



# 2021 Gas Lift Workshop - Virtual Course

June 7-8, 2021, Unconventional Gas Lift

## Virtual Class – June 7-8<sup>th</sup> 8AM -4PM

### Gas Lift For Unconventionals

Instructors: Tom Nations, Larry Harms, Dr. Wayne Mabry, Dr. Paulo Waltrich,  
Angel Wileman, Dr. Eduardo Pereyra

Virtual Class using Zoom

### Course Objective and Outcome:

The objective of this course is to provide the participants with basic knowledge, practical tools and useful tips to enable profitable and reliable gas lift implementation and operations in unconventional plays. The participants in this course will be exposed to and interact with multiple concepts on properly applying gas lift in unconventional fields/pads/wells, including well designs, life of well production profiles, flowback strategies, reservoir considerations, downhole equipment design, equipment reliability, injection gas requirements, surface facilities designs concepts, flow assurance issues and optimization/trouble shooting.

Additionally, the students will come away with a series of questions that they should ask themselves, internal support, field operators, and vendors to insure the best outcome of unconventional gas lift.

### Teaching Approach:

The instructors have extensive experience in applying gas lift to unconventional fields and/or are experts in their area of interest.

### Material:

Power point slides, For hands on exercises, Nations Consulting LLC. will provide a temporary license of SNAP for free. Trainees will need to have a computer capable of downloading Snap. Download instructions will be sent one week prior to the course start date.

### Costs

Workshop costs:	<u>Professionals</u>	<u>Students</u>
Registration	\$300, \$350 <sup>(1)</sup>	\$50
Continuing Education	\$250, \$300 <sup>(1)</sup>	\$30

(1) After 05/22//2021

\*Course Outline: See next pages

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**For more information or to nominate papers, exhibits, etc., contact:**

Steven Freeman, ALRDC, [Steven.Freeman@shell.com](mailto:Steven.Freeman@shell.com)

Ronda Brewer, ALRDC, [ronda.brewer@ttu.edu](mailto:ronda.brewer@ttu.edu)

Or go to [www.alrdc.com](http://www.alrdc.com) and navigate to the 2021 Gas Lift Workshop



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### **Day 1**

1. Introduction
  2. Well Design
    - 2.1. Life of well production profiles
    - 2.2. Flowback strategies
      - 2.2.1. First lift - unloading issues
      - 2.2.2. Lift revisions over time
      - 2.2.3. Late life production options (IGL, PAGL/GAPL, plunger lift, SRP)
    - 2.3. Well geometry issues
    - 2.4. Frack hit strategies and reservoir considerations including water cut, draw down, and parent child-effect.
    - 2.5. Questions to ask Vendors/internal support staff.
  3. Tubular and Trajectory design considerations
    - 3.1. Single well, group or pad designs
    - 3.2. Gas injection rate requirements
    - 3.3. Production rate potential
    - 3.4. Questions to ask Vendors/internal support staff.
  4. Downhole equipment design concepts
    - 4.1. Well design options using side-pocket mandrel (SPM), conventional gas lift equipment or HP/SPGL
    - 4.2. Annular verses tubing production options
    - 4.3. Operational environmental effects on downhole equipment including gas quality.
    - 4.4. Questions to ask Vendors/internal support staff.
    - 4.4. Equipment standards and reliability
    - 4.6. Equipment throughput testing and how this affects operations
    - 4.7. Equipment testing to system design parameters and how this affects operations
- VPC - API throughput testing
- 4.8. Questions to ask Vendors/internal support staff.

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### **Day 2**

- 5. Injection gas requirements
  - 5.1. Surface injection pressure options
  - 5.2. Gas quality impact
  - 5.3. Injection rate requirements
  - 5.4. Questions to ask Vendors/internal support staff.
- 6. Surface facilities design concepts
  - 6.1. Closed rotative gas lift gas distribution system
  - 6.2. Pad, comingled, or single well compressor systems
  - 6.3. Gas quality impact on surface facilities
  - 6.4. Effects of zero tolerance for venting or flaring of natural gas
  - 6.5. Equipment reliability
  - 6.6. System backpressure - Blow cases
  - 6.7. Well testing / flow measurement
  - 6.8. Questions to ask Vendors/internal support staff.
- 7. Flow assurance issues
  - 7.1. Hydrates
  - 7.2. Sand
  - 7.3. Paraffin/Wax
  - 7.4. Scale
  - 7.5. Terrain-induced slugging
  - 7.7. Questions to ask Vendors/internal support staff.
- 8. Optimization and trouble shooting
  - 8.1. Surveillance techniques
  - 8.2. Trouble shoot gas lift valve inefficiencies using trend data, pressure gradient profile, CO2 tracer, fluid level (Echometer), among other tests
  - 8.3. Questions to ask Vendors/internal support staff.

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