Title: Gas Assisted Liquid Lift using Oscillating Pressure (GALLOP)
Author(s): Scott Wilson, Ryder Scott
          David Green, Well Master Corporation
          Dan Nelson, Well Master Corporation

The advent of multi-frac'ed horizontal wells enabled extremely low permeability rock to produce at exceptional high early rates. The downside of this completion technique is that the reservoir fundamentals eventually prevail and rates eventually fall, causing the horizontal section to load up and restrict gas and additional liquid flow. Lifting liquids from a sump in the middle of the horizontal section has always been a need, but traditional lift systems are not well suited for this. Wells of this maturity exhibit terrain induced slugging, then load completely, leaving several hundred PSI of backpressure on the perforated completion, and preferentially flowing gas before liquids.

GALLOP is a closed loop intermittent gas lift system designed to produce moderate liquid rates from single or multiple sumps in a horizontal section while leaving the backside to produce continuously.

GALLOP uses a simple dual tubing system with moderate pressure lift gas and a U-tube (or concentric) connection at the end. The four period lift cycle starts with the evacuated dual tubing filling with liquids from the wellbore through a check valve. Once a proscribed optimal amount of liquid is accumulated in the dual tubing, lift gas is introduced to one side of the dual tubing, shutting the downhole check valve and isolating the tubing from the rest of the wellbore. Soon after, liquids arrive at the surface via the other side followed by the lift gas. The dual tubing is then blown down to the production lines and the cycle is started again.

This presentation will provide a preliminary status on the ongoing testing at a well in the DJ basin. Given the maturity of the DJ, Barnett, Marcellus, and Bakken plays, thousands of multi-frac'ed horizontal wells have reached the maturity and production characteristics that best suit GALLOP over any other lift method.