Surface Jet Pump Boosts Production 55%

Overcomes Backpressure in Natural-Flowing Wells Avoids Workover Costs and Well Recompletion

Objectives

- Increase overall production of four, natural-flowing wells experiencing declining production and growing backpressure amalgamating to a single flowline.
- Find an alternative to other pump solutions that can enhance production without requiring the additional downtime and CAPEX of a workover rig or recompleting the downhole well.

Our Approach

- Following a thorough review of the physical attributes of the well and operator production requirements, Weatherford Artificial Lift Specialists proposed the surface jet pump for its ability to reduce backpressure at the wellhead while increasing discharge pressure to overcome high flowline pressures. To achieve this, the jet pump pressurizes power fluid that flows through the pump nozzle to create a "Venturi" effect that decreases pressure at the inlet throat to a point lower than the wellhead pressure. This enables the natural reservoir energy to move well fluids through the pump intake and then into the throat, where the well fluids combine with the power fluid. This mixture progresses to the diffuser, which creates a discharge pressure high enough to overcome the flowline pressure.
- To determine the proper nozzle setting for the system, a technical evaluation of the well conditions was concluded using Weatherford Jet Pump Evaluation Modeling Software (JEMS). The surface jet pump was then outfitted with the ideal nozzle-and-throat combination to create custom system pressure for maximized production and pump life. Using detailed calculations to create a performance curve, the proper pressure differential for reduced wellhead backpressure was used to overcome flowline backpressure and achieve the projected flowrate.

Value to Customer

- By installing the surface jet pump near the wellhead, backpressure was effectively reduced in a minimally intrusive way and production was restored and increased. This avoided the high costs of a traditional multiphase pump. Upon reaching the target injection parameters of +/- 1,200 psig and +/- 2,000 psig power-fluid rate, the target production rate of 850 BPD was achieved—representing as a 55% improvement in production over previous volumes.
- Installation of the jet pump provided significant cost savings for the client with zero incurred downtime. The overall cost of the jet pump was much lower than alternative forms of lift. The pump was installed and tested without pulling the existing completion. This also reduced rig time and intervention costs by avoiding use of a workover unit.

With no moving parts, the Weatherford surface jet pump delivers cost-effective, rigless production enhancement for a variety of applications including natural-well augmentation, and wellhead backpressure reduction. In a well with naturally declining production rates, the surface jet pump will boost production levels without a workover unit and only minor modifications to pump components.

LOCATION
Northern Iraq

FIELD
Taqtaq, Kurdistan

WELL TYPE
Oil producer

FLOWLINE PRESSURE
355 psig

PUMP INTAKE PRESSURE
+/- 200 psig

DISCHARGE PRESSURE
360 psig

HORSEPOWER REQUIREMENT
+/- 50 hp

PRODUCTS/SERVICES

- Surface Jet Pump
- Artificial Lift Solutions
- Jet Pump Modeling Evaluation Software (JEMS)

Weatherford®

13431.00