-0.85

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
4,456.00	5.80	289.06	4,451.17	48.57	-102.30	-49.33	0.60	0.60	-0.42
4,550.00	5.43	286.57	4,544.72	51.38	-111.05	-52.22	0.47	-0.39	-2.65
4,644.00	5.07	285.31	4,638.32	53.75	-119.32	-54.64	0.40	-0.38	-1.34
4,725.00	4.41	286.15	4,719.04	55.56	-125.76	-56.50	0.82	-0.81	1.04
4,790.15	4.54	287.46	4,784.00	57.03	-130.63	-58.01	0.26	0.21	2.01
9 5/8"									
4,855.00	4.68	288.69	4,848.64	58.65	-135.59	-59.67	0.26	0.21	1.90
4,949.00	4.82	293.78	4,942.31	61.47	-142.83	-62.54	0.47	0.15	5.41
5,044.00	5.61	296.01	5,036.92	65.12	-150.66	-66.25	0.86	0.83	2.35
5,138.00	5.38	297.26	5,130.49	69.15	-158.71	-70.34	0.28	-0.24	1.33
5,232.00	5.55	292.12	5,224.06	72.88	-166.83	-74.13	0.55	0.18	-5.47
5,327.00	5.53	289.17	5,318.62	76.11	-175.41	-77.43	0.30	-0.02	-3.11
5,421.00	6.34	294.60	5,412.11	79.76	-184.41	-81.14	1.05	0.86	5.78
5,516.00	6.53	295.53	5,506.52	84.27	-194.05	-85.73	0.23	0.20	0.98
5,610.00	6.15	294.73	5,599.94	88.68	-203.45	-90.21	0.42	-0.40	-0.85
5,704.00	5.62	295.24	5,693.44	92.75	-212.19	-94.34	0.57	-0.56	0.54
5,798.00	5.41	293.13	5,787.01	96.46	-220.43	-98.11	0.31	-0.22	-2.24
5,893.00	5.92	290.13	5,881.55	99.90	-229.14	-101.62	0.62	0.54	-3.16
5,987.00	6.18	291.21	5,975.02	103.40	-238.41	-105.19	0.30	0.28	1.15
6,082.00	6.17	290.39	6,069.47	107.03	-247.97	-108.89	0.09	-0.01	-0.86
6,176.00	5.83	291.36	6,162.96	110.53	-257.15	-112.45	0.38	-0.36	1.03
6,271.00	6.47	289.49	6,257.41	114.07	-266.69	-116.07	0.71	0.67	-1.97
6,365.00	6.46	296.07	6,350.81	118.16	-276.43	-120.23	0.79	-0.01	7.00
6,459.00	6.16	293.94	6,444.24	122.53	-285.79	-124.67	0.40	-0.32	-2.27
6,553.00	5.61	292.80	6,537.75	126.36	-294.63	-128.57	0.60	-0.59	-1.21
6,648.00	5.66	292.80	6,632.29	129.97	-303.23	-132.25	0.05	0.05	0.00
6,742.00	5.17	292.38	6,725.87	133.38	-311.42	-135.72	0.52	-0.52	-0.45
6,836.00	5.26	297.41	6,819.48	136.98	-319.16	-139.37	0.50	0.10	5.35
6,931.00	5.01	294.68	6,914.10	140.72	-326.80	-143.16	0.37	-0.26	-2.87
7,025.00	5.38	294.16	7,007.71	144.23	-334.55	-146.74	0.40	0.39	-0.55
7,120.00	6.00	295.60	7,102.24	148.20	-343.09	-150.77	0.67	0.65	1.52
7,214.00	5.95	294.39	7,195.73	152.34	-351.96	-154.97	0.14	-0.05	-1.29
7,309.00	5.17	292.00	7,290.29	155.97	-360.41	-158.67	0.86	-0.82	-2.52
7,403.00	4.75	291.62	7,383.93	158.99	-367.96	-161.75	0.45	-0.45	-0.40
7,498.00	5.78	296.66	7,478.53	162.59	-375.89	-165.41	1.19	1.08	5.31
7,592.00	5.47	293.70	7,572.08	166.51	-384.22	-169.39	0.45	-0.33	-3.15
7,686.00	4.82	294.36	7,665.70	169.94	-391.92	-172.88	0.69	-0.69	0.70
7,780.00	4.08	293.54	7,759.42	172.91	-398.58	-175.89	0.79	-0.79	-0.87
7,874.00	3.68	290.75	7,853.20	175.31	-404.47	-178.34	0.47	-0.43	-2.97
7,969.00	3.32	289.97	7,948.02	177.33	-409.91	-180.40	0.38	-0.38	-0.82
8,063.00	2.62	287.37	8,041.90	178.90	-414.52	-182.01	0.76	-0.74	-2.77
8,158.00	2.78	287.49	8,136.79	180.24	-418.79	-183.38	0.17	0.17	0.13

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Corn	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
8,243.00	2.27	286.38	8,221.71	181.34	-422.37	-184.50	0.60	-0.60	-1.31
8,341.00	2.17	283.06	8,319.63	182.30	-426.04	-185.50	0.17	-0.10	-3.39
8,435.00	1.85	288.26	8,413.58	183.18	-429.21	-186.40	0.39	-0.34	5.53
8,530.00	1.60	298.47	8,508.53	184.29	-431.83	-187.53	0.42	-0.26	10.75
8,624.00	1.41	294.22	8,602.50	185.39	-434.04	-188.65	0.23	-0.20	-4.52
8,719.00	1.27	288.43	8,697.47	186.21	-436.11	-189.47	0.20	-0.15	-6.09
8,813.00	1.06	275.20	8,791.46	186.62	-437.96	-189.90	0.36	-0.22	-14.07
8,908.00	0.93	272.11	8,886.44	186.72	-439.61	-190.02	0.15	-0.14	-3.25
9,002.00	1.05	274.22	8,980.43	186.81	-441.23	-190.12	0.13	0.13	2.24
9,096.00	1.38	277.28	9,074.41	187.02	-443.21	-190.34	0.36	0.35	3.26
9,191.00	1.56	279.51	9,169.37	187.38	-445.62	-190.72	0.20	0.19	2.35
9,285.00	2.58	267.00	9,263.31	187.48	-448.99	-190.85	1.18	1.09	-13.31
9,380.00	2.01	265.56	9,358.24	187.24	-452.79	-190.63	0.60	-0.60	-1.52
9,474.00	1.29	263.84	9,452.20	187.00	-455.49	-190.41	0.77	-0.77	-1.83
9,568.00	1.93	256.67	9,546.16	186.52	-458.08	-189.95	0.71	0.68	-7.63
9,662.00	1.92	243.11	9,640.11	185.44	-461.02	-188.90	0.48	-0.01	-14.43
9,757.00	1.80	210.48	9,735.06	183.44	-463.20	-186.91	1.11	-0.13	-34.35
9,850.00	2.69	189.75	9,827.99	180.03	-464.31	-183.51	1.28	0.96	-22.29
9,944.00	2.00	148.72	9,921.91	176.45	-463.83	-179.93	1.88	-0.73	-43.65
10,039.00	1.31	131.43	10,016.88	174.32	-462.16	-177.78	0.89	-0.73	-18.20
10,133.00	1.07	132.84	10,110.85	173.01	-460.71	-176.46	0.26	-0.26	1.50
10,228.00	1.12	133.96	10,205.84	171.76	-459.39	-175.20	0.06	0.05	1.18
10,322.00	0.55	101.50	10,299.83	171.03	-458.28	-174.47	0.77	-0.61	-34.53
10,416.00	0.20	121.92	10,393.83	170.86	-457.70	-174.29	0.39	-0.37	21.72
10,511.00	0.66	234.56	10,488.82	170.45	-458.01	-173.88	0.80	0.48	118.57
10,605.00	0.87	235.47	10,582.82	169.73	-459.04	-173.17	0.22	0.22	0.97
10,699.00	1.81	278.92	10,676.79	169.56	-461.09	-173.01	1.41	1.00	46.22
10,794.00	2.90	282.44	10,771.71	170.31	-464.92	-173.79	1.16	1.15	3.71
10,888.00	3.62	281.69	10,865.56	171.42	-470.15	-174.95	0.77	0.77	-0.80
10,982.00	2.80	260.29	10,959.41	171.64	-475.32	-175.20	1.53	-0.87	-22.77
11,077.00	3.25	242.21	11,054.28	169.99	-479.99	-173.59	1.10	0.47	-19.03
11,171.00	1.88	255.00	11,148.18	168.35	-483.83	-171.97	1.57	-1.46	13.61
11,265.00	1.51	235.70	11,242.14	167.25	-486.35	-170.90	0.72	-0.39	-20.53
11,360.00	1.44	203.15	11,337.11	165.45	-487.85	-169.10	0.87	-0.07	-34.26
11,454.00	1.73	191.48	11,431.08	162.97	-488.60	-166.63	0.46	0.31	-12.41
11,548.00	1.80	185.84	11,525.03	160.11	-489.03	-163.78	0.20	0.07	-6.00
11,643.00	1.49	184.51	11,620.00	157.40	-489.28	-161.06	0.33	-0.33	-1.40
11,737.00	1.73	197.41	11,713.96	154.82	-489.80	-158.50	0.46	0.26	13.72
11,831.00	1.75	198.79	11,807.91	152.11	-490.69	-155.79	0.05	0.02	1.47
11,926.00	1.73	200.45	11,902.87	149.40	-491.65	-153.08	0.06	-0.02	1.75
12,020.00	1.74	200.46	11,996.83	146.73	-492.65	-150.42	0.01	0.01	0.01
12,114.00	1.74	202.27	12,090.78	144.07	-493.69	-147.77	0.06	0.00	1.93

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Corn	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
12,150.00	1.85	202.73	12,126.77	143.03	-494.12	-146.73	0.31	0.31	1.28
12,198.26	1.95	205.58	12,175.00	141.57	-494.78	-145.28	0.28	0.20	5.91
7 5/8"									
12,266.00	2.09	209.13	12,242.70	139.45	-495.87	-143.17	0.28	0.21	5.24
12,355.00	10.02	175.91	12,331.15	130.30	-496.11	-134.02	9.38	8.91	-37.33
12,387.00	12.12	170.81	12,362.55	124.20	-495.38	-127.92	7.23	6.56	-15.94
12,415.00	13.25	167.74	12,389.87	118.17	-494.23	-121.87	4.70	4.04	-10.96
12,447.00	17.85	159.82	12,420.69	109.97	-491.75	-113.66	15.80	14.37	-24.75
12,478.00	24.46	157.95	12,449.59	99.55	-487.70	-103.21	21.43	21.32	-6.03
12,510.00	30.28	164.09	12,478.00	85.64	-483.00	-89.26	20.19	18.19	19.19
12,542.00	34.17	168.50	12,505.07	69.07	-478.99	-72.66	14.20	12.16	13.78
12,568.00	38.70	167.75	12,525.98	53.96	-475.81	-57.53	17.51	17.42	-2.88
12,599.00	44.37	165.87	12,549.18	33.96	-471.10	-37.50	18.73	18.29	-6.06
12,631.00	47.88	167.28	12,571.35	11.53	-465.76	-15.02	11.42	10.97	4.41
12,663.00	52.01	167.29	12,591.94	-12.36	-460.37	8.90	12.91	12.91	0.03
12,694.00	55.83	168.00	12,610.19	-36.83	-455.01	33.41	12.46	12.32	2.29
12,726.00	59.50	167.07	12,627.31	-63.22	-449.17	59.85	11.73	11.47	-2.91
12,758.00	62.68	166.83	12,642.77	-90.51	-442.85	87.18	9.96	9.94	-0.75
12,789.00	65.06	166.88	12,656.43	-117.61	-436.52	114.33	7.68	7.68	0.16
12,821.00	66.60	166.86	12,669.53	-146.04	-429.89	142.81	4.81	4.81	-0.06
12,853.00	67.74	167.20	12,681.94	-174.78	-423.27	171.60	3.69	3.56	1.06
12,884.00	69.82	167.78	12,693.16	-202.99	-417.01	199.86	6.93	6.71	1.87
12,916.00	74.98	167.63	12,702.84	-232.78	-410.52	229.70	16.13	16.12	-0.47
12,951.00	80.40	167.31	12,710.29	-266.15	-403.10	263.12	15.51	15.49	-0.91
12,982.00	83.28	167.99	12,714.69	-296.12	-396.54	293.14	9.54	9.29	2.19
13,014.00	86.09	169.00	12,717.66	-327.34	-390.18	324.41	9.33	8.78	3.16
13,078.00	87.66	169.43	12,721.15	-390.12	-378.23	387.27	2.54	2.45	0.67
13,172.00	89.09	171.60	12,723.81	-482.79	-362.74	480.05	2.76	1.52	2.31
13,267.00	89.37	171.74	12,725.09	-576.78	-348.98	574.14	0.33	0.29	0.15
13,362.00	91.75	172.97	12,724.16	-670.92	-336.34	668.38	2.82	2.51	1.29
13,457.00	91.47	172.93	12,721.49	-765.16	-324.69	762.70	0.30	-0.29	-0.04
13,552.00	89.62	173.31	12,720.59	-859.47	-313.31	857.09	1.99	-1.95	0.40
13,646.00	91.33	175.91	12,719.81	-953.04	-304.48	950.73	3.31	1.82	2.77
13,741.00	90.71	178.09	12,718.12	-1,047.89	-299.51	1,045.61	2.39	-0.65	2.29
13,836.00	90.46	176.88	12,717.15	-1,142.79	-295.34	1,140.54	1.30	-0.26	-1.27
13,931.00	92.28	179.18	12,714.88	-1,237.70	-292.08	1,235.47	3.09	1.92	2.42
14,026.00	89.12	177.89	12,713.72	-1,332.64	-289.65	1,330.43	3.59	-3.33	-1.36
14,121.00	88.22	178.04	12,715.92	-1,427.56	-286.28	1,425.37	0.96	-0.95	0.16
14,216.00	88.28	178.77	12,718.82	-1,522.48	-283.63	1,520.30	0.77	0.06	0.77
14,310.00	89.53	179.16	12,720.62	-1,616.44	-281.94	1,614.28	1.39	1.33	0.41
14,405.00	90.29	178.19	12,720.77	-1,711.41	-279.74	1,709.27	1.30	0.80	-1.02
14,500.00	89.73	178.15	12,720.75	-1,806.37	-276.71	1,804.24	0.59	-0.59	-0.04

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
14,595.00	90.24	179.11	12,720.78	-1,901.34	-274.43	1,899.22	1.14	0.54	1.01
14,690.00	91.22	177.80	12,719.57	-1,996.29	-271.87	1,994.19	1.72	1.03	-1.38
14,785.00	89.90	176.87	12,718.64	-2,091.18	-267.46	2,089.11	1.70	-1.39	-0.98
14,879.00	90.80	178.62	12,718.06	-2,185.10	-263.76	2,183.06	2.09	0.96	1.86
14,974.00	90.18	179.56	12,717.25	-2,280.08	-262.25	2,278.05	1.19	-0.65	0.99
15,069.00	90.04	177.54	12,717.07	-2,375.05	-259.85	2,373.03	2.13	-0.15	-2.13
15,164.00	91.11	177.21	12,716.11	-2,469.94	-255.49	2,467.96	1.18	1.13	-0.35
15,259.00	90.24	176.04	12,715.00	-2,564.77	-249.90	2,562.82	1.53	-0.92	-1.23
15,354.00	89.73	178.82	12,715.02	-2,659.66	-245.64	2,657.75	2.98	-0.54	2.93
15,449.00	90.74	177.91	12,714.63	-2,754.62	-242.93	2,752.72	1.43	1.06	-0.96
15,543.00	90.66	177.25	12,713.48	-2,848.53	-238.96	2,846.66	0.71	-0.09	-0.70
15,638.00	90.58	178.92	12,712.45	-2,943.47	-235.79	2,941.62	1.76	-0.08	1.76
15,733.00	90.24	182.07	12,711.77	-3,038.45	-236.61	3,036.59	3.33	-0.36	3.32
15,828.00	90.85	179.00	12,710.87	-3,133.43	-237.50	3,131.56	3.29	0.64	-3.23
15,923.00	91.19	182.07	12,709.18	-3,228.40	-238.38	3,226.52	3.25	0.36	3.23
16,018.00	90.49	180.24	12,707.79	-3,323.37	-240.30	3,321.47	2.06	-0.74	-1.93
16,113.00	90.07	179.05	12,707.32	-3,418.36	-239.71	3,416.47	1.33	-0.44	-1.25
16,208.00	89.15	176.87	12,707.97	-3,513.29	-236.33	3,511.42	2.49	-0.97	-2.29
16,302.00	90.69	179.34	12,708.10	-3,607.23	-233.22	3,605.38	3.10	1.64	2.63
16,397.00	91.16	180.27	12,706.57	-3,702.22	-232.90	3,700.36	1.10	0.49	0.98
16,492.00	91.72	179.71	12,704.18	-3,797.19	-232.88	3,795.33	0.83	0.59	-0.59
16,587.00	91.39	181.06	12,701.60	-3,892.15	-233.52	3,890.28	1.46	-0.35	1.42
16,682.00	90.85	181.72	12,699.74	-3,987.10	-235.82	3,985.22	0.90	-0.57	0.69
16,776.00	90.55	177.60	12,698.59	-4,081.07	-235.27	4,079.19	4.39	-0.32	-4.38
16,871.00	89.68	178.27	12,698.40	-4,176.01	-231.84	4,174.15	1.16	-0.92	0.71
16,966.00	90.77	180.70	12,698.03	-4,270.99	-230.99	4,269.14	2.80	1.15	2.56
17,061.00	90.38	181.63	12,697.08	-4,365.97	-232.92	4,364.10	1.06	-0.41	0.98
17,156.00	90.07	182.71	12,696.70	-4,460.90	-236.52	4,459.00	1.18	-0.33	1.14
17,250.00	89.17	180.80	12,697.33	-4,554.85	-239.40	4,552.92	2.25	-0.96	-2.03
17,345.00	90.43	177.31	12,697.66	-4,649.82	-237.83	4,647.90	3.91	1.33	-3.67
17,440.00	91.97	176.70	12,695.67	-4,744.66	-232.87	4,742.78	1.74	1.62	-0.64
17,535.00	90.80	176.20	12,693.37	-4,839.45	-226.99	4,837.61	1.34	-1.23	-0.53
17,630.00	89.73	176.13	12,692.93	-4,934.23	-220.83	4,932.44	1.13	-1.13	-0.07
17,724.00	90.41	179.01	12,692.82	-5,028.14	-216.65	5,026.37	3.15	0.72	3.06
17,819.00	89.68	177.59	12,692.75	-5,123.09	-213.83	5,121.35	1.68	-0.77	-1.49
17,914.00	90.66	178.03	12,692.46	-5,218.02	-210.20	5,216.30	1.13	1.03	0.46
18,008.00	90.38	177.37	12,691.61	-5,311.94	-206.43	5,310.24	0.76	-0.30	-0.70
18,102.00	88.56	178.75	12,692.48	-5,405.88	-203.24	5,404.20	2.43	-1.94	1.47
18,197.00	91.55	178.99	12,692.39	-5,500.85	-201.37	5,499.18	3.16	3.15	0.25
18,292.00	91.08	181.85	12,690.21	-5,595.81	-202.07	5,594.14	3.05	-0.49	3.01
18,387.00	90.43	182.49	12,688.96	-5,690.73	-205.66	5,689.03	0.96	-0.68	0.67
18,482.00	89.17	182.33	12,689.29	-5,785.65	-209.66	5,783.91	1.34	-1.33	-0.17

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
18,577.00	91.02	184.87	12,689.13	-5,880.45	-215.62	5,878.66	3.31	1.95	2.67
18,671.00	90.38	183.40	12,687.98	-5,974.19	-222.40	5,972.36	1.71	-0.68	-1.56
18,766.00	88.03	182.42	12,689.30	-6,069.05	-227.22	6,067.18	2.68	-2.47	-1.03
18,861.00	89.29	181.63	12,691.52	-6,163.97	-230.58	6,162.06	1.57	1.33	-0.83
18,956.00	88.05	181.46	12,693.73	-6,258.90	-233.14	6,256.98	1.32	-1.31	-0.18
19,051.00	87.49	181.88	12,697.42	-6,353.79	-235.91	6,351.84	0.74	-0.59	0.44
19,146.00	88.50	181.50	12,700.75	-6,448.69	-238.71	6,446.72	1.14	1.06	-0.40
19,241.00	90.18	181.83	12,701.84	-6,543.64	-241.47	6,541.64	1.80	1.77	0.35
19,336.00	90.52	181.28	12,701.26	-6,638.60	-244.04	6,636.59	0.68	0.36	-0.58
19,431.00	90.85	184.03	12,700.12	-6,733.49	-248.44	6,731.43	2.92	0.35	2.89
19,526.00	90.49	183.80	12,699.01	-6,828.26	-254.93	6,826.15	0.45	-0.38	-0.24
19,610.00	90.21	184.46	12,698.50	-6,912.04	-260.98	6,909.88	0.85	-0.33	0.79
19,670.00	90.21	184.46	12,698.28	-6,971.86	-265.64	6,969.67	0.00	0.00	0.00

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
	12,804.00	5"	5.50	6.00	
790.13	790.00	13 3/8"	13.37	17.50	
4,790.15	4,784.00	9 5/8"	9.62	12.25	
12,198.26	12,175.00	7 5/8"	5.50	6.00	

Checked By: _____ Approved By: _____ Date: _____



ConocoPhillips

Lea County, NM

War Hammer 25 Fed Com

W2 2H

Original Hole

Design: Original Hole

Standard Survey Report

22 June, 2015



Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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
From:	Map	Easting:	721,157.76 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 1' 12.49 N
		Longitude:	103° 37' 11.14 W
		Grid Convergence:	0.38 °

Well	W2 2H		
Well Position	+N/-S	0.00 usft	Northing: 371,749.42 usft
	+E/-W	0.00 usft	Easting: 721,157.99 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 1' 12.17 N
		Longitude:	103° 37' 11.14 W
		Ground Level:	3,139.00 usft

Wellbore	Original Hole		
Magnetics	Model Name	Sample Date	Declination (°)
	User Defined	5/27/2015	7.28
			Dip Angle (°) 59.88
			Field Strength (nT) 48,039

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)
	0.00	0.00	0.00
			Direction (°) 179.57

Survey Program	Date	6/22/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
134.00	745.00	Survey #1 (Original Hole)	MWD - ISCWSA - COP	MWD - Standard ISCWSA COP
884.00	19,670.00	Survey #2 (Original Hole)	MWD - ISCWSA - COP	MWD - Standard ISCWSA COP

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
134.00	0.20	161.40	134.00	-0.22	0.07	0.22	0.15	0.15	0.00
197.00	0.40	91.70	197.00	-0.33	0.33	0.33	0.60	0.32	-110.63
258.00	0.60	97.40	258.00	-0.38	0.86	0.39	0.34	0.33	9.34
320.00	1.00	109.80	319.99	-0.60	1.69	0.62	0.70	0.65	20.00
405.00	1.00	100.90	404.98	-1.00	3.12	1.02	0.18	0.00	-10.47
490.00	1.20	117.10	489.96	-1.54	4.64	1.58	0.43	0.24	19.06
576.00	1.50	115.50	575.94	-2.44	6.45	2.49	0.35	0.35	-1.86

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Corn	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
660.00	1.50	109.80	659.91	-3.28	8.48	3.35	0.18	0.00	-6.79
745.00	1.50	122.90	744.88	-4.26	10.46	4.34	0.40	0.00	15.41
790.13	1.45	122.09	790.00	-4.89	11.44	4.97	0.12	-0.11	-1.80
13 3/8"									
884.00	1.35	120.21	883.84	-6.08	13.40	6.18	0.12	-0.11	-2.00
975.00	0.89	110.26	974.82	-6.86	14.99	6.97	0.55	-0.51	-10.93
1,066.00	0.74	104.24	1,065.81	-7.25	16.23	7.37	0.19	-0.16	-6.62
1,156.00	0.50	112.86	1,155.81	-7.54	17.15	7.67	0.29	-0.27	9.58
1,249.00	0.51	104.67	1,248.80	-7.81	17.93	7.94	0.08	0.01	-8.81
1,343.00	0.50	106.29	1,342.80	-8.03	18.72	8.17	0.02	-0.01	1.72
1,438.00	0.16	294.65	1,437.80	-8.09	19.00	8.23	0.69	-0.36	-180.67
1,532.00	0.56	304.90	1,531.80	-7.77	18.51	7.91	0.43	0.43	10.90
1,626.00	0.51	296.31	1,625.79	-7.32	17.75	7.46	0.10	-0.05	-9.14
1,721.00	0.75	293.44	1,720.79	-6.89	16.80	7.01	0.25	0.25	-3.02
1,815.00	0.89	292.26	1,814.78	-6.37	15.56	6.48	0.15	0.15	-1.26
1,909.00	0.81	297.03	1,908.77	-5.79	14.30	5.90	0.11	-0.09	5.07
2,003.00	0.84	301.25	2,002.76	-5.13	13.12	5.23	0.07	0.03	4.49
2,097.00	0.92	295.72	2,096.74	-4.44	11.85	4.53	0.12	0.09	-5.88
2,192.00	0.99	293.81	2,191.73	-3.78	10.41	3.86	0.08	0.07	-2.01
2,286.00	1.07	289.68	2,285.72	-3.16	8.84	3.23	0.12	0.09	-4.39
2,380.00	0.99	286.23	2,379.70	-2.64	7.23	2.69	0.11	-0.09	-3.67
2,475.00	0.95	289.21	2,474.69	-2.15	5.70	2.19	0.07	-0.04	3.14
2,569.00	1.02	293.73	2,568.67	-1.55	4.20	1.59	0.11	0.07	4.81
2,663.00	0.97	299.30	2,662.66	-0.83	2.74	0.85	0.12	-0.05	5.93
2,758.00	0.95	306.86	2,757.65	0.04	1.41	-0.03	0.13	-0.02	7.96
2,852.00	0.91	300.25	2,851.63	0.88	0.14	-0.88	0.12	-0.04	-7.03
2,946.00	0.85	289.78	2,945.62	1.49	-1.16	-1.50	0.18	-0.06	-11.14
3,041.00	1.60	302.21	3,040.60	2.44	-2.95	-2.46	0.83	0.79	13.08
3,135.00	2.86	295.13	3,134.53	4.13	-6.18	-4.18	1.37	1.34	-7.53
3,229.00	4.19	292.75	3,228.35	6.46	-11.47	-6.54	1.42	1.41	-2.53
3,324.00	4.19	298.15	3,323.09	9.44	-17.73	-9.57	0.42	0.00	5.68
3,418.00	4.76	298.56	3,416.81	12.92	-24.18	-13.10	0.61	0.61	0.44
3,513.00	4.63	301.86	3,511.49	16.83	-30.90	-17.06	0.32	-0.14	3.47
3,607.00	4.33	307.86	3,605.20	21.01	-36.93	-21.29	0.59	-0.32	6.38
3,701.00	5.37	297.00	3,698.87	25.19	-43.65	-25.51	1.47	1.11	-11.55
3,796.00	5.57	292.88	3,793.43	29.00	-51.86	-29.38	0.46	0.21	-4.34
3,890.00	5.07	294.55	3,887.03	32.50	-59.84	-32.94	0.56	-0.53	1.78
3,984.00	5.08	292.17	3,980.66	35.79	-67.47	-36.30	0.22	0.01	-2.53
4,078.00	4.25	289.68	4,074.35	38.54	-74.60	-39.09	0.91	-0.88	-2.65
4,173.00	3.53	291.00	4,169.13	40.77	-80.65	-41.37	0.76	-0.76	1.39
4,267.00	4.09	290.26	4,262.92	42.97	-86.49	-43.61	0.60	0.60	-0.79
4,361.00	5.23	289.46	4,356.61	45.56	-93.68	-46.26	1.21	1.21	-0.85

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Corn	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
4,456.00	5.80	289.06	4,451.17	48.57	-102.30	-49.33	0.60	0.60	-0.42
4,550.00	5.43	286.57	4,544.72	51.38	-111.05	-52.22	0.47	-0.39	-2.65
4,644.00	5.07	285.31	4,638.32	53.75	-119.32	-54.64	0.40	-0.38	-1.34
4,725.00	4.41	286.15	4,719.04	55.56	-125.76	-56.50	0.82	-0.81	1.04
4,790.15	4.54	287.46	4,784.00	57.03	-130.63	-58.01	0.26	0.21	2.01
9 5/8"									
4,855.00	4.68	288.69	4,848.64	58.65	-135.59	-59.67	0.26	0.21	1.90
4,949.00	4.82	293.78	4,942.31	61.47	-142.83	-62.54	0.47	0.15	5.41
5,044.00	5.61	296.01	5,036.92	65.12	-150.66	-66.25	0.86	0.83	2.35
5,138.00	5.38	297.26	5,130.49	69.15	-158.71	-70.34	0.28	-0.24	1.33
5,232.00	5.55	292.12	5,224.06	72.88	-166.83	-74.13	0.55	0.18	-5.47
5,327.00	5.53	289.17	5,318.62	76.11	-175.41	-77.43	0.30	-0.02	-3.11
5,421.00	6.34	294.60	5,412.11	79.76	-184.41	-81.14	1.05	0.86	5.78
5,516.00	6.53	295.53	5,506.52	84.27	-194.05	-85.73	0.23	0.20	0.98
5,610.00	6.15	294.73	5,599.94	88.68	-203.45	-90.21	0.42	-0.40	-0.85
5,704.00	5.62	295.24	5,693.44	92.75	-212.19	-94.34	0.57	-0.56	0.54
5,798.00	5.41	293.13	5,787.01	96.46	-220.43	-98.11	0.31	-0.22	-2.24
5,893.00	5.92	290.13	5,881.55	99.90	-229.14	-101.62	0.62	0.54	-3.16
5,987.00	6.18	291.21	5,975.02	103.40	-238.41	-105.19	0.30	0.28	1.15
6,082.00	6.17	290.39	6,069.47	107.03	-247.97	-108.89	0.09	-0.01	-0.86
6,176.00	5.83	291.36	6,162.96	110.53	-257.15	-112.45	0.38	-0.36	1.03
6,271.00	6.47	289.49	6,257.41	114.07	-266.69	-116.07	0.71	0.67	-1.97
6,365.00	6.46	296.07	6,350.81	118.16	-276.43	-120.23	0.79	-0.01	7.00
6,459.00	6.16	293.94	6,444.24	122.53	-285.79	-124.67	0.40	-0.32	-2.27
6,553.00	5.61	292.80	6,537.75	126.36	-294.63	-128.57	0.60	-0.59	-1.21
6,648.00	5.66	292.80	6,632.29	129.97	-303.23	-132.25	0.05	0.05	0.00
6,742.00	5.17	292.38	6,725.87	133.38	-311.42	-135.72	0.52	-0.52	-0.45
6,836.00	5.26	297.41	6,819.48	136.98	-319.16	-139.37	0.50	0.10	5.35
6,931.00	5.01	294.68	6,914.10	140.72	-326.80	-143.16	0.37	-0.26	-2.87
7,025.00	5.38	294.16	7,007.71	144.23	-334.55	-146.74	0.40	0.39	-0.55
7,120.00	6.00	295.60	7,102.24	148.20	-343.09	-150.77	0.67	0.65	1.52
7,214.00	5.95	294.39	7,195.73	152.34	-351.96	-154.97	0.14	-0.05	-1.29
7,309.00	5.17	292.00	7,290.29	155.97	-360.41	-158.67	0.86	-0.82	-2.52
7,403.00	4.75	291.62	7,383.93	158.99	-367.96	-161.75	0.45	-0.45	-0.40
7,498.00	5.78	296.66	7,478.53	162.59	-375.89	-165.41	1.19	1.08	5.31
7,592.00	5.47	293.70	7,572.08	166.51	-384.22	-169.39	0.45	-0.33	-3.15
7,686.00	4.82	294.36	7,665.70	169.94	-391.92	-172.88	0.69	-0.69	0.70
7,780.00	4.08	293.54	7,759.42	172.91	-398.58	-175.89	0.79	-0.79	-0.87
7,874.00	3.68	290.75	7,853.20	175.31	-404.47	-178.34	0.47	-0.43	-2.97
7,969.00	3.32	289.97	7,948.02	177.33	-409.91	-180.40	0.38	-0.38	-0.82
8,063.00	2.62	287.37	8,041.90	178.90	-414.52	-182.01	0.76	-0.74	-2.77
8,158.00	2.78	287.49	8,136.79	180.24	-418.79	-183.38	0.17	0.17	0.13

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)	
8,243.00	2.27	286.38	8,221.71	181.34	-422.37	-184.50	0.60	-0.60	-1.31	
8,341.00	2.17	283.06	8,319.63	182.30	-426.04	-185.50	0.17	-0.10	-3.39	
8,435.00	1.85	288.26	8,413.58	183.18	-429.21	-186.40	0.39	-0.34	5.53	
8,530.00	1.60	298.47	8,508.53	184.29	-431.83	-187.53	0.42	-0.26	10.75	
8,624.00	1.41	294.22	8,602.50	185.39	-434.04	-188.65	0.23	-0.20	-4.52	
8,719.00	1.27	288.43	8,697.47	186.21	-436.11	-189.47	0.20	-0.15	-6.09	
8,813.00	1.06	275.20	8,791.46	186.62	-437.96	-189.90	0.36	-0.22	-14.07	
8,908.00	0.93	272.11	8,886.44	186.72	-439.61	-190.02	0.15	-0.14	-3.25	
9,002.00	1.05	274.22	8,980.43	186.81	-441.23	-190.12	0.13	0.13	2.24	
9,096.00	1.38	277.28	9,074.41	187.02	-443.21	-190.34	0.36	0.35	3.26	
9,191.00	1.56	279.51	9,169.37	187.38	-445.62	-190.72	0.20	0.19	2.35	
9,285.00	2.58	267.00	9,263.31	187.48	-448.99	-190.85	1.18	1.09	-13.31	
9,380.00	2.01	265.56	9,358.24	187.24	-452.79	-190.63	0.60	-0.60	-1.52	
9,474.00	1.29	263.84	9,452.20	187.00	-455.49	-190.41	0.77	-0.77	-1.83	
9,568.00	1.93	256.67	9,546.16	186.52	-458.08	-189.95	0.71	0.68	-7.63	
9,662.00	1.92	243.11	9,640.11	185.44	-461.02	-188.90	0.48	-0.01	-14.43	
9,757.00	1.80	210.48	9,735.06	183.44	-463.20	-186.91	1.11	-0.13	-34.35	
9,850.00	2.69	189.75	9,827.99	180.03	-464.31	-183.51	1.28	0.96	-22.29	
9,944.00	2.00	148.72	9,921.91	176.45	-463.83	-179.93	1.88	-0.73	-43.65	
10,039.00	1.31	131.43	10,016.88	174.32	-462.16	-177.78	0.89	-0.73	-18.20	
10,133.00	1.07	132.84	10,110.85	173.01	-460.71	-176.46	0.26	-0.26	1.50	
10,228.00	1.12	133.96	10,205.84	171.76	-459.39	-175.20	0.06	0.05	1.18	
10,322.00	0.55	101.50	10,299.83	171.03	-458.28	-174.47	0.77	-0.61	-34.53	
10,416.00	0.20	121.92	10,393.83	170.86	-457.70	-174.29	0.39	-0.37	21.72	
10,511.00	0.66	234.56	10,488.82	170.45	-458.01	-173.88	0.80	0.48	118.57	
10,605.00	0.87	235.47	10,582.82	169.73	-459.04	-173.17	0.22	0.22	0.97	
10,699.00	1.81	278.92	10,676.79	169.56	-461.09	-173.01	1.41	1.00	46.22	
10,794.00	2.90	282.44	10,771.71	170.31	-464.92	-173.79	1.16	1.15	3.71	
10,888.00	3.62	281.69	10,865.56	171.42	-470.15	-174.95	0.77	0.77	-0.80	
10,982.00	2.80	260.29	10,959.41	171.64	-475.32	-175.20	1.53	-0.87	-22.77	
11,077.00	3.25	242.21	11,054.28	169.99	-479.99	-173.59	1.10	0.47	-19.03	
11,171.00	1.88	255.00	11,148.18	168.35	-483.83	-171.97	1.57	-1.46	13.61	
11,265.00	1.51	235.70	11,242.14	167.25	-486.35	-170.90	0.72	-0.39	-20.53	
11,360.00	1.44	203.15	11,337.11	165.45	-487.85	-169.10	0.87	-0.07	-34.26	
11,454.00	1.73	191.48	11,431.08	162.97	-488.60	-166.63	0.46	0.31	-12.41	
11,548.00	1.80	185.84	11,525.03	160.11	-489.03	-163.78	0.20	0.07	-6.00	
11,643.00	1.49	184.51	11,620.00	157.40	-489.28	-161.06	0.33	-0.33	-1.40	
11,737.00	1.73	197.41	11,713.96	154.82	-489.80	-158.50	0.46	0.26	13.72	
11,831.00	1.75	198.79	11,807.91	152.11	-490.69	-155.79	0.05	0.02	1.47	
11,926.00	1.73	200.45	11,902.87	149.40	-491.65	-153.08	0.06	-0.02	1.75	
12,020.00	1.74	200.46	11,996.83	146.73	-492.65	-150.42	0.01	0.01	0.01	
12,114.00	1.74	202.27	12,090.78	144.07	-493.69	-147.77	0.06	0.00	1.93	

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
12,150.00	1.85	202.73	12,126.77	143.03	-494.12	-146.73	0.31	0.31	1.28
12,198.26	1.95	205.58	12,175.00	141.57	-494.78	-145.28	0.28	0.20	5.91
7 5/8"™									
12,266.00	2.09	209.13	12,242.70	139.45	-495.87	-143.17	0.28	0.21	5.24
12,355.00	10.02	175.91	12,331.15	130.30	-496.11	-134.02	9.38	8.91	-37.33
12,387.00	12.12	170.81	12,362.55	124.20	-495.38	-127.92	7.23	6.56	-15.94
12,415.00	13.25	167.74	12,389.87	118.17	-494.23	-121.87	4.70	4.04	-10.96
12,447.00	17.85	159.82	12,420.69	109.97	-491.75	-113.66	15.80	14.37	-24.75
12,478.00	24.46	157.95	12,449.59	99.55	-487.70	-103.21	21.43	21.32	-6.03
12,510.00	30.28	164.09	12,478.00	85.64	-483.00	-89.26	20.19	18.19	19.19
12,542.00	34.17	168.50	12,505.07	69.07	-478.99	-72.66	14.20	12.16	13.78
12,568.00	38.70	167.75	12,525.98	53.96	-475.81	-57.53	17.51	17.42	-2.88
12,599.00	44.37	165.87	12,549.18	33.96	-471.10	-37.50	18.73	18.29	-6.06
12,631.00	47.88	167.28	12,571.35	11.53	-465.76	-15.02	11.42	10.97	4.41
12,663.00	52.01	167.29	12,591.94	-12.36	-460.37	8.90	12.91	12.91	0.03
12,694.00	55.83	168.00	12,610.19	-36.83	-455.01	33.41	12.46	12.32	2.29
12,726.00	59.50	167.07	12,627.31	-63.22	-449.17	59.85	11.73	11.47	-2.91
12,758.00	62.68	166.83	12,642.77	-90.51	-442.85	87.18	9.96	9.94	-0.75
12,789.00	65.06	166.88	12,656.43	-117.61	-436.52	114.33	7.68	7.68	0.16
12,821.00	66.60	166.86	12,669.53	-146.04	-429.89	142.81	4.81	4.81	-0.06
12,853.00	67.74	167.20	12,681.94	-174.78	-423.27	171.60	3.69	3.56	1.06
12,884.00	69.82	167.78	12,693.16	-202.99	-417.01	199.86	6.93	6.71	1.87
12,916.00	74.98	167.63	12,702.84	-232.78	-410.52	229.70	16.13	16.12	-0.47
12,951.00	80.40	167.31	12,710.29	-266.15	-403.10	263.12	15.51	15.49	-0.91
12,982.00	83.28	167.99	12,714.69	-296.12	-396.54	293.14	9.54	9.29	2.19
13,014.00	86.09	169.00	12,717.66	-327.34	-390.18	324.41	9.33	8.78	3.16
13,078.00	87.66	169.43	12,721.15	-390.12	-378.23	387.27	2.54	2.45	0.67
13,172.00	89.09	171.60	12,723.81	-482.79	-362.74	480.05	2.76	1.52	2.31
13,267.00	89.37	171.74	12,725.09	-576.78	-348.98	574.14	0.33	0.29	0.15
13,362.00	91.75	172.97	12,724.16	-670.92	-336.34	668.38	2.82	2.51	1.29
13,457.00	91.47	172.93	12,721.49	-765.16	-324.69	762.70	0.30	-0.29	-0.04
13,552.00	89.62	173.31	12,720.59	-859.47	-313.31	857.09	1.99	-1.95	0.40
13,646.00	91.33	175.91	12,719.81	-953.04	-304.48	950.73	3.31	1.82	2.77
13,741.00	90.71	178.09	12,718.12	-1,047.89	-299.51	1,045.61	2.39	-0.65	2.29
13,836.00	90.46	176.88	12,717.15	-1,142.79	-295.34	1,140.54	1.30	-0.26	-1.27
13,931.00	92.28	179.18	12,714.88	-1,237.70	-292.08	1,235.47	3.09	1.92	2.42
14,026.00	89.12	177.89	12,713.72	-1,332.64	-289.65	1,330.43	3.59	-3.33	-1.36
14,121.00	88.22	178.04	12,715.92	-1,427.56	-286.28	1,425.37	0.96	-0.95	0.16
14,216.00	88.28	178.77	12,718.82	-1,522.48	-283.63	1,520.30	0.77	0.06	0.77
14,310.00	89.53	179.16	12,720.62	-1,616.44	-281.94	1,614.28	1.39	1.33	0.41
14,405.00	90.29	178.19	12,720.77	-1,711.41	-279.74	1,709.27	1.30	0.80	-1.02
14,500.00	89.73	178.15	12,720.75	-1,806.37	-276.71	1,804.24	0.59	-0.59	-0.04

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	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)
14,595.00	90.24	179.11	12,720.78	-1,901.34	-274.43	1,899.22	1.14	0.54	1.01
14,690.00	91.22	177.80	12,719.57	-1,996.29	-271.87	1,994.19	1.72	1.03	-1.38
14,785.00	89.90	176.87	12,718.64	-2,091.18	-267.46	2,089.11	1.70	-1.39	-0.98
14,879.00	90.80	178.62	12,718.06	-2,185.10	-263.76	2,183.06	2.09	0.96	1.86
14,974.00	90.18	179.56	12,717.25	-2,280.08	-262.25	2,278.05	1.19	-0.65	0.99
15,069.00	90.04	177.54	12,717.07	-2,375.05	-259.85	2,373.03	2.13	-0.15	-2.13
15,164.00	91.11	177.21	12,716.11	-2,469.94	-255.49	2,467.96	1.18	1.13	-0.35
15,259.00	90.24	176.04	12,715.00	-2,564.77	-249.90	2,562.82	1.53	-0.92	-1.23
15,354.00	89.73	178.82	12,715.02	-2,659.66	-245.64	2,657.75	2.98	-0.54	2.93
15,449.00	90.74	177.91	12,714.63	-2,754.62	-242.93	2,752.72	1.43	1.06	-0.96
15,543.00	90.66	177.25	12,713.48	-2,848.53	-238.96	2,846.66	0.71	-0.09	-0.70
15,638.00	90.58	178.92	12,712.45	-2,943.47	-235.79	2,941.62	1.76	-0.08	1.76
15,733.00	90.24	182.07	12,711.77	-3,038.45	-236.61	3,036.59	3.33	-0.36	3.32
15,828.00	90.85	179.00	12,710.87	-3,133.43	-237.50	3,131.56	3.29	0.64	-3.23
15,923.00	91.19	182.07	12,709.18	-3,228.40	-238.38	3,226.52	3.25	0.36	3.23
16,018.00	90.49	180.24	12,707.79	-3,323.37	-240.30	3,321.47	2.06	-0.74	-1.93
16,113.00	90.07	179.05	12,707.32	-3,418.36	-239.71	3,416.47	1.33	-0.44	-1.25
16,208.00	89.15	176.87	12,707.97	-3,513.29	-236.33	3,511.42	2.49	-0.97	-2.29
16,302.00	90.69	179.34	12,708.10	-3,607.23	-233.22	3,605.38	3.10	1.64	2.63
16,397.00	91.16	180.27	12,706.57	-3,702.22	-232.90	3,700.36	1.10	0.49	0.98
16,492.00	91.72	179.71	12,704.18	-3,797.19	-232.88	3,795.33	0.83	0.59	-0.59
16,587.00	91.39	181.06	12,701.60	-3,892.15	-233.52	3,890.28	1.46	-0.35	1.42
16,682.00	90.85	181.72	12,699.74	-3,987.10	-235.82	3,985.22	0.90	-0.57	0.69
16,776.00	90.55	177.60	12,698.59	-4,081.07	-235.27	4,079.19	4.39	-0.32	-4.38
16,871.00	89.68	178.27	12,698.40	-4,176.01	-231.84	4,174.15	1.16	-0.92	0.71
16,966.00	90.77	180.70	12,698.03	-4,270.99	-230.99	4,269.14	2.80	1.15	2.56
17,061.00	90.38	181.63	12,697.08	-4,365.97	-232.92	4,364.10	1.06	-0.41	0.98
17,156.00	90.07	182.71	12,696.70	-4,460.90	-236.52	4,459.00	1.18	-0.33	1.14
17,250.00	89.17	180.80	12,697.33	-4,554.85	-239.40	4,552.92	2.25	-0.96	-2.03
17,345.00	90.43	177.31	12,697.66	-4,649.82	-237.83	4,647.90	3.91	1.33	-3.67
17,440.00	91.97	176.70	12,695.67	-4,744.66	-232.87	4,742.78	1.74	1.62	-0.64
17,535.00	90.80	176.20	12,693.37	-4,839.45	-226.99	4,837.61	1.34	-1.23	-0.53
17,630.00	89.73	176.13	12,692.93	-4,934.23	-220.63	4,932.44	1.13	-1.13	-0.07
17,724.00	90.41	179.01	12,692.82	-5,028.14	-216.65	5,026.37	3.15	0.72	3.06
17,819.00	89.68	177.59	12,692.75	-5,123.09	-213.83	5,121.35	1.68	-0.77	-1.49
17,914.00	90.66	178.03	12,692.46	-5,218.02	-210.20	5,216.30	1.13	1.03	0.46
18,008.00	90.38	177.37	12,691.61	-5,311.94	-206.43	5,310.24	0.76	-0.30	-0.70
18,102.00	88.56	178.75	12,692.48	-5,405.88	-203.24	5,404.20	2.43	-1.94	1.47
18,197.00	91.55	178.99	12,692.39	-5,500.85	-201.37	5,499.18	3.16	3.15	0.25
18,292.00	91.08	181.85	12,690.21	-5,595.81	-202.07	5,594.14	3.05	-0.49	3.01
18,387.00	90.43	182.49	12,688.96	-5,690.73	-205.66	5,689.03	0.96	-0.68	0.67
18,482.00	89.17	182.33	12,689.29	-5,785.65	-209.66	5,783.91	1.34	-1.33	-0.17

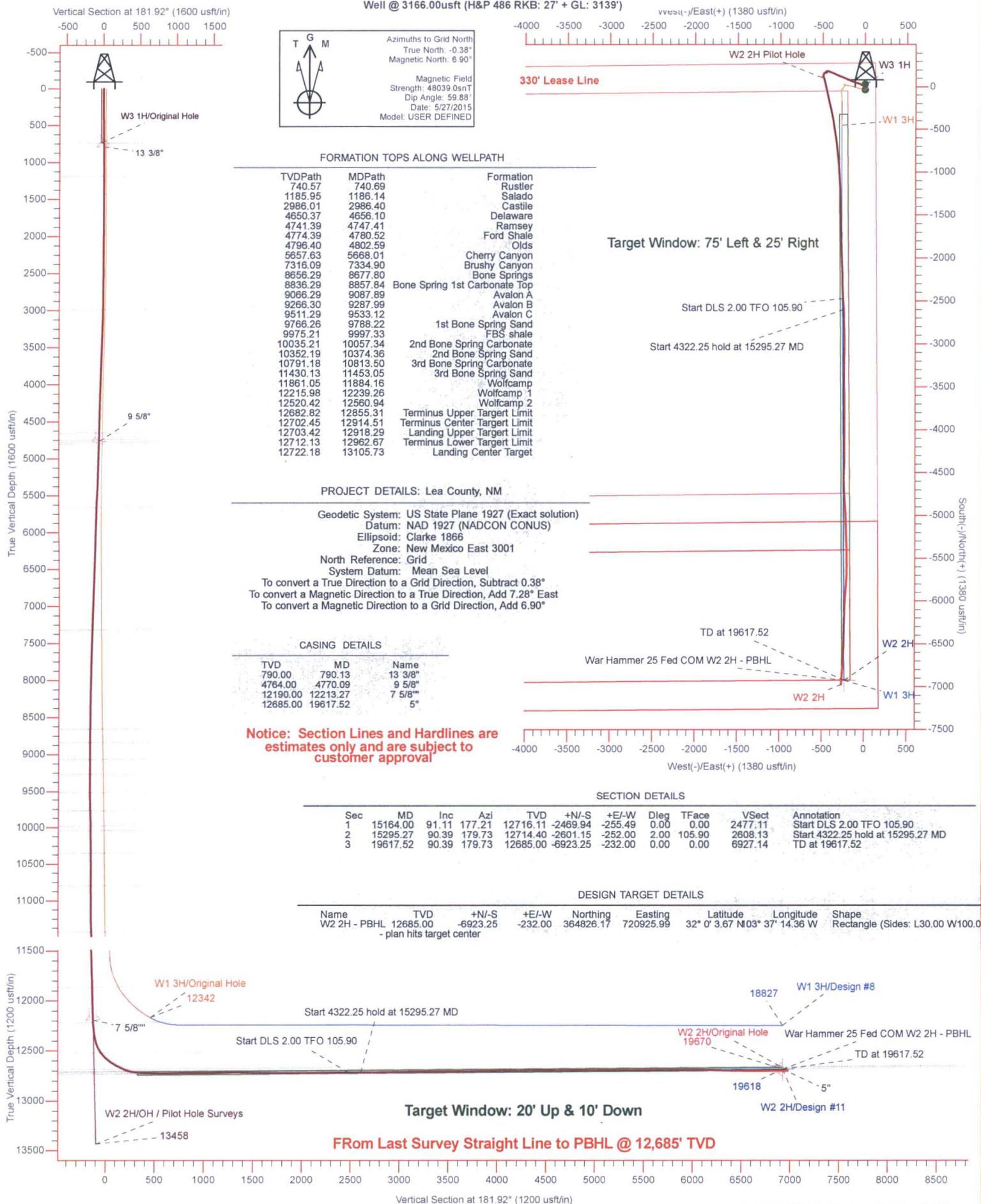
Company:	ConocoPhillips	Local Co-ordinate Reference:	Well W2 2H
Project:	Lea County, NM	TVD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Site:	War Hammer 25 Fed Com	MD Reference:	Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')
Well:	W2 2H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Gyrodatta 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)	
18,577.00	91.02	184.87	12,689.13	-5,880.45	-215.62	5,878.66	3.31	1.95	2.67	
18,671.00	90.38	183.40	12,687.98	-5,974.19	-222.40	5,972.36	1.71	-0.68	-1.56	
18,766.00	88.03	182.42	12,689.30	-6,069.05	-227.22	6,067.18	2.68	-2.47	-1.03	
18,861.00	89.29	181.63	12,691.52	-6,163.97	-230.58	6,162.06	1.57	1.33	-0.83	
18,956.00	88.05	181.46	12,693.73	-6,258.90	-233.14	6,256.98	1.32	-1.31	-0.18	
19,051.00	87.49	181.88	12,697.42	-6,353.79	-235.91	6,351.84	0.74	-0.59	0.44	
19,146.00	88.50	181.50	12,700.75	-6,448.69	-238.71	6,446.72	1.14	1.06	-0.40	
19,241.00	90.18	181.83	12,701.84	-6,543.64	-241.47	6,541.64	1.80	1.77	0.35	
19,336.00	90.52	181.28	12,701.26	-6,638.60	-244.04	6,636.59	0.68	0.36	-0.58	
19,431.00	90.85	184.03	12,700.12	-6,733.49	-248.44	6,731.43	2.92	0.35	2.89	
19,526.00	90.49	183.80	12,699.01	-6,828.26	-254.93	6,826.15	0.45	-0.38	-0.24	
19,610.00	90.21	184.46	12,698.50	-6,912.04	-260.98	6,909.88	0.85	-0.33	0.79	
19,670.00	90.21	184.46	12,698.28	-6,971.86	-265.64	6,969.67	0.00	0.00	0.00	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
	12,804.00	5"	5.50	6.00	
790.13	790.00	13 3/8"	13.37	17.50	
4,790.15	4,784.00	9 5/8"	9.62	12.25	
12,198.26	12,175.00	7 5/8"	5.50	6.00	

Checked By: _____ Approved By: _____ Date: _____

Plan: Design #11 (W2 2H/Original Hole)
Well @ 3166.00usft (H&P 486 RKB: 27' + GL: 3139')



Actual: Original Hole (W2 2H/Original Hole)

