

Attachment#1

ConocoPhillips

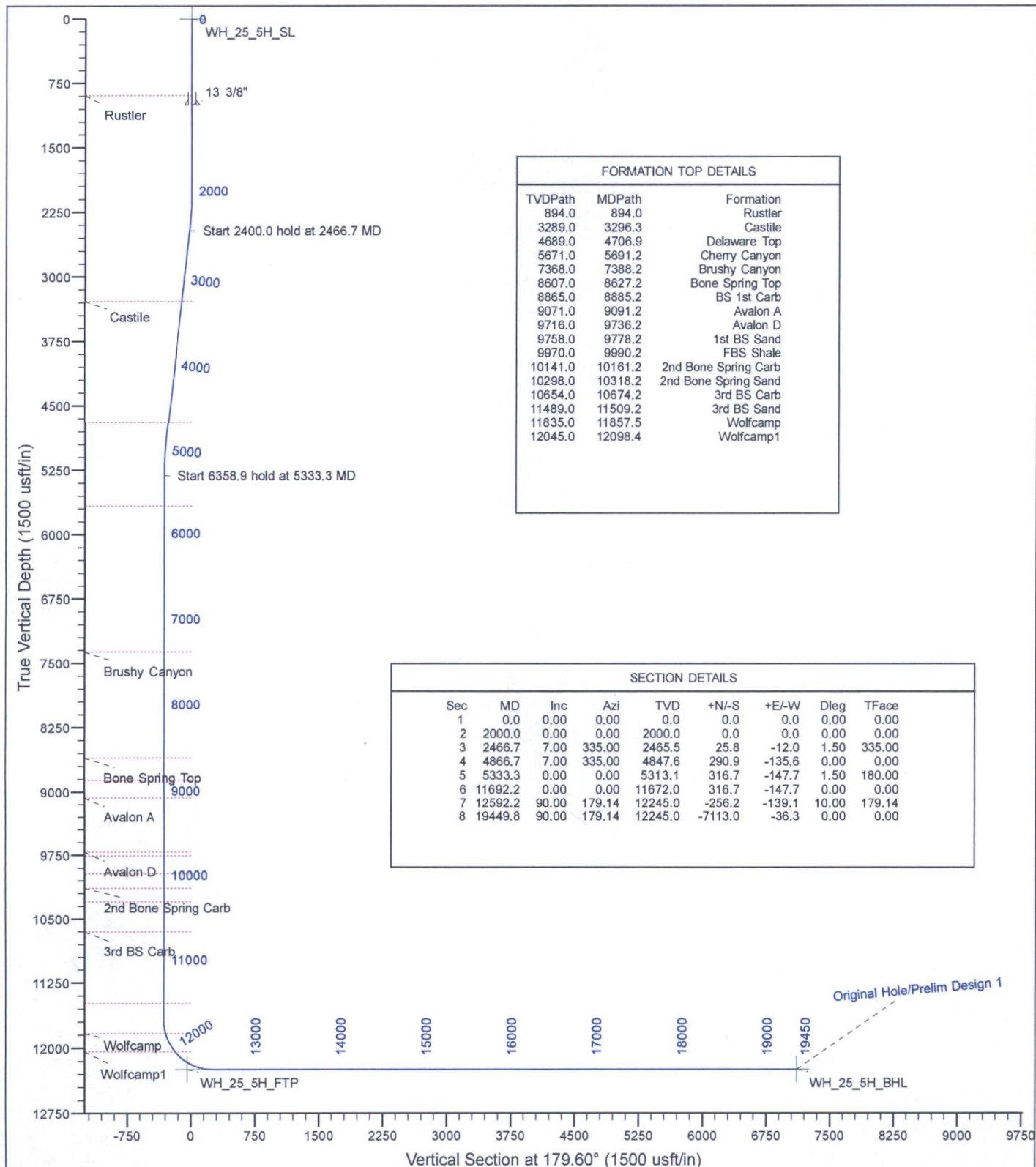
ConocoPhillips MCBU
Permian Delaware Hz New Mexico
WAR HAMMER 25 FEDERAL COM 5H - PS
War Hammer 25 Federal Com 5H - PS

Original Hole
Plan: Prelim Design 1 (War Hammer 25 Federal Com 5H - PS/Original Hole)
GRND+27 SKID @ 3160.0usft
US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001



Azimuths to Grid North
True North: -0.38°
Magnetic North: 6.90°

Magnetic Field
Strength: 48088.0snT
Dip Angle: 59.94°
Date: 7/10/2015
Model: BGGM2015





HOBBS OCD

AUG 22 2016

RECEIVED

ConocoPhillips

Lea County, NM

War Hammer 25 Fed Com

W3 5H

5H

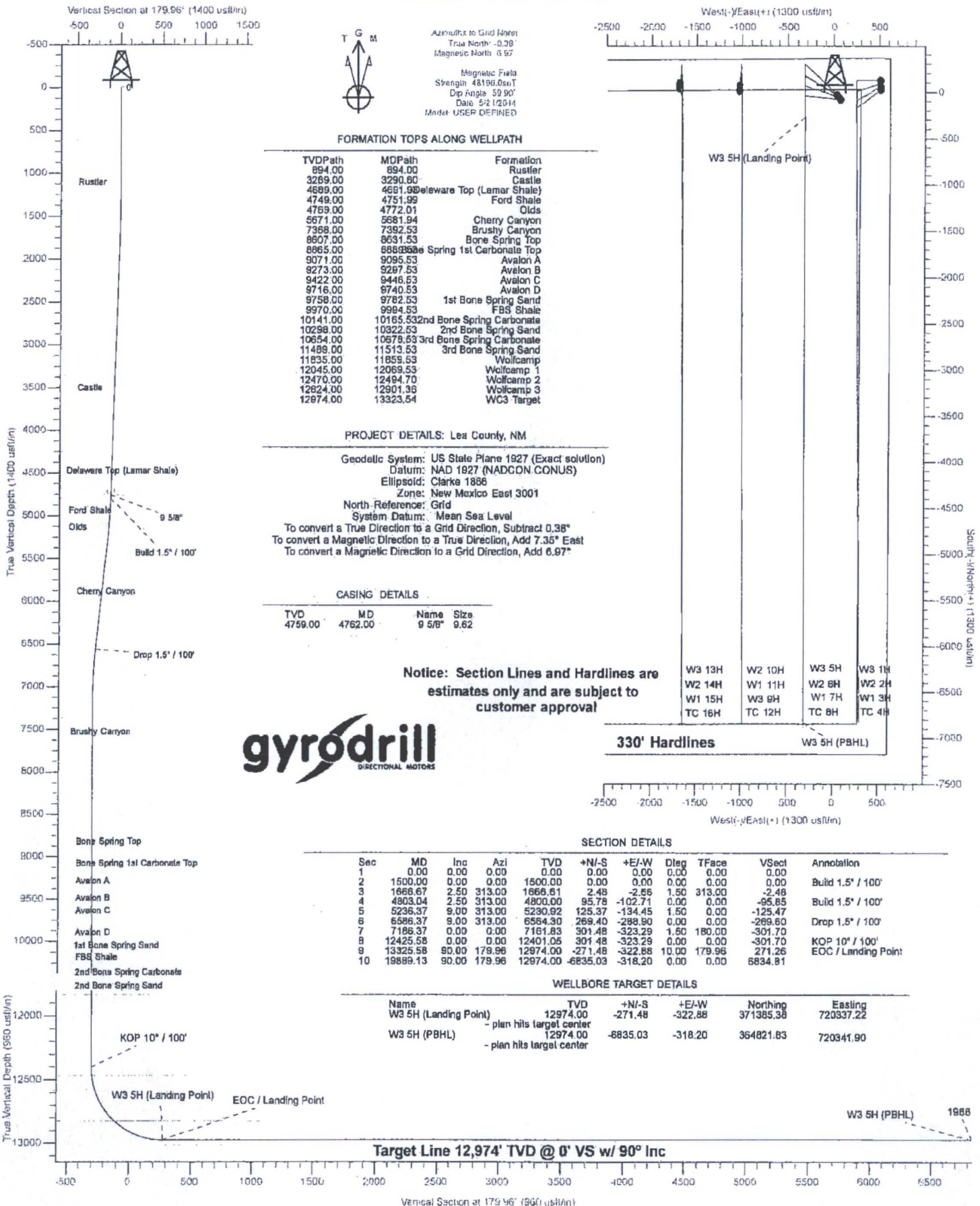
Plan: Design #1

Standard Planning Report

21 May, 2014

gyro/data

Precision Wellbore Placement



Database: Gyrodata NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference: Well W3 5H
TVD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
MD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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:	W3 5H		
Well Position	+N/-S	-125.38 usft	Northing: 371,656.86 usft
	+E/-W	-497.66 usft	Easting: 720,660.10 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
			Ground Level: 3,139.00 usft

Wellbore	5H		
Magnetics	Model Name	Sample Date	Declination
	User Defined	5/21/2014	7.35
			Dip Angle
			59.90
			Field Strength
			48,196

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
			(°)
			179.96

Plan Sections:										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.00	0.00	0.00	0.00	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	
1,666.67	2.50	313.00	1,666.61	2.48	-2.66	1.50	1.50	0.00	313.00	
4,803.04	2.50	313.00	4,800.00	95.78	-102.71	0.00	0.00	0.00	0.00	
5,236.37	9.00	313.00	5,230.92	125.37	-134.45	1.50	1.50	0.00	0.00	
6,586.37	9.00	313.00	6,564.30	269.40	-288.90	0.00	0.00	0.00	0.00	
7,186.37	0.00	0.00	7,161.83	301.48	-323.29	1.50	-1.50	0.00	180.00	
12,425.58	0.00	0.00	12,401.05	301.48	-323.29	0.00	0.00	0.00	0.00	
13,325.58	90.00	179.96	12,974.00	-271.48	-322.88	10.00	10.00	20.00	179.96	
19,889.13	90.00	179.96	12,974.00	-6,835.03	-318.20	0.00	0.00	0.00	0.00	W3 5H (PBHL)

Database: Gyrodata NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference: Well W3 5H
TVB Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
MD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Bulld 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	1.50	313.00	1,599.99	0.89	-0.96	-0.89	1.50	1.50	0.00
1,666.67	2.50	313.00	1,666.61	2.48	-2.66	-2.48	1.50	1.50	0.00
1,700.00	2.50	313.00	1,699.92	3.47	-3.72	-3.47	0.00	0.00	0.00
1,800.00	2.50	313.00	1,799.82	6.45	-6.91	-6.45	0.00	0.00	0.00
1,900.00	2.50	313.00	1,899.73	9.42	-10.10	-9.43	0.00	0.00	0.00
2,000.00	2.50	313.00	1,999.63	12.40	-13.29	-12.40	0.00	0.00	0.00
2,100.00	2.50	313.00	2,099.53	15.37	-16.48	-15.38	0.00	0.00	0.00
2,200.00	2.50	313.00	2,199.44	18.35	-19.67	-18.36	0.00	0.00	0.00
2,300.00	2.50	313.00	2,299.34	21.32	-22.86	-21.34	0.00	0.00	0.00
2,400.00	2.50	313.00	2,399.25	24.29	-26.05	-24.31	0.00	0.00	0.00
2,500.00	2.50	313.00	2,499.15	27.27	-29.24	-27.29	0.00	0.00	0.00
2,600.00	2.50	313.00	2,599.06	30.24	-32.43	-30.27	0.00	0.00	0.00
2,700.00	2.50	313.00	2,698.96	33.22	-35.62	-33.24	0.00	0.00	0.00
2,800.00	2.50	313.00	2,798.87	36.19	-38.81	-36.22	0.00	0.00	0.00
2,900.00	2.50	313.00	2,898.77	39.17	-42.00	-39.20	0.00	0.00	0.00
3,000.00	2.50	313.00	2,998.68	42.14	-45.19	-42.18	0.00	0.00	0.00
3,100.00	2.50	313.00	3,098.58	45.12	-48.38	-45.15	0.00	0.00	0.00
3,200.00	2.50	313.00	3,198.49	48.09	-51.57	-48.13	0.00	0.00	0.00
3,300.00	2.50	313.00	3,298.39	51.07	-54.76	-51.11	0.00	0.00	0.00
3,400.00	2.50	313.00	3,398.30	54.04	-57.95	-54.08	0.00	0.00	0.00
3,500.00	2.50	313.00	3,498.20	57.02	-61.14	-57.06	0.00	0.00	0.00
3,600.00	2.50	313.00	3,598.11	59.99	-64.33	-60.04	0.00	0.00	0.00
3,700.00	2.50	313.00	3,698.01	62.97	-67.52	-63.01	0.00	0.00	0.00
3,800.00	2.50	313.00	3,797.92	65.94	-70.71	-65.99	0.00	0.00	0.00
3,900.00	2.50	313.00	3,897.82	68.92	-73.90	-68.97	0.00	0.00	0.00
4,000.00	2.50	313.00	3,997.73	71.89	-77.09	-71.95	0.00	0.00	0.00
4,100.00	2.50	313.00	4,097.63	74.87	-80.29	-74.92	0.00	0.00	0.00
4,200.00	2.50	313.00	4,197.54	77.84	-83.48	-77.90	0.00	0.00	0.00
4,300.00	2.50	313.00	4,297.44	80.82	-86.67	-80.88	0.00	0.00	0.00
4,400.00	2.50	313.00	4,397.35	83.79	-89.86	-83.85	0.00	0.00	0.00
4,500.00	2.50	313.00	4,497.25	86.77	-93.05	-86.83	0.00	0.00	0.00
4,600.00	2.50	313.00	4,597.16	89.74	-96.24	-89.81	0.00	0.00	0.00
4,700.00	2.50	313.00	4,697.06	92.72	-99.43	-92.79	0.00	0.00	0.00
4,800.00	2.50	313.00	4,796.96	95.69	-102.62	-95.76	0.00	0.00	0.00
4,803.04	2.50	313.00	4,800.00	95.78	-102.71	-95.85	0.00	0.00	0.00
4,900.00	3.95	313.00	4,896.81	99.50	-106.70	-99.58	1.50	1.50	0.00
5,000.00	5.45	313.00	4,996.47	105.10	-112.70	-105.18	1.50	1.50	0.00
5,100.00	6.95	313.00	5,095.88	112.47	-120.61	-112.55	1.50	1.50	0.00

Database: Gyrodatab NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference: Well W3 5H
TVD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
MD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.00	8.45	313.00	5,194.97	121.61	-130.41	-121.70	1.50	1.50	0.00
5,236.37	9.00	313.00	5,230.92	125.37	-134.45	-125.47	1.50	1.50	0.00
5,300.00	9.00	313.00	5,293.77	132.16	-141.73	-132.26	0.00	0.00	0.00
5,400.00	9.00	313.00	5,392.54	142.83	-153.17	-142.94	0.00	0.00	0.00
5,500.00	9.00	313.00	5,491.30	153.50	-164.61	-153.62	0.00	0.00	0.00
5,600.00	9.00	313.00	5,590.07	164.17	-176.05	-164.29	0.00	0.00	0.00
5,700.00	9.00	313.00	5,688.84	174.84	-187.49	-174.97	0.00	0.00	0.00
5,800.00	9.00	313.00	5,787.61	185.51	-198.93	-185.65	0.00	0.00	0.00
5,900.00	9.00	313.00	5,886.38	196.18	-210.37	-196.32	0.00	0.00	0.00
6,000.00	9.00	313.00	5,985.15	206.84	-221.81	-207.00	0.00	0.00	0.00
6,100.00	9.00	313.00	6,083.92	217.51	-233.25	-217.68	0.00	0.00	0.00
6,200.00	9.00	313.00	6,182.69	228.18	-244.70	-228.35	0.00	0.00	0.00
6,300.00	9.00	313.00	6,281.46	238.85	-256.14	-239.03	0.00	0.00	0.00
6,400.00	9.00	313.00	6,380.22	249.52	-267.58	-249.71	0.00	0.00	0.00
6,500.00	9.00	313.00	6,478.99	260.19	-279.02	-260.38	0.00	0.00	0.00
6,586.37	9.00	313.00	6,564.30	269.40	-288.90	-269.60	0.00	0.00	0.00
6,600.00	8.80	313.00	6,577.77	270.84	-290.44	-271.04	1.50	-1.50	0.00
6,700.00	7.30	313.00	6,676.78	280.39	-300.68	-280.60	1.50	-1.50	0.00
6,800.00	5.80	313.00	6,776.12	288.16	-309.01	-288.38	1.50	-1.50	0.00
6,900.00	4.30	313.00	6,875.73	294.16	-315.45	-294.38	1.50	-1.50	0.00
7,000.00	2.80	313.00	6,975.54	298.38	-319.97	-298.60	1.50	-1.50	0.00
7,100.00	1.30	313.00	7,075.47	300.81	-322.58	-301.03	1.50	-1.50	0.00
7,186.37	0.00	0.00	7,161.83	301.48	-323.29	-301.70	1.50	-1.50	0.00
7,200.00	0.00	0.00	7,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,300.00	0.00	0.00	7,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,400.00	0.00	0.00	7,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,500.00	0.00	0.00	7,475.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,600.00	0.00	0.00	7,575.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,700.00	0.00	0.00	7,675.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,800.00	0.00	0.00	7,775.47	301.48	-323.29	-301.70	0.00	0.00	0.00
7,900.00	0.00	0.00	7,875.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,000.00	0.00	0.00	7,975.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,100.00	0.00	0.00	8,075.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,200.00	0.00	0.00	8,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,300.00	0.00	0.00	8,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,400.00	0.00	0.00	8,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,500.00	0.00	0.00	8,475.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,600.00	0.00	0.00	8,575.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,700.00	0.00	0.00	8,675.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,800.00	0.00	0.00	8,775.47	301.48	-323.29	-301.70	0.00	0.00	0.00
8,900.00	0.00	0.00	8,875.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,000.00	0.00	0.00	8,975.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,100.00	0.00	0.00	9,075.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,200.00	0.00	0.00	9,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,300.00	0.00	0.00	9,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,400.00	0.00	0.00	9,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,500.00	0.00	0.00	9,475.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,600.00	0.00	0.00	9,575.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,700.00	0.00	0.00	9,675.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,800.00	0.00	0.00	9,775.47	301.48	-323.29	-301.70	0.00	0.00	0.00
9,900.00	0.00	0.00	9,875.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,000.00	0.00	0.00	9,975.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,100.00	0.00	0.00	10,075.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,200.00	0.00	0.00	10,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00

Database: Gyrodatab NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference: Well W3 5H
TVD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
MD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,300.00	0.00	0.00	10,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,400.00	0.00	0.00	10,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,500.00	0.00	0.00	10,475.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,600.00	0.00	0.00	10,575.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,700.00	0.00	0.00	10,675.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,800.00	0.00	0.00	10,775.47	301.48	-323.29	-301.70	0.00	0.00	0.00
10,900.00	0.00	0.00	10,875.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,000.00	0.00	0.00	10,975.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,100.00	0.00	0.00	11,075.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,200.00	0.00	0.00	11,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,300.00	0.00	0.00	11,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,400.00	0.00	0.00	11,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,500.00	0.00	0.00	11,475.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,600.00	0.00	0.00	11,575.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,700.00	0.00	0.00	11,675.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,800.00	0.00	0.00	11,775.47	301.48	-323.29	-301.70	0.00	0.00	0.00
11,900.00	0.00	0.00	11,875.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,000.00	0.00	0.00	11,975.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,100.00	0.00	0.00	12,075.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,200.00	0.00	0.00	12,175.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,300.00	0.00	0.00	12,275.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,400.00	0.00	0.00	12,375.47	301.48	-323.29	-301.70	0.00	0.00	0.00
12,425.58	0.00	0.00	12,401.05	301.48	-323.29	-301.70	0.00	0.00	0.00
12,500.00	7.44	179.96	12,475.26	296.65	-323.29	-296.87	10.00	10.00	0.00
12,600.00	17.44	179.96	12,572.78	275.13	-323.27	-275.36	10.00	10.00	0.00
12,700.00	27.44	179.96	12,665.09	237.01	-323.25	-237.23	10.00	10.00	0.00
12,800.00	37.44	179.96	12,749.38	183.43	-323.21	-183.65	10.00	10.00	0.00
12,900.00	47.44	179.96	12,823.08	116.03	-323.16	-116.26	10.00	10.00	0.00
13,000.00	57.44	179.96	12,883.96	36.86	-323.10	-37.08	10.00	10.00	0.00
13,100.00	67.44	179.96	12,930.17	-51.68	-323.04	51.46	10.00	10.00	0.00
13,200.00	77.44	179.96	12,960.30	-146.90	-322.97	146.68	10.00	10.00	0.00
13,300.00	87.44	179.96	12,973.43	-245.91	-322.90	245.68	10.00	10.00	0.00
13,325.58	90.00	179.96	12,974.00	-271.48	-322.88	271.26	10.00	10.00	0.00
13,400.00	90.00	179.96	12,974.00	-345.90	-322.83	345.68	0.00	0.00	0.00
13,500.00	90.00	179.96	12,974.00	-445.90	-322.76	445.68	0.00	0.00	0.00
13,600.00	90.00	179.96	12,974.00	-545.90	-322.69	545.68	0.00	0.00	0.00
13,700.00	90.00	179.96	12,974.00	-645.90	-322.62	645.68	0.00	0.00	0.00
13,800.00	90.00	179.96	12,974.00	-745.90	-322.55	745.68	0.00	0.00	0.00
13,900.00	90.00	179.96	12,974.00	-845.90	-322.47	845.68	0.00	0.00	0.00
14,000.00	90.00	179.96	12,974.00	-945.90	-322.40	945.68	0.00	0.00	0.00
14,100.00	90.00	179.96	12,974.00	-1,045.90	-322.33	1,045.68	0.00	0.00	0.00
14,200.00	90.00	179.96	12,974.00	-1,145.90	-322.26	1,145.68	0.00	0.00	0.00
14,300.00	90.00	179.96	12,974.00	-1,245.90	-322.19	1,245.68	0.00	0.00	0.00
14,400.00	90.00	179.96	12,974.00	-1,345.90	-322.12	1,345.68	0.00	0.00	0.00
14,500.00	90.00	179.96	12,974.00	-1,445.90	-322.05	1,445.68	0.00	0.00	0.00
14,600.00	90.00	179.96	12,974.00	-1,545.90	-321.97	1,545.68	0.00	0.00	0.00
14,700.00	90.00	179.96	12,974.00	-1,645.90	-321.90	1,645.68	0.00	0.00	0.00
14,800.00	90.00	179.96	12,974.00	-1,745.90	-321.83	1,745.68	0.00	0.00	0.00
14,900.00	90.00	179.96	12,974.00	-1,845.90	-321.76	1,845.68	0.00	0.00	0.00
15,000.00	90.00	179.96	12,974.00	-1,945.90	-321.69	1,945.68	0.00	0.00	0.00
15,100.00	90.00	179.96	12,974.00	-2,045.90	-321.62	2,045.68	0.00	0.00	0.00
15,200.00	90.00	179.96	12,974.00	-2,145.90	-321.55	2,145.68	0.00	0.00	0.00
15,300.00	90.00	179.96	12,974.00	-2,245.90	-321.47	2,245.68	0.00	0.00	0.00
15,400.00	90.00	179.96	12,974.00	-2,345.90	-321.40	2,345.68	0.00	0.00	0.00

Database: Gyrodatab NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well W3 5H
Well @ 3164.00usft (RKB: 25' + GL: 3139')
Well @ 3164.00usft (RKB: 25' + GL: 3139')
Grid
Minimum Curvature

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)
15,500.00	90.00	179.96	12,974.00	-2,445.90	-321.33	2,445.68	0.00	0.00	0.00
15,600.00	90.00	179.96	12,974.00	-2,545.90	-321.26	2,545.68	0.00	0.00	0.00
15,700.00	90.00	179.96	12,974.00	-2,645.90	-321.19	2,645.68	0.00	0.00	0.00
15,800.00	90.00	179.96	12,974.00	-2,745.90	-321.12	2,745.68	0.00	0.00	0.00
15,900.00	90.00	179.96	12,974.00	-2,845.90	-321.05	2,845.68	0.00	0.00	0.00
16,000.00	90.00	179.96	12,974.00	-2,945.90	-320.98	2,945.68	0.00	0.00	0.00
16,100.00	90.00	179.96	12,974.00	-3,045.90	-320.90	3,045.68	0.00	0.00	0.00
16,200.00	90.00	179.96	12,974.00	-3,145.90	-320.83	3,145.68	0.00	0.00	0.00
16,300.00	90.00	179.96	12,974.00	-3,245.90	-320.76	3,245.68	0.00	0.00	0.00
16,400.00	90.00	179.96	12,974.00	-3,345.90	-320.69	3,345.68	0.00	0.00	0.00
16,500.00	90.00	179.96	12,974.00	-3,445.90	-320.62	3,445.68	0.00	0.00	0.00
16,600.00	90.00	179.96	12,974.00	-3,545.90	-320.55	3,545.68	0.00	0.00	0.00
16,700.00	90.00	179.96	12,974.00	-3,645.90	-320.48	3,645.68	0.00	0.00	0.00
16,800.00	90.00	179.96	12,974.00	-3,745.90	-320.40	3,745.68	0.00	0.00	0.00
16,900.00	90.00	179.96	12,974.00	-3,845.90	-320.33	3,845.68	0.00	0.00	0.00
17,000.00	90.00	179.96	12,974.00	-3,945.90	-320.26	3,945.68	0.00	0.00	0.00
17,100.00	90.00	179.96	12,974.00	-4,045.90	-320.19	4,045.68	0.00	0.00	0.00
17,200.00	90.00	179.96	12,974.00	-4,145.90	-320.12	4,145.68	0.00	0.00	0.00
17,300.00	90.00	179.96	12,974.00	-4,245.90	-320.05	4,245.68	0.00	0.00	0.00
17,400.00	90.00	179.96	12,974.00	-4,345.90	-319.98	4,345.68	0.00	0.00	0.00
17,500.00	90.00	179.96	12,974.00	-4,445.90	-319.90	4,445.68	0.00	0.00	0.00
17,600.00	90.00	179.96	12,974.00	-4,545.90	-319.83	4,545.68	0.00	0.00	0.00
17,700.00	90.00	179.96	12,974.00	-4,645.90	-319.76	4,645.68	0.00	0.00	0.00
17,800.00	90.00	179.96	12,974.00	-4,745.90	-319.69	4,745.68	0.00	0.00	0.00
17,900.00	90.00	179.96	12,974.00	-4,845.90	-319.62	4,845.68	0.00	0.00	0.00
18,000.00	90.00	179.96	12,974.00	-4,945.90	-319.55	4,945.68	0.00	0.00	0.00
18,100.00	90.00	179.96	12,974.00	-5,045.90	-319.48	5,045.68	0.00	0.00	0.00
18,200.00	90.00	179.96	12,974.00	-5,145.90	-319.41	5,145.68	0.00	0.00	0.00
18,300.00	90.00	179.96	12,974.00	-5,245.90	-319.33	5,245.68	0.00	0.00	0.00
18,400.00	90.00	179.96	12,974.00	-5,345.90	-319.26	5,345.68	0.00	0.00	0.00
18,500.00	90.00	179.96	12,974.00	-5,445.90	-319.19	5,445.68	0.00	0.00	0.00
18,600.00	90.00	179.96	12,974.00	-5,545.90	-319.12	5,545.68	0.00	0.00	0.00
18,700.00	90.00	179.96	12,974.00	-5,645.90	-319.05	5,645.68	0.00	0.00	0.00
18,800.00	90.00	179.96	12,974.00	-5,745.90	-318.98	5,745.68	0.00	0.00	0.00
18,900.00	90.00	179.96	12,974.00	-5,845.90	-318.91	5,845.68	0.00	0.00	0.00
19,000.00	90.00	179.96	12,974.00	-5,945.90	-318.83	5,945.68	0.00	0.00	0.00
19,100.00	90.00	179.96	12,974.00	-6,045.90	-318.76	6,045.68	0.00	0.00	0.00
19,200.00	90.00	179.96	12,974.00	-6,145.90	-318.69	6,145.68	0.00	0.00	0.00
19,300.00	90.00	179.96	12,974.00	-6,245.90	-318.62	6,245.68	0.00	0.00	0.00
19,400.00	90.00	179.96	12,974.00	-6,345.90	-318.55	6,345.68	0.00	0.00	0.00
19,500.00	90.00	179.96	12,974.00	-6,445.90	-318.48	6,445.68	0.00	0.00	0.00
19,600.00	90.00	179.96	12,974.00	-6,545.90	-318.41	6,545.68	0.00	0.00	0.00
19,700.00	90.00	179.96	12,974.00	-6,645.90	-318.33	6,645.68	0.00	0.00	0.00
19,800.00	90.00	179.96	12,974.00	-6,745.90	-318.26	6,745.68	0.00	0.00	0.00
19,889.13	90.00	179.96	12,974.00	-6,835.03	-318.20	6,834.81	0.00	0.00	0.00

Database:	Gyrodatab NWDB	Local Co-ordinate Reference:	Well W3 5H
Company:	ConocoPhillips	TVD Reference:	Well @ 3164.00usft (RKB: 25' + GL: 3139')
Project:	Lea County, NM	MD Reference:	Well @ 3164.00usft (RKB: 25' + GL: 3139')
Site:	War Hammer 25 Fed Com	North Reference:	Grid
Well:	W3 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	5H		
Design:	Design #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
W3 5H (PBHL) - plan hits target center - Point	0.00	0.00	12,974.00	-6,835.03	-318.20	364,821.83	720,341.90	32° 0' 3.66 N	103° 37' 21.15 W
W3 5H (Landing Point) - plan misses target center by 0.01usft at 13325.58usft MD (12974.00 TVD, -271.48 N, -322.88 E) - Point	0.00	0.00	12,974.00	-271.48	-322.88	371,385.38	720,337.22	32° 1' 8.62 N	103° 37' 20.70 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
4,762.00	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	179.96
3,290.60	3,289.00	Castle		0.00	179.96
4,691.93	4,689.00	Delaware Top (Lamar Shale)		0.00	179.96
4,751.99	4,749.00	Ford Shale		0.00	179.96
4,772.01	4,769.00	Olds		0.00	179.96
5,681.94	5,671.00	Cherry Canyon		0.00	179.96
7,392.53	7,388.00	Brushy Canyon		0.00	179.96
8,631.53	8,607.00	Bone Spring Top		0.00	179.96
8,889.53	8,865.00	Bone Spring 1st Carbonate Top		0.00	179.96
9,095.53	9,071.00	Avalon A		0.00	179.96
9,297.53	9,273.00	Avalon B		0.00	179.96
9,446.53	9,422.00	Avalon C		0.00	179.96
9,740.53	9,716.00	Avalon D		0.00	179.96
9,782.53	9,758.00	1st Bone Spring Sand		0.00	179.96
9,994.53	9,970.00	FBS Shale		0.00	179.96
10,165.53	10,141.00	2nd Bone Spring Carbonate		0.00	179.96
10,322.53	10,298.00	2nd Bone Spring Sand		0.00	179.96
10,678.53	10,654.00	3rd Bone Spring Carbonate		0.00	179.96
11,513.53	11,489.00	3rd Bone Spring Sand		0.00	179.96
11,859.53	11,835.00	Wolfcamp		0.00	179.96
12,089.53	12,045.00	Wolfcamp 1		0.00	179.96
12,494.70	12,470.00	Wolfcamp 2		0.00	179.96
12,901.36	12,824.00	Wolfcamp 3		0.00	179.96
13,323.54	12,974.00	WC3 Target		0.00	179.96

Database: Gyrodatab NWDB
Company: ConocoPhillips
Project: Lea County, NM
Site: War Hammer 25 Fed Com
Well: W3 5H
Wellbore: 5H
Design: Design #1

Local Co-ordinate Reference: Well W3 5H
TVD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
MD Reference: Well @ 3164.00usft (RKB: 25' + GL: 3139')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
1,500.00	1,500.00	0.00	0.00	Build 1.5° / 100'
4,803.04	4,800.00	95.78	-102.71	Build 1.5° / 100'
6,586.37	6,564.30	269.40	-288.90	Drop 1.5° / 100'
12,425.58	12,401.05	301.48	-323.29	KOP 10° / 100'
13,325.58	12,974.00	-271.48	-322.88	EOC / Landing Point