TAQA

Case Study - Initial Summary:

Cascade³ solution overcomes sanding challenges and eliminates requirement for gravel packing

Cascade3 saves client $1million and insures against loss of injectivity in unconsolidated sandstone formation

Well Data

Location: Sub-Saharan Africa

Well Type: Water Injector

Installation Date: February 2019

System Design Rates: 30,000-40,000bwpd

Background

TAQA collaborated with an operator to provide a sand control solution, delivering a system which extends well life and maintains longevity of injection while simplifying operations, saving money and reducing health and safety concerns, when considered against other conventional means.

The Challenge

Based in detailed sanding studies the operator had identified a high risk of sand ingress which standalone screen solution could not address. Such particulates can become mobile during periods when water injection is shut-off, either during planned shutdowns or in unplanned instances, such as loss of pump functionality.

In the event that sand migrates into the completion, a loss of injectivity may be observed, which reduces the effectiveness of the injector's pressure support or sweep capacity. Ultimately, this can lead to the loss of a well and possibly the requirement to workover or drill a new well.

Comparable levels of sand control may be provided by gravel packing, however; the equipment spread required to pump the pack could cost in the region of $500k per well, in addition to the cost of conventional sand screens.

TAQA Solution

The client opted to install TAQA's Cascade3 system, which provides a unique flow-checking mechanism at the sandface.

Cascade3 mitigates the 3 main causes of water injection well failure, namely; crossflow, backflow and water hammer effects.

Placing an array of non-return valves across the reservoir prevents fluid backflow from entering the well, ensuring that no fine particles enter the lower completion. Cascade3 is unlike a conventional water injection valve, where inter-layer crossflow can mobilize sand into the completion below the valve's location.

The Cascade3 valves were protected by utilising TAQA's FloDirect Wire Wrap Screen offering robust sand control.

Furthermore, from a health and safety perspective, Cascade3 may provide further benefits over gravel packing mitigating equipment and personnel on location.

Project Results

The Cascade3 screens were delivered to the site in a ready-to-run condition, deployment of the solution went seamlessly.

At present the client has 2 Cascade3 wells injecting at a rate of 5,000bwpd at a Wellhead Pressure of 1,200psi. No sand issues have been encountered to date.

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