

# Tiger Shark<sup>®</sup> II Tapered ESP System Delivers Long Run Life in Low Volume Gassy Well

## OPERATOR DRAWS DOWN WELL AND MAXIMIZES PRODUCTION OVER 450 DAYS OF OPERATION

BAKKEN

### CHALLENGE

- » High gas-oil ratio leading to gas interference and slugging
- » Low volume production leading to excessive heat from overpowered pumps
- » Economic goal to maximize production before transition to rod lift

### SOLUTION

- » Tapered multi-stage Tiger Shark II system with tandem Liberator™ Vortex gas separators for optimal oil and gas recovery and long run life

### RESULT

- » Long run life (550 days installed with 450 days of operation)
- » Production rate as high as 600-700 barrels per day
- » Rapid well drawdown to 400 psia
- » Total production >55,690 barrels of oil and 124,700 mcf of gas

### CHALLENGE

A Bakken operator had a gassy well producing 200-600 stb/d with an average gas-oil ratio (GOR) of 2,300 scf/stb. Intake pressure was less than 700 psia and the GOR would surge in excess of 4,000 scf/stb. The operator's goal was to maximize production while drawing the well down without generating excessive heat and subsequent pump system failure.

### SOLUTION

Summit ESP<sup>®</sup>, a Halliburton Service, proposed a tapered electric submersible pumping (ESP) system featuring Tiger Shark<sup>®</sup> II pumps that are progressively smaller by volume, with tandem Liberator™ vortex gas separators at intake. The tapered design of the Tiger Shark II SFGH2500, Tiger Shark II SF1750, and primary production stage Tiger Shark II SF675 pumps allowed the system to run at low horsepower, avoiding excessive heat that leads to failure.

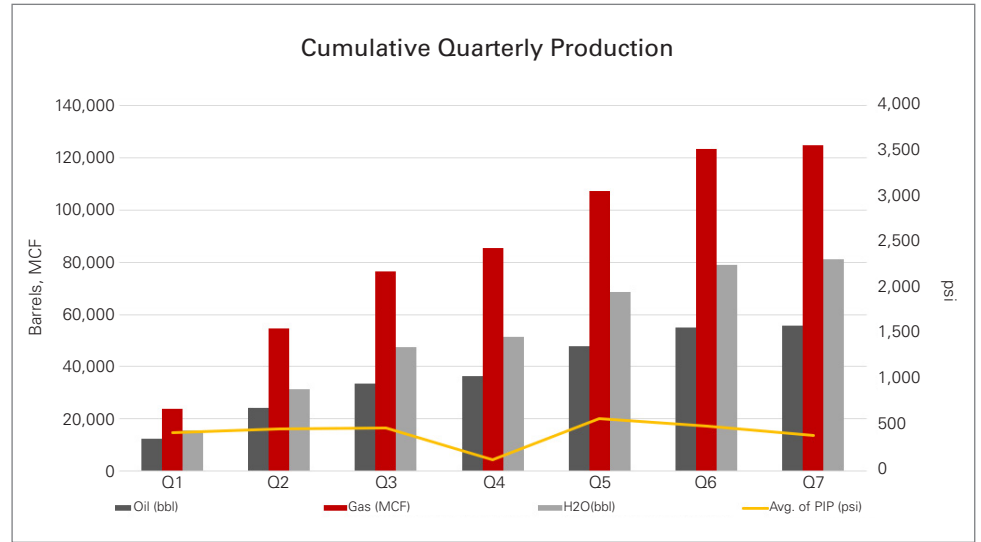


The tapered design is optimized for volumetric changes as gas separates from fluid. The robust solution effectively handles free gas and gas slugging, allowing the operator to produce maximum oil and gas.

**RESULT**

The tapered ESP system was successful and quickly began to draw the well down to slightly above 400 psia. It continued to operate for seven months until the well was shut in due to economic reasons. The operator successfully returned the unit to production two months later and continued to operate until culminating in more than 550 days installed and more than 450 days of operation.

The ESP system was able to draw production down to an average of 252 stb/d and allowed the operator to successfully transition to rod lift without sacrificing production. Total production of oil throughout this install was over 55,690 barrels of oil and over 124,700 mcf of gas. Production outperformed rod lift, achieving as much as 600-700 barrels per day.



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