

Newpek, LLC

Fauver #1-20 Drill Plan

October 28, 2015

**Summary:**

The Fauver #1-20 will be a vertical test well in the Niobrara formation. The well will be drilled to a vertical depth of 5,450' TVD with a conventional core obtained across the Niobrara formation ( $\pm$  5,000' - 5,175' TVD) and electric log and rotary core data obtained at total depth. 7" casing will be installed and cemented to surface for completion.

**Surface Location:** Section 20-T9N-R56W  
1,400' FSL, 660' FWL  
Weld County, Colorado

**Bottom Hole Location:** Section 20-T9N-R56W  
1,400' FSL, 660' FWL  
Weld County, Colorado

**DRILLING PROGRAM**

**1. ESTIMATED TOPS OF GEOLOGICAL MARKERS:**

Ground Level: 4,520' Estimated KB: 4,540' (20.0')

Formation	MD	Lithology	Hazards
Fox Hills	Surface	Sandstone, Shale, Coal	Water
Pierre	1,350'	Sandstone & Dark Grey Shale	None
Sharon Springs	4,890'	Shale	Lost Circulation
Niobrara	4,960'	Chalk, Limey Shale, Shale	Oil, Gas, Fractures
Fort Hays	5,270'	Limestone	Oil, Gas, Fractures
Codell	5,340'	Siltstone	Oil, Gas, Fractures
Greenhorn	5,425'	Limestone	None
<b>Total Depth</b>	<b>5,450'</b>		

## **2. PRESSURE CONTROL EQUIPMENT**

### **A. Type:**

Eleven (11) inch double gate hydraulic BOP with eleven (11) inch annular preventer with 5,000 psi Casing head and 5,000 psi Tubing head wellhead equipment.

### **B. Testing Procedure:**

The annular preventer will be tested to 50% of the stack rated working pressure for ten (10) minutes or until provisions of test are met, whichever is longer. The BOP, choke manifold and related equipment will be pressure tested to approved BOP stack working pressure (if isolated from surface casing by a test plug) or to 70% of surface casing internal yield strength (if BOP is not isolated by a test plug). Pressure will be maintained for ten (10) minutes or until the requirements of the test are met, whichever is longer. At a minimum, the Annular and Blow-Out Preventer pressure tests will be performed:

1. When the BOPE is initially installed;
2. Whenever any seal that is subject to test pressure is broken;
3. Following related repairs; and
4. At two (2) week intervals.

The annular preventer will be function tested weekly with the pipe and blind rams activated each trip, but not more than once per day. All BOP drills & tests will be recorded in the IADC driller's log.

### **C. Choke Manifold Equipment:**

All choke lines will be straight lines whenever possible at turns, tee blocks will be used or will be targeted with running tees and will be anchored to prevent whip and vibration.

### **D. Accumulator:**

The Accumulator will have sufficient capacity to open the hydraulically-controlled choke line valve (if so equipped), close all rams plus the annular preventer and retain a minimum of 200 psi above pre-charge on the closing manifold without the use of the closing unit pumps. The fluid reservoir capacity will be doubled the accumulator's capacity with the fluid level being maintained at manufacturer's recommendations. An Accumulator pre-charge pressure test will be conducted prior to connecting the closing unit to the BOP stack.

## 2. PRESSURE CONTROL EQUIPMENT – CONTINUED

### E. Miscellaneous Information

The choke manifold and BOP extension rods with hand wheels will be located outside the rig's substructure.

The hydraulic BOP closing unit will be located a minimum of twenty-five (25) feet from the wellhead being readily accessible to the driller. The exact location and configuration of the hydraulic BOP closing unit will depend upon the specific rig contracted to drill this well.

A flare line will be installed after the choke manifold with the discharge point of the flare line to be a separate pit located a minimum of 125 feet away from the wellbore and/or any existing production facilities.

A volume monitoring system with alarms, will be used to monitor pit gains and/or losses in conjunction with visual backup.

## 3. PROPOSED CASING TUBULAR PROGRAM

### A. Casing Program (New/Tested)

Hole Size	Casing Size	Burst (psi)	Collapse (psi)	Tension (Body/Jt) klbs	Depth Set (MD)
12.25"	9.625" 36#, J-55 STC	3,520	2020	564 / 394	0' - 1,500'
8.75"	7" 26#, L-80 LTC	7,250	5,410	604 / 511	0' - 5,450'

### 9.625" Surface casing centralization program:

1. Install one (1) bow spring centralizer 10' above the float shoe.
2. Install one (1) bow spring centralizer on collar of joint #1.
3. Install one (1) bow spring centralizer in middle of joint #2.
4. Install float collar on top of joint #2.
5. Install one (1) bow spring centralizer on collar of joint #3.
6. Install one (1) bow spring centralizer on every third joint above the third collar.
7. One (1) bow spring centralizer and cement basket to be installed 125' below the surface (or at the bottom of the third joint of casing below the surface).
8. One (1) bowstring centralizer and cement basket to be installed 80' below the surface (or at the bottom of the second joint of casing below the surface).

### 3. PROPOSED CASING TUBULAR PROGRAM – CONTINUED

#### 7.00" Production casing centralization program:

1. Install one (1) rigid solid spiral turbolizer 10' above the float shoe.
2. Install one (1) rigid solid spiral turbolizer on collar of joint #1.
3. Install one (1) rigid solid spiral turbolizer in middle of joint #2.
4. Install one (1) rigid solid spiral turbolizer on collar of joints #3, #4, and #5.
5. Install one (1) rigid solid spiral turbolizer on collar of joints #7, #9, #12, #15 and every third joint to surface.
6. One (1) bow spring centralizer and cement basket to be installed 125' below the surface (or at the bottom of the third joint of casing below the surface).
7. One (1) bow spring centralizer and cement basket to be installed 80' below the surface (or at the bottom of the second joint of casing below the surface).

Note: If a productive formation is identified, place (4) rigid solid turbolizers below and (3) rigid solid turbolizers above the formation @ 20' intervals + one (1) rigid solid turbolizer centralizer per joint across the pay interval itself.

#### B. Casing Design Parameters:

##### Surface Casing

Interval	Casing Size	Burst (psi)/SF	Collapse (psi)/SF	Tension (klb)/SF
0' – 1,500'	9.625" 36#, J-55 STC	3,520/5.01	2,020/2.88	394/10.44

- a. Based on frac gradient at shoe of 14 ppg
- b. Based on full evacuation with 9.0 ppg fluid on backside
- c. Based on casing string weight in air

##### Production Casing

Interval	Casing Size	Burst (psi)/SF	Collapse (psi)/SF	Tension (klb)/SF
0' – 5,450'	7.0" 26#, L-80 LTC	7,250/2.71	5,410/2.02	511/4.51

- a. Based on 6,500 psi frac pressure
- b. Based on full evacuation with 10.0 ppg fluid on backside
- c. Based on casing string weight in air

#### 4. PROPOSED CEMENTING PROGRAM

##### Surface Casing

Casing	Slurry	Ft of Fill	Cement Type	XC (%)	Wt (ppg)	Yield (ft <sup>3</sup> /sx)
9.625"	Tail	1,500	454 sxs Type III Cmt + 0.08 lbs/sk Static Free + 1% bwoc CaCl + 0.25 lbs/sk Cello Flake + 60.4% Fresh Wtr	25	14.5	1.40

Note: A cement top job will be performed if cement fallback is greater than 10' below ground level.

##### Production Casing

Casing	Slurry	Ft of Fill	Cement Type	XC (%)	Wt (ppg)	Yield (ft <sup>3</sup> /sx)
7.00"	Lead	4,350	326 sxs (20:80) Poz (Fly Ash): Type III Cement + 0.2% bwoc R-3 + 0.2% bwoc CD-32 + 15 lbs/sk CSE-2 + 0.6% bwoc MPA-170 44 lb/sack + 111% Fresh Water	20	12.5	2.21
7.00"	Tail	1,100'	192 sxs (50:50) Poz (Fly Ash): Class G Cement + 0.1% bwoc R-3 + 0.6% bwoc FL-63 + 0.1% bwoc CD-32 + 0.2% bwoc ASA-301 + 0.2% bwoc Sodium Metasilicate + 10 lbs/sk CSE-2 + 67.3% Fresh Water	35	13.8	1.47

Note: 1) Cement volumes for the 7" casing will be calculated to provide a top of cement at surface.

2) Waiting on cement time will be sufficient to achieve a minimum of 500 psi compressive strength at 4,350' TVD.

#### 5. PROPOSED MUD PROGRAM

Depth (MD)	Mud System	MW	PV	YP	FL
0' - 1,500'	Fresh Water / Spud Mud	8.4 - 8.8	1 - 10	1 - 10	NC
1,500' - 5,450'	LSND / Mil-Pac	9.0 - 10.0	10 - 15	8 - 12	5.0 - 8.0

**6. PROPOSED EVALUATION PROGRAM**

Cores: Conventional Core (5,000' – 5,175' MD = 175')  
Rotary Sidewall Cores (5,000' – 5,425' ELM)

DST: None Planned

Surveys: Deviation surveys every 500' in Surface Hole.  
Deviation surveys every 100' from 1,500' to Total Depth

Mud Logging 30' samples from 1,500' to Total Depth

Open Hole Logging: Quad Combo / Microlog / Sonic Scanner from Total Depth to Surface Casing

**7. ABNORMAL CONDITIONS**

No abnormal pressures or H2S anticipated.

Estimated bottom hole pressure is 2,360 psi (0.433 psi/ft) @ 5,450' TVD in the Greenhorn Formation.

**8. Anticipated Operations Starting Dates**

Location Construction: January 10, 2016

Spud: February 1, 2016

Rig Release: February 15, 2016