

ESP Run Life Tripled with Tiger Shark® III Abrasion-Resistant Overlap (ARO) Bearings

ABRASION PROTECTION IN DEEP, HIGH-PRESSURE, AND HIGHLY ABRASIVE WELL SAVES OPERATOR OVER \$150,000 IN OPEX

ROCKY MOUNTAINS REGION, UNITED STATES

CHALLENGE

- » Mitigate abrasive frac sand and formation fines in the pump
- » Improve ESP performance
- » Extend ESP run life
- » Save operator equipment cost

SOLUTION

Tiger Shark III ESP with ARO bearings:

- » Engineered with custom-blended tungsten carbide for abrasion resistance
- » Overlap design that ensures continued performance even if the key is cut

RESULT

- » Tiger Shark III ESP with ARO bearings had a 500-plus day run life, which is over three times the typical run life in this highly abrasive application
- » ESP pulled for electrical issue in re-run condition
- » Efficient ESP operation saved over \$150,000 in equipment and rig costs

OVERVIEW

Producing unconventional wellbores that are drilled deep into abrasive formations can be challenging. One notable failure for electric submersible pumps (ESPs) is erosion that cuts the key on the impeller and, in cases of extreme abrasion, can cut the shaft. The problem is compounded by the industry's shift to smaller frac sand particle sizes (< 100 mesh) which can prop open the tightest of formation fractures but are also able to infiltrate areas of even the smallest tolerances in ESP pumps.

CHALLENGE

When small, abrasive particles infiltrate the space between the impeller and the shaft, fretting can occur, and, if the key is eroded or "cut," then the impeller no longer rotates, and the pump loses lift pressure. In extreme cases, abrasion can also cut the shaft.

SOLUTION

The innovative Summit ESP Tiger Shark III pumps, featuring abrasion-resistant overlap (ARO) bearings, mitigate abrasion, thus protecting the key and extending run life. Made of an exclusive blend of tungsten carbide to combat abrasion, the bearing sleeve is designed with an overlap that engages with the impeller so that rotation will continue even if the key is cut on the shaft.

RESULT

A well installed with a Tiger Shark III ESP with ARO bearings ran over 500 days before being pulled for an electrical issue. Upon inspection, it was determined that the unit could be re-run. With typical run times at around 100 days, and equipment and rig costs over \$150,000, the savings to the operator were significant.

 **OVER
USD \$150,000
SAVED**

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