

TORNAR[®] Optimized Well Cleaning

Proven to give a clean and solids-free wellbore

Summary: Archer’s Tornar wellbore cleaning solutions have been proven, over time, to save major operators worldwide up to 30 hours of rig time on land and up to 15 hours subsea. More than \$280,000 can be saved on efficient wellbore cleaning with a modern technology that supersedes conventional methods.

The Industry Challenge

Wellbore debris is a major issue in all oil and gas wells around the globe. A clean wellbore is important when running expensive and sensitive completion strings. Failure in doing so can cost **millions of dollars**. Running multiple clean-up runs to clean a wellbore can also be a **time consuming and costly operation**. A wellbore cleaning operation can take more than 70 hours to complete. Reducing the numbers of runs without compromising effective hole cleaning, is the key to ensuring a successful completion installation and providing maximum well returns.

Solution

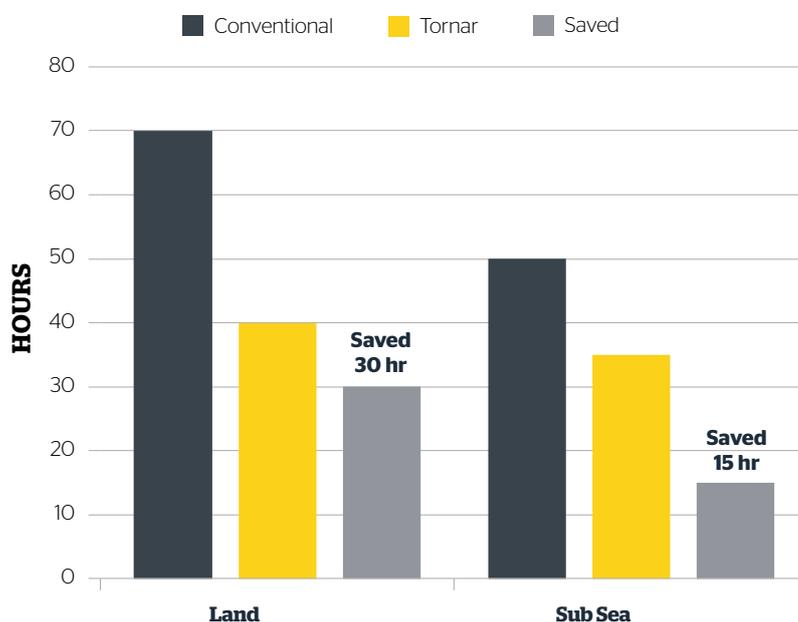
Archer’s Tornar[®] wellbore cleaning technology optimizes hole cleaning by saving time and costs. The Tornar[®] wellbore system rapidly and effectively cleans and displaces the wellbore, therefore reducing the number of clean-up runs without compromising a clean wellbore.

The name Tornar[®] is derived from the word Tornado and Archer. Like a vortex of a tornado, Tornar’s wellbore cleaning technology swiftly draws in and expels debris from the wellbore. Coincidentally Tornar[®] is also a Spanish word which means return to or give back, which is exactly what Tornar[®] technology does; it returns the wellbore to a pristine and clean condition.

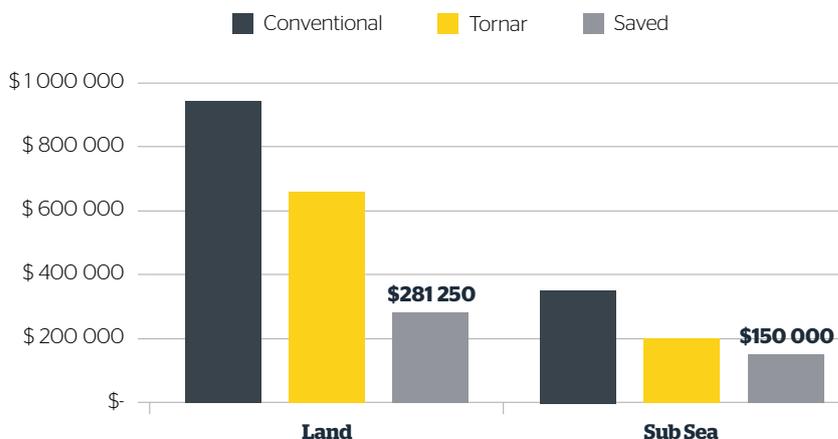
Result

Archer’s Tornar[®] wellbore cleaning technology can save a total of 30 hours’ rig time by optimizing and reducing numbers of clean-up runs. Result in a clean and solids-free wellbore for customers.

30 HOURS OF RIG TIME CAN BE SAVED ON EFFICIENT WELLBORE CLEANING



MORE THAN \$280 000 CAN BE SAVED ON EFFICIENT WELLBORE CLEANING



TORNAR[®]

Archer

What does the Tornar® solution focus on?

- » **Balanced Annular Velocity** is essential to avoid debris settlings when there is a change in liner or casing ID. Through the use of innovative circulation valve technology, all sections of the wellbore will have a high annular velocity simultaneously.
- » **Non-stop Displacement** is of the essence to enhance the chemical cleaning of a wellbore. Through the use of innovative circulation valve technology the wellbore can be displaced without stop in pumping. This saves time and optimizes the displacement process.
- » **High Rotation speed** is important to create a turbulent flow and transport debris into the flow regime in the vertical section of a well.

- » **High Annular Velocity** is important to transport debris out of the well. Each tool is designed to optimize and enhance annular velocity. The result is a constant superior annular velocity in all wellbore sections.

- » **Fluid Rheology** is equally important to create a viscous coupling with the drillpipe and suspend debris in the flow regime.

All these elements together make Tornar wellbore cleaning technology the best option for a Clean and Solids Free Wellbore.



Case study:

Archer's Tornar® Wellbore Cleaning Can Save a Potential of 60 Hours' Rig Time



Challenge

A national oil company in Middle East region wanted to reduce the number of clean-up runs on two wells prior to running expensive and sensitive completion strings. An average wellbore cleaning operation can take more than 70 hours to complete.

Running multiple clean-up runs to clean a wellbore is a time consuming and costly operation. Reducing the numbers of runs without compromising an effective hole cleaning job is the key to ensuring a successful completion installation and providing maximum well returns.

Solution

Archer's Tornar® wellbore cleaning technology optimizes hole cleaning by saving time and costs. The Tornar® wellbore system rapidly and effectively cleans and displaces the wellbore, therefore reducing the number of clean-up runs. The Tornar® solution encompasses balanced annular velocity; nonstop displacement; and maximum annular velocity.

Result

Archer's superior Tornar® wellbore cleaning technology proved a potential savings of 60 hours' rig time by giving a clean and solids-free wellbore for the customer.

Archer saved the customer 30 hours of rig time on each well. As a

result of effective wellbore cleaning, completions operations could continue without interference and zero hours' rig down time.

Case benefits

- Saved 60 hours.
- Balanced annular velocity.
- Superior wellbore debris removal.
- Easy operation.
- Enhanced chemical cleaning.

Typical Applications

- Applied during displacement in the pre-completion phase of the well.
- Perforation jobs.
- Drilling applications.
- Frac jobs.
- Milling jobs (whipstocks, packers, junk removal).
- Applied when debris needs to be removed from the well that could affect normal operations.

For more information, **contact your local Archer representative.**



Archer is a global oil services company with a heritage that stretches back over 40 years. With a strong focus on safety and delivering the highest quality products and services, Archer operates in 40 locations over 19 countries providing drilling services, well integrity & intervention, plug & abandonment and decommissioning to its upstream oil and gas clients. **We are Archer.**

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