High-Pressure-Gas-Lift Delaware Basin Case Study

Gas lift has been a popular choice in the unconventional artificial lift realm due to its high tolerance for producing sand laden fluid, high efficiency in handling gas, and ability to operate in deviated wellbores with minimal downhole issues. High Pressure Gas Lift (HPGL) was introduced to the unconventional artificial lift market in 2017 and is providing operators the ability to maintain the benefits of gas lift with the deliverability of ESPs.

HPGL is a form of Artificial Lift that consist of injecting gas at the deepest possible point in the wellbore which enables the lightening of the entire fluid column. This paired with the ability to produce up the annulus (lower friction component due to larger cross sectional flow area) enables an operator to maximize production by drastically reducing flowing bottom hole pressure. The introduction of high-pressure compressor technology in 2017 allows operators to implement high pressure gas lift early in the life of a well which enables an operator to maximize IPs while benefiting from the advantages of gas lift. Devon Energy recognized this opportunity and tested the concept on a Delaware Basin horizontal well.

Devon's results were successful in that they were able to achieve the desired high IP rates as well as mitigate the excessive work over cost associated with other forms of artificial lift. In this paper we will discuss the process of implementing HPGL for Devon's HPGL Delaware Basin test as well as discuss the operational and economic benefits experienced.