Automating Soapstick Launchers with an EFM Control Scheme

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Manual Soap-Stick Launcher

Advantages:
- Low CAPEX
- Minimal skill requirements

Disadvantages:
- Operator time constraints
- Manual shut-in and re-open
- Safety

Note: Inadequate eye and fall protection.
Automated Launchers

Activation by time-based Controller
Automated Launchers

Advantages

– routine de-watering = decline curve slope reduction
– more wells serviced per operator
– reasonable CAPEX and OPEX for de-watering

Limitations:

– failure to capitalize on CAPEX of existing EFM
– incapable of monitoring or responding to changes in flowing well conditions
– doesn’t routinely monitor tubing over line pressures
Optimize Automation

EFM + Launcher

Added value to pre-existing EFM
Launcher Control Logic
Launcher Control Logic

• Sticks dropped based on FCU information
• Flowrate or Critical Rate < Setpoint
• Cycle delay between sticks dropping
• Will drop sticks until the max # for cycle is reached
• Hi Flowrate will reset the counter
• Hi line pressure will prevent stick from dropping
Launcher Control Logic

- Once max sticks set to drop per cycle is reached, Reset by:
  - Manual switch or remotely
  - Tubing – Line > Setpoint
Launcher Control Statistics

- Statistics
- # of sticks remaining in launcher
- # of sticks until shutdown
- # of sticks in accumulator since last reset
Test Well Info

- Located in South Texas - Lobo Field
  - 1800 Wells total on 80+ Acre Nominal Spacing
- ~8000’ Depth
- 2.875” Tubing with 5.5” Casing
- Fracture Stimulated
- Cum Production per well ~ .7 to .9 BCF
Rationale for Selecting Test Wells

• Reactive to Soap Sticks/ Batch Foamer

• Remotely located

• Packer Wells – Less desirable for plunger lift

• Lower Cum Wells

• Have EFM hooked up to SCADA
Cost/Benefit

• Approximate $10,000 Cost
  – About half this cost for unsuccessful test (can move launcher to another location)

• Desired Uplift ~20-30 MCFD

• Payout ~ 3-4 Months
Challenges

• Changes in configuration of Templates in SCADA

• Liquids in Gas

• Shared understanding of operation and requirements by all involved stakeholders

• Finding optimum cycle
Results

- **Test Well 1**
  - Manual Soapsticks - 60 MCFD with manual soaping
  - Automated Soapstick Launcher – 100-120 MCFD

- **Test Well 2**
  - Manual Soapsticks - 50 MCFD
  - Batch Liquid Soap – 90 MCFD
  - Automated Soap Launcher – 90 MCFD
Path Forward

• Continue working to optimize operation and setup on test wells

• Install on 3-5 Additional wells in 2008

• Install on wells with wellhead compressors
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