

### CHALLENGE

The client operates a small field under steam flood with declining oil production. Conventional stimulation techniques such as acid had yielded mixed and/or short term results. The client was interested in trying a cost effective technology that would potentially provide better and/or longer lasting results.

#### HIGHLIGHTS

- Heavy oil
- Steam flood
- Vertically drilled
- Artificially lifted
- Slotted liner
- Gravel pack

#### LOCATION

- California, USA
- Onshore

#### CONDITIONS

- Depth: 650 ft (200 m)
- Etchegoin Sandstone
- Porosity 35%; Perm 5 D

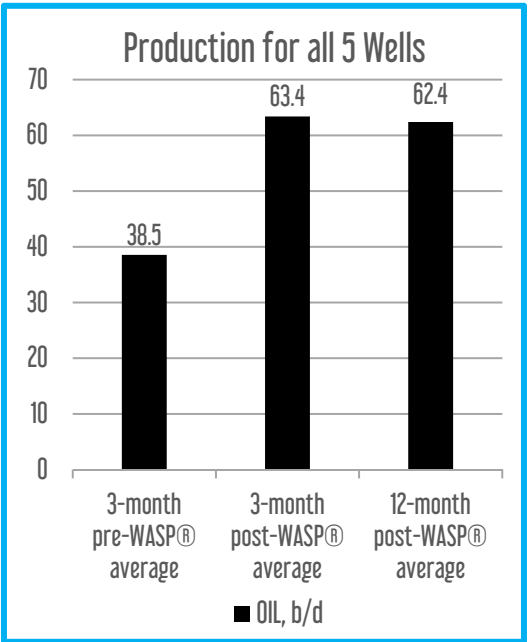


Producing Wells

### OUTCOME

- The wells were immediately put back on production and rates, pressures and fluid levels were monitored.
- The total production for the 5 wells increased by 65% based on a 3-month comparison, while the water cut decreased by 5%
- Three of the wells saw increases of over 100%.
- The total production for the 5 wells maintained a 62% increase for the 12-months following the stimulation

Aggregate oil  
increased by  
**65%**



### SOLUTION

- Improve connectivity to the reservoir through a slotted liner using electro-hydraulic stimulation technology.
- The client chose 5 wells to treat with the Blue Spark WASP® (Wireline Applied Stimulation Pulsing) to improve production.
- The client selected the treatment zones from open hole logs, such that the total interval stimulated could be maximized in a single day of operation for each well.
- Tubing was pulled and a bit-and-scraper run was done on each well.
- The WASP® stimulation was completed on all 5 wells in 5 working days.