TAQA

Case Study:
Application of DTS for effective acid stimulation

An intervention based approach to reduce stimulation uncertainty by understanding well contribution using DTS

Well Data

Location: Italy

Well Type: Oil, Natural Flow Producer

Drain Type: Sub-Horizontal Drain

Migration Date: February 2021

The client planned a stimulation job to mitigate production decline. To achieve this, a good understanding of the contributing zones in the well was needed and this required well monitoring across the different operations.

DTS data was selected as it provides quick and continuous temperature measurements along the well length over the period of the operations, allowing for transient thermal behaviour to be captured.

Using this system, pre-job data was captured in order to better focus stimulation on specific zones, and after the acid job, post-job data was used to verify the success and overall reservoir behaviour.

Instrumented Coiled Tubing by Fibre Optic cable was used to monitor chemical placement and data gathering.

The Challenge

- Avoid blind stimulation and plan a more focused job
- Understanding downhole flow contribution zones
- Evaluation success of stimulation operation

TAQA Solution

Experienced TAQA reservoir engineers worked with the clients to plan the data acquisition periods over the different operations to get the best quality data and optimise logging time.

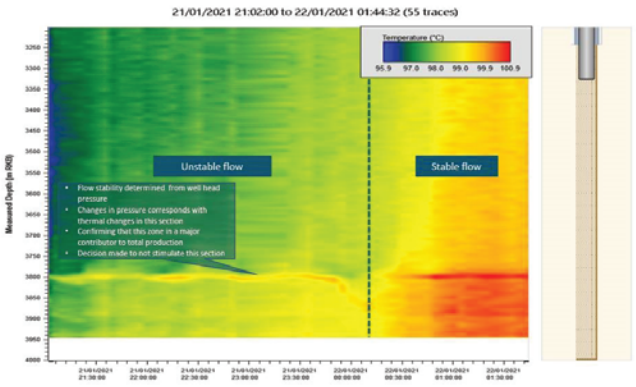
TAQA's propriety software FloQuest was used to provide a flash report right after the pre-stimulation acquisition in order to make quick decisions on acid placement and volumes with the aim of prioritising certain well sections and minimise others (e.g. large fractures)

Project Results

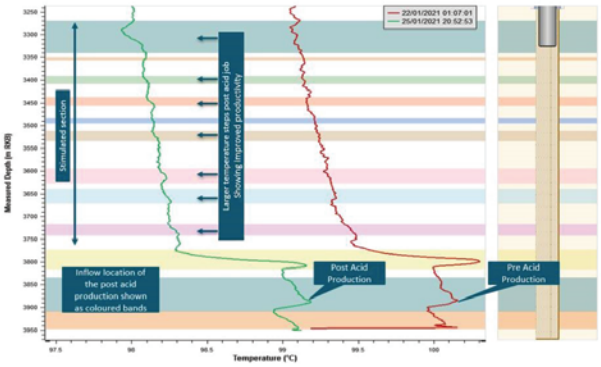
Using FloQuest allowed for quick data processing, improved event identification and faster turn-around of results.

The pre-stimulation data and analysis allowed the client to make informed decision on acid volume and depth of spotting in order to maximize effect on wanted wellbore section.

The client also acquired additional reservoir information.



Pre-acid inflow dominated by zone at 3000m



Post-acid temperature profile showing higher temperature response at inflow locations in stimulated section