Case study: North Africa

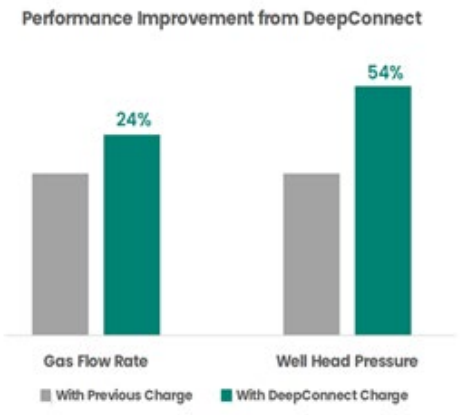
DeepConnect reservoir-driven perforating charges increased production 24%

A major customer in North Africa had been seeking improved production in one of its most important and highest producing fields. Multiple aspects from completion programs to stimulation solutions had been introduced, with only varying degrees of success. The Baker Hughes team recommended the **DeepConnect™ reservoir-driven perforating charges** as a potential solution. This deep gas reservoir, below 13,000 feet (4,000 m) has an average permeability of 50 mD and a porosity of 20%.

Unlike conventional perforating systems optimized for performance in a concrete test target, the DeepConnect charge is designed for performance in reservoir rock, at reservoir conditions. The DeepConnect technology was developed using an iterative testing and design process that replicates as closely as possible reservoir conditions, in terms of rock properties, downhole pressures, fluids and temperatures, resulting in a best-in-class shaped charge product family. Our global SME's and local technical team collaborated with the customer in multiple conversations, and a suitable candidate well was identified with production data from neighboring wells made available for comparison. The operation entailed perforating 177 feet (54 m) of reservoi in a vertical well, using Wireline deployment in 10 successive runs.

The operation was executed flawlessly, completed with zero NPT. The well showed a 24% increase in gas flow rate, and an even greater increase of 54% in wellhead pressure compared to the reference well previously perforated with concrete-optimized charges. The increase in wellhead pressure indicates excellent connection to the reservoir. This increased production came with no change in operational procedures or requirements.

As a result of this success, the customer has decided to expand the usage of DeepConnect charges into its challenging fields, and is now engaging Baker Hughes for additional perforating and Production Enhancement solutions.



Challenges

- Improve production in one of the customer's major reservoirs
- Introduce perforating technology based on in-situ formation penetration, not concrete test data

Results

- Increased production 24% compared to offset wells in the immediate area
- Increased wellhead pressure 54% indicating excellent connection to the reservoir
- No NPT, no HSE issues resulting in flawless execution by the wireline team
- Successfully perforated 177 feet (54 m) of interval in 10 runs with 3⅛-in. OD 6 SPF HMX DeepConnect perforating charges

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