



ConocoPhillips

Lea County, NM
War Hammer 25 Fed Com
W1 15H

15H

Plan: Design #1



Standard Planning Report

16 April, 2014

gyrodata
Precision Wellbore Placement



ConocoPhillips
Lea County, NM
War Hammer 25 Fed Com
W1 15H
15H

Plan: Design #1 (W1 15H/15H)
RKB @ 3164.00usft (RKB: 25' + GL: 3139')

gyrodata
Precision Wellbore Placement

Vertical Section at 179.81° (1400 usft/in)

-500 0 500 1000 1500



Azinuths to Grid North
True North -0.37°
Magnetic North -6.69°

Magnetic Field
Strength 46202 Gauss
Dip Angle 50.93°
Date 4/16/2014
Model USER DEFINED

FORMATION TOPS ALONG WELLPATH

TVDPath	MDPath	Formation
894.00	894.00	Rustler
3289.00	3289.00	Castle
4689.00	4689.88	Delaware top (Lamar Shale)
4749.00	4749.94	Ford Shale
4769.00	4769.96	Olds
5671.00	5672.04	Cherry Canyon
7368.00	7369.04	Brushy Canyon
8607.00	8608.04	Bone Spring Top
8865.00	8866.04	Bone Spring 1st Carbonate Top
9071.00	9072.04	Avalon A
9273.00	9274.04	Avalon B
9422.00	9423.04	Avalon C
9716.00	9717.04	Avalon D
9758.00	9759.04	1st Bone Spring Sand
9970.00	9971.04	FBS Shale
10141.00	10142.04	2nd Bone Spring Carbonate
10298.00	10299.04	2nd Bone Spring Sand
10854.00	10855.04	3rd Bone Spring Carbonate
11489.00	11490.04	3rd Bone Spring Sand
11835.00	11836.12	Wolfcamp
12045.00	12056.28	Wolfcamp 1

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 0.37°
To convert a Magnetic Direction to a True Direction, Add 7.36° East
To convert a Magnetic Direction to a Grid Direction, Add 6.99°

CASING DETAILS

TVD	MD	Name	Size
4759.00	4759.95	9 5/8"	9.62

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



50' from lease lines

Build 1.5° / 100'

Drop 1.5° / 100'

KOP 10° / 100'

LP (W1 15H)

EOC / Landing Point

True Vertical Depth (1400 usft/in)

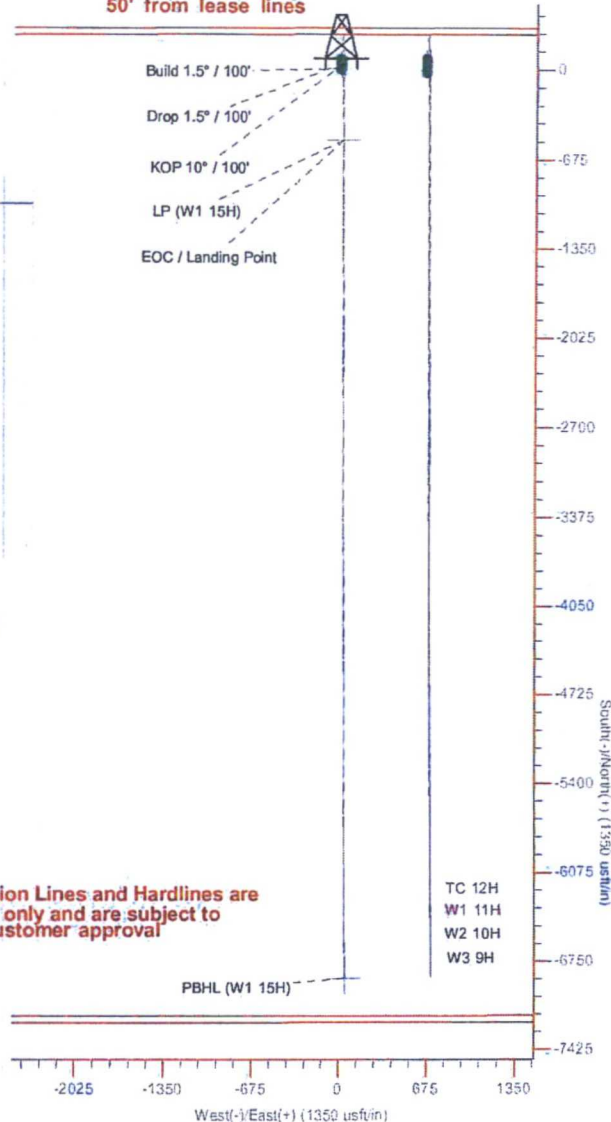
True Vertical Depth (1400 usft/in)

True Vertical Depth (1400 usft/in)

True Vertical Depth (1400 usft/in)

True Vertical Depth (1400 usft/in)

True Vertical Depth (1400 usft/in)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3650.00	0.00	0.00	3650.00	0.00	0.00	0.00	0.00	0.00	Build 1.5° / 100'
3	3816.67	2.50	30.00	3816.61	3.15	1.82	1.50	30.00	-3.14	Drop 1.5° / 100'
4	4800.99	2.50	30.00	4800.00	40.33	23.29	0.00	0.00	-40.25	KOP 10° / 100'
5	4967.66	0.00	0.00	4966.81	43.48	25.10	1.50	-180.00	-43.40	EOC / Landing Point
6	11783.09	0.00	0.00	11782.04	43.48	25.10	0.00	0.00	-43.40	
7	12683.08	90.00	179.81	12355.00	-529.47	27.03	10.00	179.81	529.56	
8	19034.42	90.00	179.81	12355.00	-6880.77	48.35	0.00	0.00	6880.89	

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
WH LP (W1 15H)	12355.00	-529.47	27.03	371163.85	719000.89
WH PBHL (W1 15H)	12355.00	-6880.77	48.35	364812.55	719022.21

Target Line: 12,355' TVD @ 0° VS w/ 90° Inc

Vertical Section at 179.81° (1000 usft/in)

Created By: Erik de La Fe Date: 11-15 Apr 16 2014

Database:	GyrodataNWDB	Local Co-ordinate Reference:	Well W1 15H
Company:	ConocoPhillips	TVD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

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:	Map	Northing:	371,782.24 usft
From:		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	W1 15H		
Well Position	+N/-S	-88.92 usft	Northing:
	+E/-W	-2,183.90 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 1' 11.75 N
		Longitude:	103° 37' 36.51 W
		Ground Level:	3,139.00 usft

Wellbore	15H		
Magnetics	Model Name	Sample Date	Declination (°)
	User Defined	4/16/2014	7.36
			Dip Angle (°)
			59.90
			Field Strength (nT)
			48,207

Design	Design #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			179.81

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,650.00	0.00	0.00	3,650.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,816.67	2.50	30.00	3,816.61	3.15	1.82	1.50	1.50	0.00	30.00	
4,800.99	2.50	30.00	4,800.00	40.33	23.29	0.00	0.00	0.00	0.00	
4,967.66	0.00	0.00	4,966.61	43.48	25.10	1.50	-1.50	-18.00	-180.00	
11,783.09	0.00	0.00	11,782.04	43.48	25.10	0.00	0.00	0.00	0.00	
12,683.08	90.00	179.81	12,355.00	-529.47	27.03	10.00	10.00	19.98	179.81	
19,034.42	90.00	179.81	12,355.00	-6,880.77	48.35	0.00	0.00	0.00	0.00	PBHL (W1 15H)

Database:	GyrodataNWDB	Local Co-ordinate Reference:	Well W1 15H
Company:	ConocoPhillips	TVD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
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Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,650.00	0.00	0.00	3,650.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.75	30.00	3,700.00	0.28	0.16	-0.28	1.50	1.50	0.00
3,800.00	2.25	30.00	3,799.96	2.55	1.47	-2.55	1.50	1.50	0.00
3,816.67	2.50	30.00	3,816.61	3.15	1.82	-3.14	1.50	1.50	0.00
3,900.00	2.50	30.00	3,899.87	6.30	3.64	-6.28	0.00	0.00	0.00
4,000.00	2.50	30.00	3,999.77	10.07	5.82	-10.05	0.00	0.00	0.00
4,100.00	2.50	30.00	4,099.68	13.85	8.00	-13.82	0.00	0.00	0.00
4,200.00	2.50	30.00	4,199.58	17.63	10.18	-17.60	0.00	0.00	0.00
4,300.00	2.50	30.00	4,299.49	21.41	12.36	-21.37	0.00	0.00	0.00
4,400.00	2.50	30.00	4,399.39	25.18	14.54	-25.14	0.00	0.00	0.00
4,500.00	2.50	30.00	4,499.30	28.96	16.72	-28.91	0.00	0.00	0.00
4,600.00	2.50	30.00	4,599.20	32.74	18.90	-32.68	0.00	0.00	0.00
4,700.00	2.50	30.00	4,699.11	36.52	21.08	-36.45	0.00	0.00	0.00
4,800.00	2.50	30.00	4,799.01	40.29	23.26	-40.22	0.00	0.00	0.00
4,800.99	2.50	30.00	4,800.00	40.33	23.29	-40.25	0.00	0.00	0.00
4,900.00	1.01	30.00	4,898.96	42.96	24.80	-42.88	1.50	-1.50	0.00
4,967.66	0.00	0.00	4,966.61	43.48	25.10	-43.40	1.50	-1.50	-44.34

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Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

Planned 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)
5,000.00	0.00	0.00	4,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,100.00	0.00	0.00	5,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,200.00	0.00	0.00	5,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,300.00	0.00	0.00	5,298.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,400.00	0.00	0.00	5,398.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,500.00	0.00	0.00	5,498.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,600.00	0.00	0.00	5,598.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,700.00	0.00	0.00	5,698.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,800.00	0.00	0.00	5,798.96	43.48	25.10	-43.40	0.00	0.00	0.00
5,900.00	0.00	0.00	5,898.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,000.00	0.00	0.00	5,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,100.00	0.00	0.00	6,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,200.00	0.00	0.00	6,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,300.00	0.00	0.00	6,298.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,400.00	0.00	0.00	6,398.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,500.00	0.00	0.00	6,498.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,600.00	0.00	0.00	6,598.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,700.00	0.00	0.00	6,698.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,800.00	0.00	0.00	6,798.96	43.48	25.10	-43.40	0.00	0.00	0.00
6,900.00	0.00	0.00	6,898.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,000.00	0.00	0.00	6,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,100.00	0.00	0.00	7,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,200.00	0.00	0.00	7,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,300.00	0.00	0.00	7,298.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,400.00	0.00	0.00	7,398.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,500.00	0.00	0.00	7,498.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,600.00	0.00	0.00	7,598.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,700.00	0.00	0.00	7,698.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,800.00	0.00	0.00	7,798.96	43.48	25.10	-43.40	0.00	0.00	0.00
7,900.00	0.00	0.00	7,898.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,000.00	0.00	0.00	7,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,100.00	0.00	0.00	8,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,200.00	0.00	0.00	8,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,300.00	0.00	0.00	8,298.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,400.00	0.00	0.00	8,398.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,500.00	0.00	0.00	8,498.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,600.00	0.00	0.00	8,598.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,700.00	0.00	0.00	8,698.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,800.00	0.00	0.00	8,798.96	43.48	25.10	-43.40	0.00	0.00	0.00
8,900.00	0.00	0.00	8,898.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,000.00	0.00	0.00	8,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,100.00	0.00	0.00	9,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,200.00	0.00	0.00	9,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,300.00	0.00	0.00	9,298.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,400.00	0.00	0.00	9,398.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,500.00	0.00	0.00	9,498.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,600.00	0.00	0.00	9,598.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,700.00	0.00	0.00	9,698.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,800.00	0.00	0.00	9,798.96	43.48	25.10	-43.40	0.00	0.00	0.00
9,900.00	0.00	0.00	9,898.96	43.48	25.10	-43.40	0.00	0.00	0.00
10,000.00	0.00	0.00	9,998.96	43.48	25.10	-43.40	0.00	0.00	0.00
10,100.00	0.00	0.00	10,098.96	43.48	25.10	-43.40	0.00	0.00	0.00
10,200.00	0.00	0.00	10,198.96	43.48	25.10	-43.40	0.00	0.00	0.00
10,300.00	0.00	0.00	10,298.96	43.48	25.10	-43.40	0.00	0.00	0.00

Database:	GyrodatabWDB	Local Co-ordinate Reference:	Well W1 15H
Company:	ConocoPhillips	TVD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

Planned 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)	
10,400.00	0.00	0.00	10,398.96	43.48	25.10	-43.40	0.00	0.00	0.00	
10,500.00	0.00	0.00	10,498.96	43.48	25.10	-43.40	0.00	0.00	0.00	
10,600.00	0.00	0.00	10,598.96	43.48	25.10	-43.40	0.00	0.00	0.00	
10,700.00	0.00	0.00	10,698.96	43.48	25.10	-43.40	0.00	0.00	0.00	
10,800.00	0.00	0.00	10,798.96	43.48	25.10	-43.40	0.00	0.00	0.00	
10,900.00	0.00	0.00	10,898.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,000.00	0.00	0.00	10,998.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,100.00	0.00	0.00	11,098.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,200.00	0.00	0.00	11,198.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,300.00	0.00	0.00	11,298.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,400.00	0.00	0.00	11,398.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,500.00	0.00	0.00	11,498.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,600.00	0.00	0.00	11,598.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,700.00	0.00	0.00	11,698.96	43.48	25.10	-43.40	0.00	0.00	0.00	
11,783.09	0.00	0.00	11,782.04	43.48	25.10	-43.40	0.00	0.00	0.00	
11,800.00	1.69	179.81	11,798.96	43.23	25.10	-43.15	10.00	10.00	1,063.07	
11,900.00	11.69	179.81	11,898.15	31.59	25.14	-31.51	10.00	10.00	0.00	
12,000.00	21.69	179.81	11,993.81	2.91	25.24	-2.82	10.00	10.00	0.00	
12,100.00	31.69	179.81	12,083.04	-41.95	25.39	42.04	10.00	10.00	0.00	
12,200.00	41.69	179.81	12,163.13	-101.63	25.59	101.71	10.00	10.00	0.00	
12,300.00	51.69	179.81	12,231.63	-174.30	25.83	174.39	10.00	10.00	0.00	
12,400.00	61.69	179.81	12,286.48	-257.77	26.11	257.85	10.00	10.00	0.00	
12,500.00	71.69	179.81	12,326.00	-349.49	26.42	349.58	10.00	10.00	0.00	
12,600.00	81.69	179.81	12,348.99	-446.68	26.75	446.77	10.00	10.00	0.00	
12,683.08	90.00	179.81	12,355.00	-529.47	27.03	529.56	10.00	10.00	0.00	
12,700.00	90.00	179.81	12,355.00	-546.39	27.08	546.48	0.00	0.00	0.00	
12,800.00	90.00	179.81	12,355.00	-646.39	27.42	646.48	0.00	0.00	0.00	
12,900.00	90.00	179.81	12,355.00	-746.39	27.76	746.48	0.00	0.00	0.00	
13,000.00	90.00	179.81	12,355.00	-846.39	28.09	846.48	0.00	0.00	0.00	
13,100.00	90.00	179.81	12,355.00	-946.39	28.43	946.48	0.00	0.00	0.00	
13,200.00	90.00	179.81	12,355.00	-1,046.39	28.76	1,046.48	0.00	0.00	0.00	
13,300.00	90.00	179.81	12,355.00	-1,146.39	29.10	1,146.48	0.00	0.00	0.00	
13,400.00	90.00	179.81	12,355.00	-1,246.38	29.43	1,246.48	0.00	0.00	0.00	
13,500.00	90.00	179.81	12,355.00	-1,346.38	29.77	1,346.48	0.00	0.00	0.00	
13,600.00	90.00	179.81	12,355.00	-1,446.38	30.11	1,446.48	0.00	0.00	0.00	
13,700.00	90.00	179.81	12,355.00	-1,546.38	30.44	1,546.48	0.00	0.00	0.00	
13,800.00	90.00	179.81	12,355.00	-1,646.38	30.78	1,646.48	0.00	0.00	0.00	
13,900.00	90.00	179.81	12,355.00	-1,746.38	31.11	1,746.48	0.00	0.00	0.00	
14,000.00	90.00	179.81	12,355.00	-1,846.38	31.45	1,846.48	0.00	0.00	0.00	
14,100.00	90.00	179.81	12,355.00	-1,946.38	31.78	1,946.48	0.00	0.00	0.00	
14,200.00	90.00	179.81	12,355.00	-2,046.38	32.12	2,046.48	0.00	0.00	0.00	
14,300.00	90.00	179.81	12,355.00	-2,146.38	32.46	2,146.48	0.00	0.00	0.00	
14,400.00	90.00	179.81	12,355.00	-2,246.38	32.79	2,246.48	0.00	0.00	0.00	
14,500.00	90.00	179.81	12,355.00	-2,346.38	33.13	2,346.48	0.00	0.00	0.00	
14,600.00	90.00	179.81	12,355.00	-2,446.38	33.46	2,446.48	0.00	0.00	0.00	
14,700.00	90.00	179.81	12,355.00	-2,546.38	33.80	2,546.48	0.00	0.00	0.00	
14,800.00	90.00	179.81	12,355.00	-2,646.38	34.13	2,646.48	0.00	0.00	0.00	
14,900.00	90.00	179.81	12,355.00	-2,746.38	34.47	2,746.48	0.00	0.00	0.00	
15,000.00	90.00	179.81	12,355.00	-2,846.38	34.81	2,846.48	0.00	0.00	0.00	
15,100.00	90.00	179.81	12,355.00	-2,946.38	35.14	2,946.48	0.00	0.00	0.00	
15,200.00	90.00	179.81	12,355.00	-3,046.37	35.48	3,046.48	0.00	0.00	0.00	
15,300.00	90.00	179.81	12,355.00	-3,146.37	35.81	3,146.48	0.00	0.00	0.00	
15,400.00	90.00	179.81	12,355.00	-3,246.37	36.15	3,246.48	0.00	0.00	0.00	
15,500.00	90.00	179.81	12,355.00	-3,346.37	36.48	3,346.48	0.00	0.00	0.00	

Database:	GyrodalaNWDB	Local Co-ordinate Reference:	Well W1 15H
Company:	ConocoPhillips	TVD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Corn	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

Planned 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)	
15,600.00	90.00	179.81	12,355.00	-3,446.37	36.82	3,446.48	0.00	0.00	0.00	
15,700.00	90.00	179.81	12,355.00	-3,546.37	37.16	3,546.48	0.00	0.00	0.00	
15,800.00	90.00	179.81	12,355.00	-3,646.37	37.49	3,646.48	0.00	0.00	0.00	
15,900.00	90.00	179.81	12,355.00	-3,746.37	37.83	3,746.48	0.00	0.00	0.00	
16,000.00	90.00	179.81	12,355.00	-3,846.37	38.16	3,846.48	0.00	0.00	0.00	
16,100.00	90.00	179.81	12,355.00	-3,946.37	38.50	3,946.48	0.00	0.00	0.00	
16,200.00	90.00	179.81	12,355.00	-4,046.37	38.83	4,046.48	0.00	0.00	0.00	
16,300.00	90.00	179.81	12,355.00	-4,146.37	39.17	4,146.48	0.00	0.00	0.00	
16,400.00	90.00	179.81	12,355.00	-4,246.37	39.51	4,246.48	0.00	0.00	0.00	
16,500.00	90.00	179.81	12,355.00	-4,346.37	39.84	4,346.48	0.00	0.00	0.00	
16,600.00	90.00	179.81	12,355.00	-4,446.37	40.18	4,446.48	0.00	0.00	0.00	
16,700.00	90.00	179.81	12,355.00	-4,546.37	40.51	4,546.48	0.00	0.00	0.00	
16,800.00	90.00	179.81	12,355.00	-4,646.37	40.85	4,646.48	0.00	0.00	0.00	
16,900.00	90.00	179.81	12,355.00	-4,746.37	41.18	4,746.48	0.00	0.00	0.00	
17,000.00	90.00	179.81	12,355.00	-4,846.36	41.52	4,846.48	0.00	0.00	0.00	
17,100.00	90.00	179.81	12,355.00	-4,946.36	41.86	4,946.48	0.00	0.00	0.00	
17,200.00	90.00	179.81	12,355.00	-5,046.36	42.19	5,046.48	0.00	0.00	0.00	
17,300.00	90.00	179.81	12,355.00	-5,146.36	42.53	5,146.48	0.00	0.00	0.00	
17,400.00	90.00	179.81	12,355.00	-5,246.36	42.86	5,246.48	0.00	0.00	0.00	
17,500.00	90.00	179.81	12,355.00	-5,346.36	43.20	5,346.48	0.00	0.00	0.00	
17,600.00	90.00	179.81	12,355.00	-5,446.36	43.53	5,446.48	0.00	0.00	0.00	
17,700.00	90.00	179.81	12,355.00	-5,546.36	43.87	5,546.48	0.00	0.00	0.00	
17,800.00	90.00	179.81	12,355.00	-5,646.36	44.21	5,646.48	0.00	0.00	0.00	
17,900.00	90.00	179.81	12,355.00	-5,746.36	44.54	5,746.48	0.00	0.00	0.00	
18,000.00	90.00	179.81	12,355.00	-5,846.36	44.88	5,846.48	0.00	0.00	0.00	
18,100.00	90.00	179.81	12,355.00	-5,946.36	45.21	5,946.48	0.00	0.00	0.00	
18,200.00	90.00	179.81	12,355.00	-6,046.36	45.55	6,046.48	0.00	0.00	0.00	
18,300.00	90.00	179.81	12,355.00	-6,146.36	45.88	6,146.48	0.00	0.00	0.00	
18,400.00	90.00	179.81	12,355.00	-6,246.36	46.22	6,246.48	0.00	0.00	0.00	
18,500.00	90.00	179.81	12,355.00	-6,346.36	46.56	6,346.48	0.00	0.00	0.00	
18,600.00	90.00	179.81	12,355.00	-6,446.36	46.89	6,446.48	0.00	0.00	0.00	
18,700.00	90.00	179.81	12,355.00	-6,546.36	47.23	6,546.48	0.00	0.00	0.00	
18,800.00	90.00	179.81	12,355.00	-6,646.35	47.56	6,646.48	0.00	0.00	0.00	
18,900.00	90.00	179.81	12,355.00	-6,746.35	47.90	6,746.48	0.00	0.00	0.00	
19,000.00	90.00	179.81	12,355.00	-6,846.35	48.23	6,846.48	0.00	0.00	0.00	
19,034.42	90.00	179.81	12,355.00	-6,880.77	48.35	6,880.89	0.00	0.00	0.00	

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LP (W1 15H) - hit/miss target - Shape - Point	0.00	0.00	12,355.00	-529.47	27.03	371,163.85	719,000.89	32° 1' 6.51 N	103° 37' 36.24 W
PBHL (W1 15H) - plan hits target center - Point	0.00	0.00	12,355.00	-6,880.77	48.35	364,812.55	719,022.21	32° 0' 3.66 N	103° 37' 36.47 W
PBHL (W3 13H) - plan misses target center by 619.00usft at 19034.42usft MD (12355.00 TVD, -6880.77 N, 48.35 E) - Rectangle (sides W0.00 H0.00 D0.00)	90.00	179.74	12,974.00	-6,880.77	48.35	364,812.55	719,022.21	32° 0' 3.66 N	103° 37' 36.47 W

Database:	GyrodatabWVDB	Local Co-ordinate Reference:	Well W1 15H
Company:	ConocoPhillips	TVD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	RKB @ 3164.00usft (RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Corn	North Reference:	Grid
Well:	W1 15H	Survey Calculation Method:	Minimum Curvature
Wellbore:	15H		
Design:	Design #1		

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
4,759.95	4,759.00	9 5/8"	9.62	12.25

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
894.00	894.00	Rustler		0.00	179.81
3,289.00	3,289.00	Castle		0.00	179.81
4,689.88	4,689.00	Delaware top (Lamar Shale)		0.00	179.81
4,749.94	4,749.00	Ford Shale		0.00	179.81
4,769.96	4,769.00	Olds		0.00	179.81
5,672.04	5,671.00	Cherry Canyon		0.00	179.81
7,369.04	7,368.00	Brushy Canyon		0.00	179.81
8,608.04	8,607.00	Bone Spring Top		0.00	179.81
8,866.04	8,865.00	Bone Spring 1st Carbonate Top		0.00	179.81
9,072.04	9,071.00	Avalon A		0.00	179.81
9,274.04	9,273.00	Avalon B		0.00	179.81
9,423.04	9,422.00	Avalon C		0.00	179.81
9,717.04	9,716.00	Avalon D		0.00	179.81
9,759.04	9,758.00	1st Bone Spring Sand		0.00	179.81
9,971.04	9,970.00	FBS Shale		0.00	179.81
10,142.04	10,141.00	2nd Bone Spring Carbonate		0.00	179.81
10,299.04	10,298.00	2nd Bone Spring Sand		0.00	179.81
10,655.04	10,654.00	3rd Bone Spring Carbonate		0.00	179.81
11,490.04	11,489.00	3rd Bone Spring Sand		0.00	179.81
11,836.12	11,835.00	Wolfcamp		0.00	179.81
12,056.28	12,045.00	Wolfcamp 1		0.00	179.81

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,650.00	3,650.00	0.00	0.00	Build 1.5" / 100'
4,800.99	4,800.00	40.33	23.29	Drop 1.5" / 100'
11,783.09	11,782.05	43.48	25.10	KOP 10" / 100'
12,683.08	12,355.00	-529.47	27.03	EOC / Landing Point