

Title: Maximizing Uplift in Gas-lifted Oil Production Systems

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Optimizing gas lift injection rate is essential to maximizing the total oil produced in a production network system. In this presentation, we will discuss a novel optimization framework integrated into a decision-support application suite and its role in enabling optimal production. Two major application areas will be highlighted. First, we apply the framework to identify optimal combinations of well gas lift injection rates, well head choke valve positions, and well-to-separator routing to maximize total oil production subject to well, field, and facility-level constraints. Second, for wells with a high gas-oil-ratio where well cycling is applied to mitigate gas coning, we apply the framework to determine an optimal well cycling schedule to maximize oil production. Our optimization framework integrates well performance models, innovative production system network modeling, and a novel constrained optimization formulation. Using this framework, we have demonstrated a significant increase in generated uplift and we will share results from applications in offshore oil production systems.