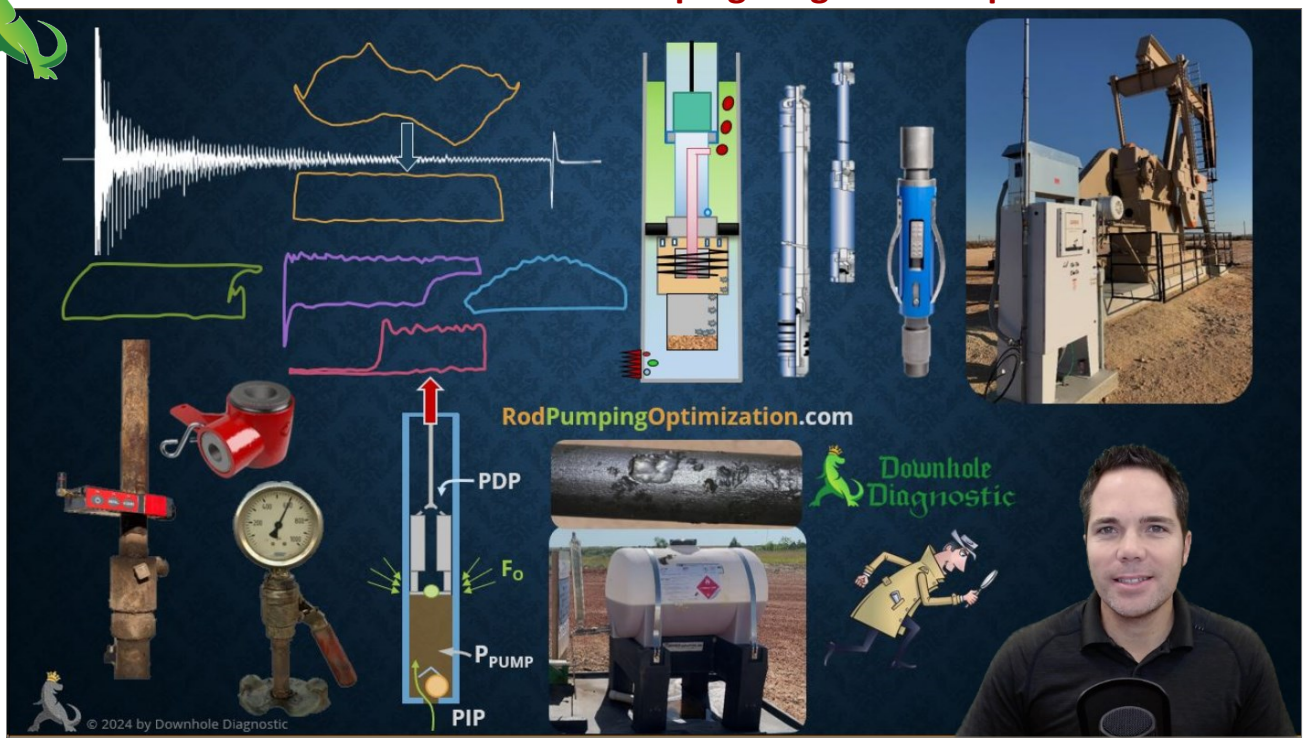
# 50-hr Online Course: Rod Pumping Diagnosis & Optimization




**Let me introduce to you a 50-hr online course on Rod Pumping systems that can 10x the value of your engineers and field operators when it comes to designing, troubleshooting and optimizing Rod Pumping wells.**

I am a Petroleum Engineer with a passion for Rod Pumping optimization. I worked as an engineer for an oil company for 5-years and I have spent the last 10-years working independently for hundreds of companies to help them understand and optimize their wells.

The course blends theory with field practice and hands-on troubleshooting (with tons of real world pictures and interesting examples). There is a strong focus on applying and interpreting FL Shots & Dynamometer tests—our two diagnostic tools that let us see downhole.

**The course will make your employees expert on:**

- **Components & Theory of Rod Pump Operation**
- **Fluid Level Shots: application & interpretation**
- **Dynamometer Card Interpretation & POC's**
- **Downhole Gas & Solids Separation**
- **Specialty Equipment (pump, rods, & tbg) to Minimize Failures & Extend Run Life**
- **Troubleshooting & Optimizing Wells**

The course is broken into 1-hr segments and fully available after purchase: $1776 (6-month access period). Group discounts available.

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(432) 230-8700 (cell)

(the course looks like this: I am floating in the bottom corner of the slide with lots of images/diagrams to illustrate the points)

Section Outline:

1. **Introduction** (1-hr)
2. **Rod Pumping Overview** (2-hr)
3. **Intro to Optimization & Fluid Level/Dyno Tests** (1-hr)
4. **Fluid Level Shots (pt. 1) – Basics** (6-hr)
5. **Downhole Pumps & Pump/Rod Operation** (2-hr)
6. **Dynamometers (pt. 1) – Card Interpretation** (7-hr)
7. **Fluid Level Shots (pt. 2) – Over-Time** (5-hr)
8. **Dynamometers (pt. 2) – Over-Time** (9-hr)
9. **Echometer Equipment & Software** (3-hr)
10. **Gas & Solids – Separation & Handling** (6-hr)
11. **Run Time Control – Timers, POC & VSD** (6-hr)
12. **Other Topics (Chemical, Pump Action)** (2-hr)
13. **Optimization & Troubleshooting Wells** (4-hr)
14. **Final Quiz** (5-hr)

For a free preview (to watch many hours of content and see the quality) or to see a full detailed outline, visit:

**www.RodPumpingOptimization.com**

**YouTube: Downhole Diagnostic (channel)**

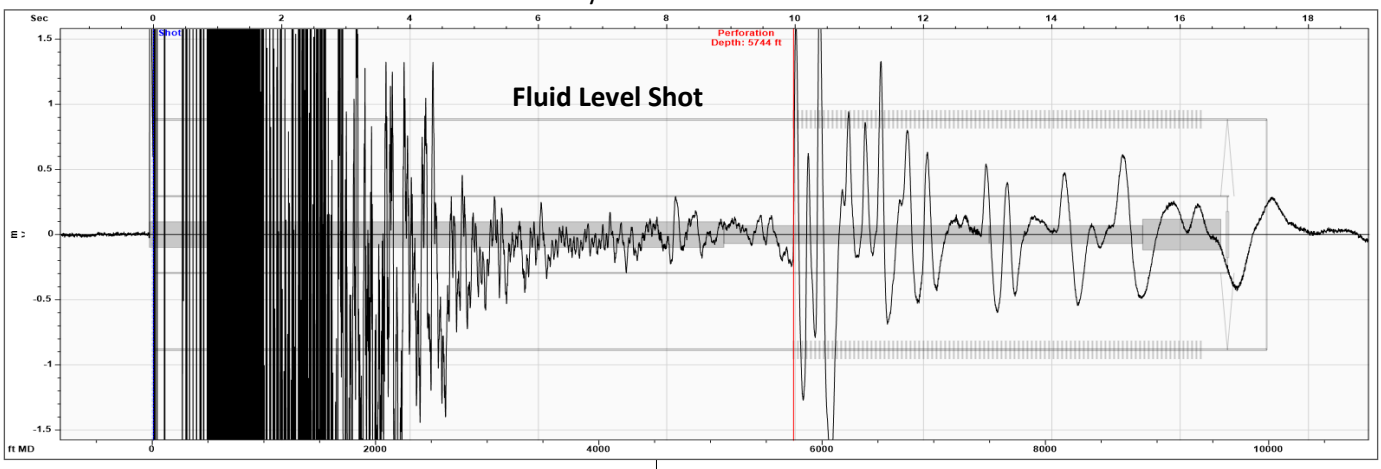
Downhole Diagnostic
www.DownholeDiagnostic.com

**Pop Quiz!**

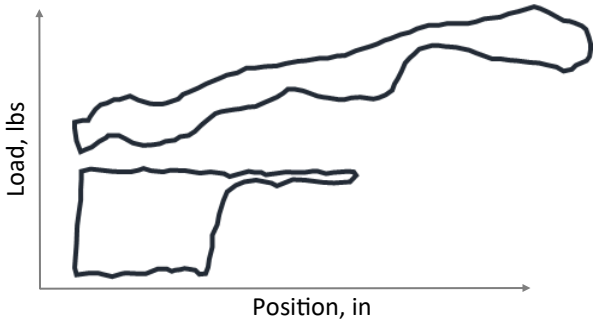
# Pop Quiz!

(answers on next page)

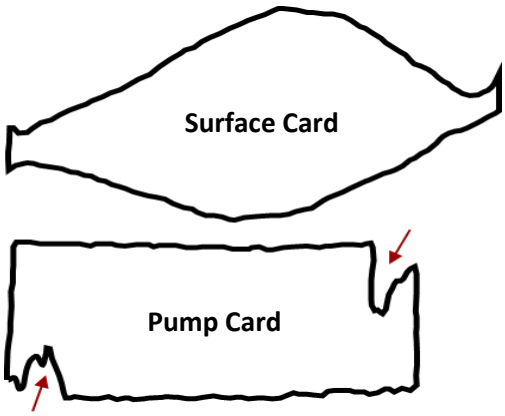
**#1:** Which kick is the Fluid Level Kick and why? What are the other kicks seen on the acoustic trace due to?




**#2:** Why is the downhole stroke length (DH SL) so much shorter than the surface SL? What could you change to reduce the loss of the DH SL?

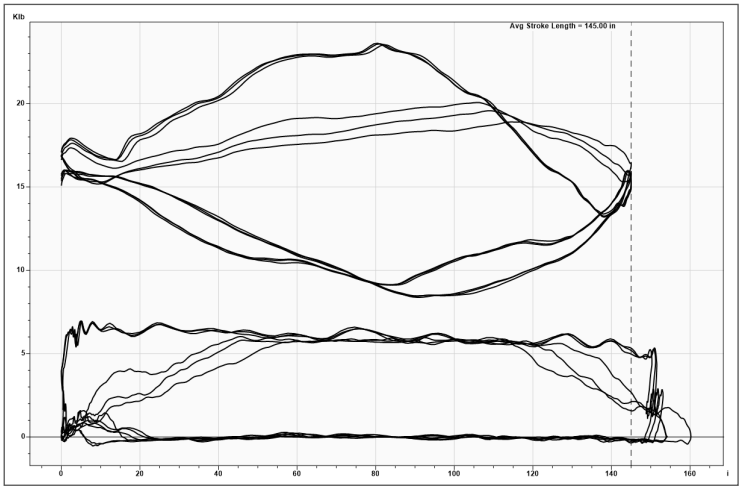


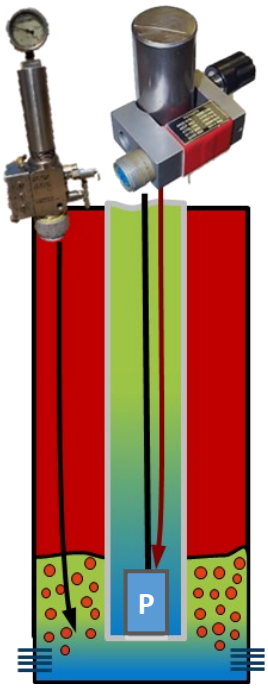

**#3:** What is causing the kicks in the Pump Card? (arrows)




**#4:** Does holding tubing back-pressure help to reduce gas interference or improve production on gassy wells?

**#5:** The pump cards are shifting back and forth between rectangular cards and 'worn pump' cards: what is the cause?




**#6:**

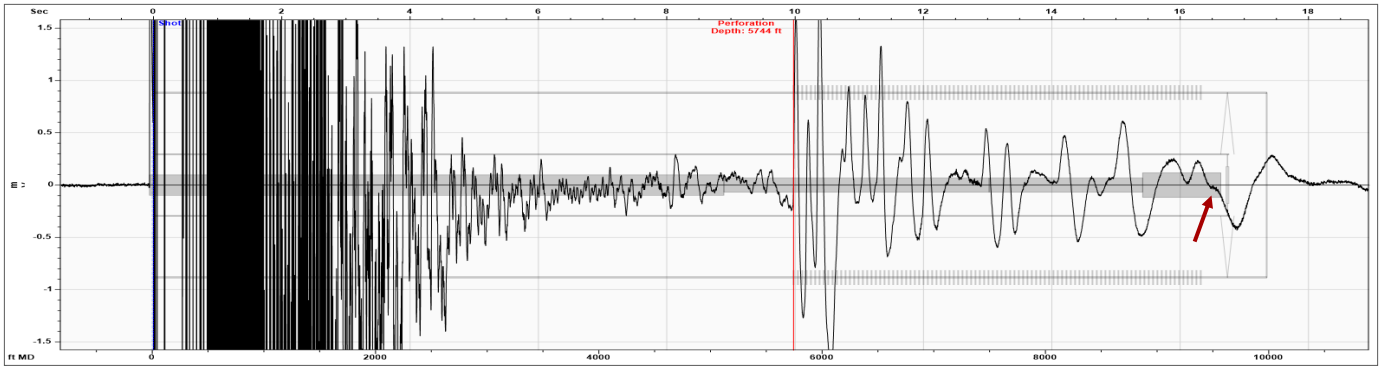
A **FL Shot** is looking down the _____ and tells you the _____ efficiency of the well.

A **Dynamometer Survey** is looking down the _____ and tells you the _____ efficiency of the well.

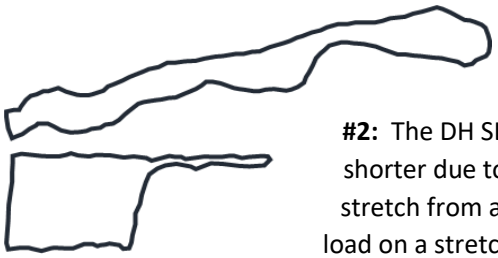
Downhole Diagnostic

# Answers

These topics are a small sample of what we will discuss in detail in the course: check out the free preview videos on YouTube or the course website to see the quality of the material!

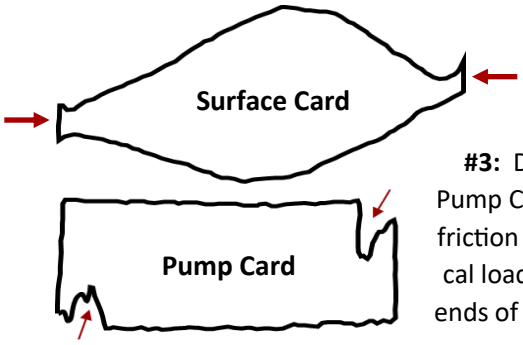



**#1:** The fluid level kick is at the SN, around 9500'—this is the deepest down-kick on the trace. There is a polarity to the kicks: **up-kicks** (increase in annular area) and **down-kicks** (reductions in area). The other kicks seen above the FL Kick are all up-kicks—created due to the pressure wave reflecting off separate perforation intervals.



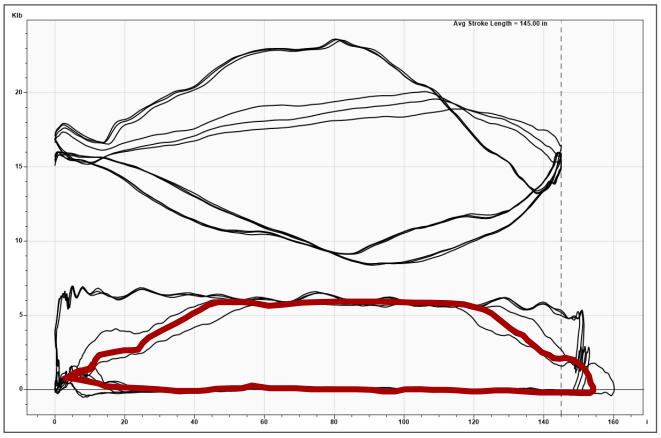
**#2:** The DH SL is so much shorter due to lots of rod stretch from a heavy fluid load on a stretchy rod string.

Ways to reduce the loss of DH SL include (and not necessarily justified or economic): downsize the plunger, install a more stiff rodstring (less FG and less small diameter rods), or increase the SPM (to increase Over-Travel due to dynamics).

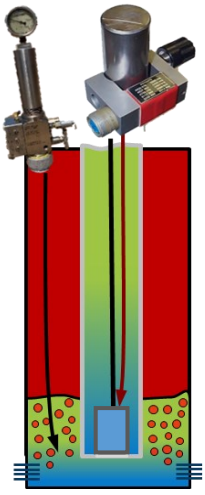



**#3:** Distortion in the Pump Card is due to SBox friction (seen in the vertical load transition at the ends of the Surface Card).


**#4:** Pumpers commonly misperceive that holding extra TP reduces gas interference, but this is not correct. Extra TP will improve the 'pump action' seen on the pressure gauge by retaining more liquid in the tbg and compressing the gassy tbg fluid (so they *perceive* it is pumping better). Higher TP actually increases the fluid load on the plunger, which increases rod stretch and lost DH SL, and it will slightly delay the opening of the Traveling Valve on the down-stk as now a higher pressure must be overcome. However, some TP can mitigate SBox leaks.




**#5:** A rounded 'worn pump' card (or 'slippage' card) can occur if anything is not effectively holding the ΔP acting across the plunger. Usually it is the plunger/barrel seal that is worn and leaking, but this particular case is due to a pitted Traveling Valve ball that sometimes has an effective seal (rectangular card) and other times does not (when a pitted surface of the ball lands on the seat).



**#6:**

A **FL Shot** is looking down the **annulus** and tells you the **liquid producing efficiency** of the well.

**Pumped Off = Max Production**

A **Dynamometer Survey** is looking down the **rod string** and tells you the **mechanical producing efficiency**.

**Worn Pump, Gas Int, F# = Inefficient**

**www.RodPumpingOptimization.com**