

Case study: Middle East

Propellant-Assisted Stimulation increased production in Middle East well

StimTube treatment increased production in a perforated, openhole well from 0 bbl/day to more than 400 bbl/day

A Middle East customer's exploration team for marginal fields was having series of setbacks. After perforating, the customer could not flow the wells and ended up plugging and abandoning each well. In the last well planned in one field, Baker Hughes performed the logging operation, providing **SLAM/MReX™, STAR™, and RCI™ services**. The well failed to flow after the test. Upon evaluation, Baker Hughes suggested a **StimTube™ treatment prior to acidizing**.

The StimTube treatment is expected to induce fractures to bypass the damaged zone into the undisturbed formation, and enhance connectivity in the zone of interest. iPerf pre-job modeling programs were used to simulate the entire operation.

Modeling results indicated that the well would benefit from the StimTube treatment without compromising its integrity. The results indicated 100% perforation breakdown across the intervals and an estimated maximum fracture length of about 20 ft. After the StimTube treatment, the acid injection rate increased from an initial 6 bbl in 4 hours to 1.1 bbl/min, and the well began to flow.

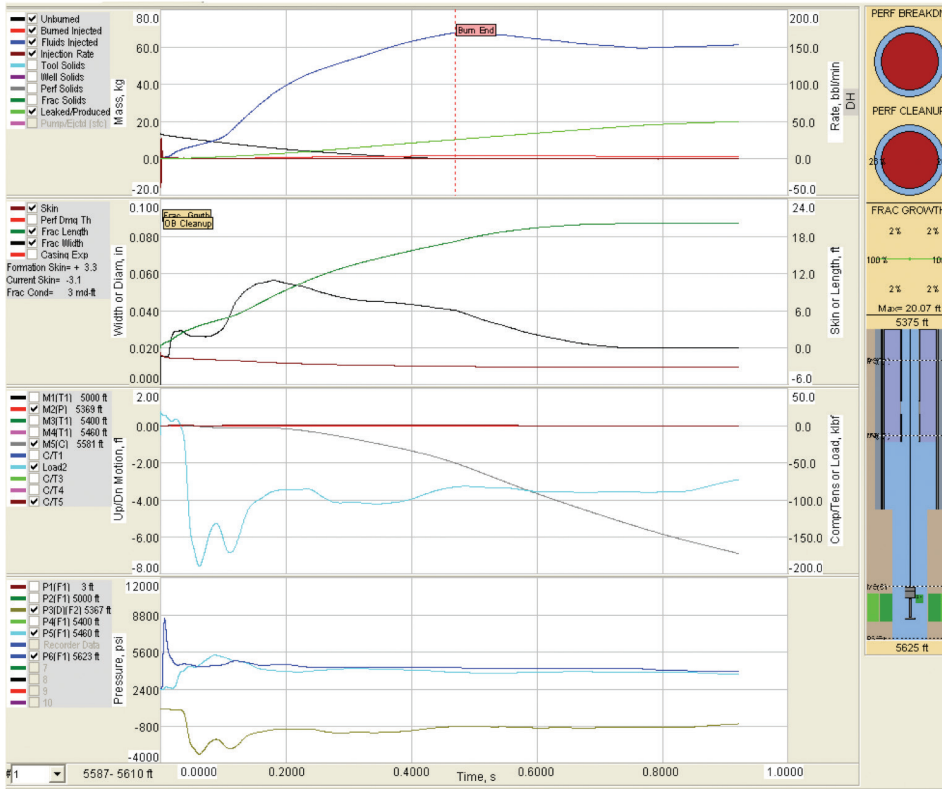
Based on this success, the customer invited Baker Hughes to present the success story and re-assigned a competitor's well to Baker Hughes to perform three zonal stimulations. The first zone has already been performed with the same success.

Challenges

- Onshore exploration well in a marginal Middle East field
- Depth of 5,624 ft with 104 ft of openhole section in the reservoir
- Existing perforations in the well were over two intervals of 10 ft and 46 ft
- Several wells in the same field were plugged and abandoned after perforating because they would not flow
- Customer was concerned about the integrity of a packer located about 180 ft from top shot

Results

- Acid injection rate increased from an initial 6 bbl in 4 hours to 1.1 bbl/min
- Well production increased from 0 bbl/day to more than 400 bbl/day
- Wireline-conveyed, through-tubing StimTube treatment across existing perforations in the openhole section prior to acid treatment
- Baker Hughes iPerf™ pre-job modeling programs used to optimize propellant loading, perforation breakdown, and fracture propagation
- Estimates from the iPerf pre-job modeling indicated 100% perforation breakdown across the intervals, and a maximum fracture length of about 20 ft
- Overall integrity of the wellbore was maintained throughout the operation



iPerf pre-job modeling results for Run 1, using the PulsFrac™ service.