

# Enhancing Operational Efficiency and Environmental Sustainability in Gas Lift Wells

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## Abstract

### Objectives/Scope:

This Case Study portrays the considerations, method and the benefits in adoption of surface Annular Safety Valves (ASVs) to operate Gas Lift wells driven by mandatory HSE Critical Equipment and Systems (HSECES) requirements. ASVs are crucial components in gas lift completion design that help prevent hydrocarbon gas release into the well bay, reducing the risk of jet fires, structural damage, and explosions. They are required by the Company Drilling Code of Practices and International regulations and standards for well barriers. There are two types of ASVs: Downhole ASVs and Surface ASVs.

### Methods, Procedures, Process:

The company identified well with Gas Lift completion and reviewed their compliance with the Company's Gas Lift Code of Practice (COP) requirement for downhole barriers. The candidate wells underwent Well Integrity and performance testing with mitigations in place. Upon successful completion of the test, the well was selected for ASV installation. The non-compliant gas lift wells with respect to downhole requirement of the Company's Gas Lift COP upon passing the above test, ASV was installed, and these wells were operated under Downgraded System with controls in place. The retrofitting of the ASV was done riglessly using Surface ASVs with modifications to the existing surface facilities.

### Results, Observations, Conclusions:

More than 400 Surface ASVs have been successfully deployed in the Company fields, reaping the benefits mentioned below:

- a) **Efficient Installation:** Surface ASVs enables rigless installation, eliminating the need for rig workover, particularly beneficial for wells with existing Gas Lift completions. This resulted in the enhancement of the rig availability for drilling the new wells and other workovers for enhancing production. Thus, resulted in Rig Workover cost saving per well.
- b) **Environmental Sustainability:** The use of surface ASVs has significantly reduced CO2 emissions by negating the necessity for rig workovers, aligning with Company's and Country's environmental conservation efforts.
- c) **Enhanced Activation of Inactive Wells:** By deploying surface ASVs, previously inactive natural producers with gas lift completions can be swiftly brought online, bolstering oil production output. A pre-installation Well Integrity and performance test was tailor made to perform the risk assessment of the otherwise non-compliant wells for the downhole barrier requirements to gas lift Company's Drilling Code of Practice. This further built the basis of a fortified risk assessment, making it possible to screen the right candidates for ASV installation.
- d) **Simplified Maintenance:** The surface location of ASVs streamlines preventive maintenance and rectification procedures, contributing to reduced downtime and operational ease.

**Novel/Additive Information:**

This case study provides useful lessons for comparable operational contexts and the approaches and results can be transferred by a wider audience or other firms in the oil and gas industry.