



Company: Red Willow Production Co.  
Project: Archuleta County, CO NAD83  
Site: North Carracas 7F Pad  
Well: NC 32-4 7F-1  
Wellbore: Lateral 4  
Design: Plan #5

# PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone  
System Datum: Mean Sea Level  
Local North: True



Azimuths to True North  
Magnetic North: 9.07°

Magnetic Field  
Strength: 50068.0snT  
Dip Angle: 63.55°  
Date: 2/14/2018  
Model: HDGM

## WELL DETAILS: NC 32-4 7F-1

Plan: Plan #5 (NC 32-4 7F-1/Lateral 4)

Created By: Janie Collins Date: 11:22, February 05 2019

GL 6159.10' & RKB 14' @ 6173.10usft  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.00 0.00 1135994.45 2464727.53 37.0257222 -107.3335757 7F-1

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
NC 7F-1 Lat 4 BHL	2804.00	4900.12	-1023.69	1140913.72	2463800.22	37.0391797	-107.3370828

## SECTION DETAILS

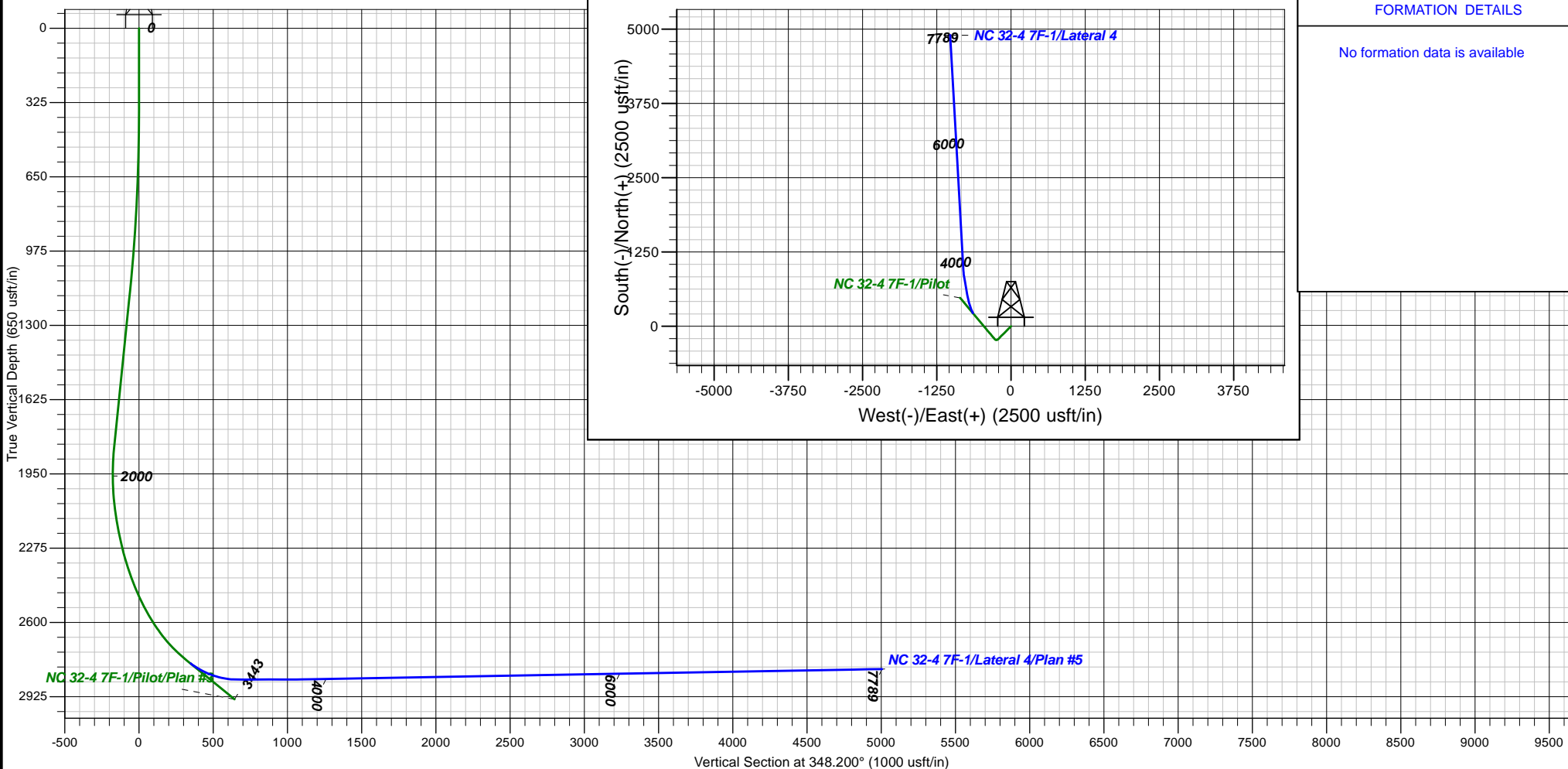
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
3073.00	65.00	335.000	2779.60	221.68	-642.14	0.00	0.00	348.31	
3397.77	90.00	350.000	2849.72	521.36	-734.50	8.90	32.38	660.55	
3697.77	90.00	350.000	2849.72	816.80	-786.60	0.00	0.00	960.40	
3834.19	90.65	356.790	2848.95	952.24	-802.28	5.00	84.51	1096.18	
7788.53	90.65	356.790	2804.00	4900.12	-1023.69	0.00	0.00	5005.91	NC 7F-1 Lat 4 BHL

## CASING DETAILS

No casing data is available

## FORMATION DETAILS

No formation data is available





# **Red Willow Production Co.**

**Archuleta County, CO NAD83**

**North Carracas 7F Pad**

**NC 32-4 7F-1 - Slot 7F-1**

**Lateral 4**

**Plan: Plan #5**

## **Standard Planning Report**

**05 February, 2019**





# Scientific Drilling, Intl Planning Report



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well NC 32-4 7F-1 - Slot 7F-1
<b>Company:</b>	Red Willow Production Co.	<b>TVD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Project:</b>	Archuleta County, CO NAD83	<b>MD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Site:</b>	North Carracas 7F Pad	<b>North Reference:</b>	True
<b>Well:</b>	NC 32-4 7F-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 4		
<b>Design:</b>	Plan #5		

<b>Project</b>	Archuleta County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Southern Zone		

<b>Site</b>	North Carracas 7F Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,135,994.45 usft	<b>Latitude:</b> 37.0257222
<b>From:</b>	Map	<b>Easting:</b>	2,464,727.53 usft	<b>Longitude:</b> -107.3335758
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b> -1.12 °

<b>Well</b>	NC 32-4 7F-1 - Slot 7F-1			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,135,994.45 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,464,727.53 usft
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft
			<b>Ground Level:</b>	6,159.10 usft

<b>Wellbore</b>	Lateral 4				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	2/14/2018	9.07	63.55	50,068

<b>Design</b>	Plan #5			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	3,073.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	348.200

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>
3,073.00	65.00	335.000	2,779.60	221.68	-642.14	0.00	0.00	0.00	0.00	
3,397.77	90.00	350.000	2,849.72	521.36	-734.50	8.90	7.70	4.62	32.38	
3,697.77	90.00	350.000	2,849.72	816.80	-786.60	0.00	0.00	0.00	0.00	
3,834.19	90.65	356.790	2,848.95	952.24	-802.28	5.00	0.48	4.98	84.51	
7,788.53	90.65	356.790	2,804.00	4,900.12	-1,023.69	0.00	0.00	0.00	0.00	NC 7F-1 Lat 4 BHL



# Scientific Drilling, Intl Planning Report



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well NC 32-4 7F-1 - Slot 7F-1
<b>Company:</b>	Red Willow Production Co.	<b>TVD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Project:</b>	Archuleta County, CO NAD83	<b>MD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Site:</b>	North Carracas 7F Pad	<b>North Reference:</b>	True
<b>Well:</b>	NC 32-4 7F-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 4		
<b>Design:</b>	Plan #5		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,073.00	65.00	335.000	2,779.60	221.68	-642.14	348.31	0.00	0.00	0.00	
3,100.00	67.04	336.397	2,790.58	244.16	-652.29	372.39	8.90	7.54	5.17	
3,200.00	74.67	341.247	2,823.37	332.19	-686.29	465.51	8.90	7.63	4.85	
3,300.00	82.40	345.752	2,843.24	426.07	-714.05	563.09	8.90	7.73	4.50	
3,397.77	90.00	350.000	2,849.72	521.36	-734.50	660.55	8.90	7.77	4.34	
3,400.00	90.00	350.000	2,849.72	523.56	-734.89	662.78	0.00	0.00	0.00	
3,500.00	90.00	350.000	2,849.72	622.04	-752.25	762.73	0.00	0.00	0.00	
3,600.00	90.00	350.000	2,849.72	720.52	-769.62	862.68	0.00	0.00	0.00	
3,697.77	90.00	350.000	2,849.72	816.80	-786.60	960.40	0.00	0.00	0.00	
3,700.00	90.01	350.111	2,849.72	819.00	-786.98	962.63	5.00	0.48	4.98	
3,800.00	90.49	355.088	2,849.29	918.13	-799.86	1,062.30	5.00	0.48	4.98	
3,834.19	90.65	356.790	2,848.95	952.24	-802.28	1,096.18	5.00	0.48	4.98	
3,900.00	90.65	356.790	2,848.20	1,017.94	-805.96	1,161.24	0.00	0.00	0.00	
4,000.00	90.65	356.790	2,847.06	1,117.78	-811.56	1,260.11	0.00	0.00	0.00	
4,100.00	90.65	356.790	2,845.93	1,217.61	-817.16	1,358.99	0.00	0.00	0.00	
4,200.00	90.65	356.790	2,844.79	1,317.45	-822.76	1,457.86	0.00	0.00	0.00	
4,300.00	90.65	356.790	2,843.65	1,417.29	-828.36	1,556.73	0.00	0.00	0.00	
4,400.00	90.65	356.790	2,842.52	1,517.12	-833.96	1,655.60	0.00	0.00	0.00	
4,500.00	90.65	356.790	2,841.38	1,616.96	-839.56	1,754.47	0.00	0.00	0.00	
4,600.00	90.65	356.790	2,840.24	1,716.80	-845.16	1,853.35	0.00	0.00	0.00	
4,700.00	90.65	356.790	2,839.11	1,816.63	-850.76	1,952.22	0.00	0.00	0.00	
4,800.00	90.65	356.790	2,837.97	1,916.47	-856.35	2,051.09	0.00	0.00	0.00	
4,900.00	90.65	356.790	2,836.83	2,016.31	-861.95	2,149.96	0.00	0.00	0.00	
5,000.00	90.65	356.790	2,835.70	2,116.14	-867.55	2,248.83	0.00	0.00	0.00	
5,100.00	90.65	356.790	2,834.56	2,215.98	-873.15	2,347.71	0.00	0.00	0.00	
5,200.00	90.65	356.790	2,833.42	2,315.82	-878.75	2,446.58	0.00	0.00	0.00	
5,300.00	90.65	356.790	2,832.29	2,415.65	-884.35	2,545.45	0.00	0.00	0.00	
5,400.00	90.65	356.790	2,831.15	2,515.49	-889.95	2,644.32	0.00	0.00	0.00	
5,500.00	90.65	356.790	2,830.01	2,615.33	-895.55	2,743.19	0.00	0.00	0.00	
5,600.00	90.65	356.790	2,828.88	2,715.16	-901.15	2,842.06	0.00	0.00	0.00	
5,700.00	90.65	356.790	2,827.74	2,815.00	-906.75	2,940.94	0.00	0.00	0.00	
5,800.00	90.65	356.790	2,826.60	2,914.84	-912.35	3,039.81	0.00	0.00	0.00	
5,900.00	90.65	356.790	2,825.47	3,014.67	-917.95	3,138.68	0.00	0.00	0.00	
6,000.00	90.65	356.790	2,824.33	3,114.51	-923.54	3,237.55	0.00	0.00	0.00	
6,100.00	90.65	356.790	2,823.19	3,214.35	-929.14	3,336.42	0.00	0.00	0.00	
6,200.00	90.65	356.790	2,822.06	3,314.18	-934.74	3,435.30	0.00	0.00	0.00	
6,300.00	90.65	356.790	2,820.92	3,414.02	-940.34	3,534.17	0.00	0.00	0.00	
6,400.00	90.65	356.790	2,819.78	3,513.86	-945.94	3,633.04	0.00	0.00	0.00	
6,500.00	90.65	356.790	2,818.65	3,613.69	-951.54	3,731.91	0.00	0.00	0.00	
6,600.00	90.65	356.790	2,817.51	3,713.53	-957.14	3,830.78	0.00	0.00	0.00	
6,700.00	90.65	356.790	2,816.37	3,813.37	-962.74	3,929.65	0.00	0.00	0.00	
6,800.00	90.65	356.790	2,815.24	3,913.20	-968.34	4,028.53	0.00	0.00	0.00	
6,900.00	90.65	356.790	2,814.10	4,013.04	-973.94	4,127.40	0.00	0.00	0.00	
7,000.00	90.65	356.790	2,812.96	4,112.88	-979.54	4,226.27	0.00	0.00	0.00	
7,100.00	90.65	356.790	2,811.83	4,212.71	-985.13	4,325.14	0.00	0.00	0.00	
7,200.00	90.65	356.790	2,810.69	4,312.55	-990.73	4,424.01	0.00	0.00	0.00	
7,300.00	90.65	356.790	2,809.55	4,412.38	-996.33	4,522.89	0.00	0.00	0.00	
7,400.00	90.65	356.790	2,808.42	4,512.22	-1,001.93	4,621.76	0.00	0.00	0.00	
7,500.00	90.65	356.790	2,807.28	4,612.06	-1,007.53	4,720.63	0.00	0.00	0.00	
7,600.00	90.65	356.790	2,806.14	4,711.89	-1,013.13	4,819.50	0.00	0.00	0.00	
7,700.00	90.65	356.790	2,805.01	4,811.73	-1,018.73	4,918.37	0.00	0.00	0.00	
7,788.53	90.65	356.790	2,804.00	4,900.12	-1,023.69	5,005.91	0.00	0.00	0.00	



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well NC 32-4 7F-1 - Slot 7F-1
<b>Company:</b>	Red Willow Production Co.	<b>TVD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Project:</b>	Archuleta County, CO NAD83	<b>MD Reference:</b>	GL 6159.10' & RKB 14' @ 6173.10usft
<b>Site:</b>	North Carracas 7F Pad	<b>North Reference:</b>	True
<b>Well:</b>	NC 32-4 7F-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 4		
<b>Design:</b>	Plan #5		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
NC 7F-1 Lat 4 BHL	0.00	0.000	2,804.00	4,900.12	-1,023.69	1,140,913.72	2,463,800.22	37.0391797	-107.3370828
- plan hits target center									
- Point									