

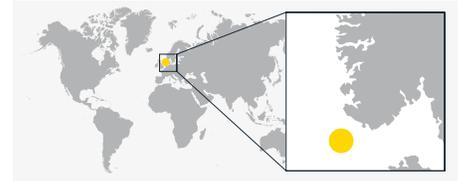


Case study: Tornar® BOP Cleaning

Archer performs a successful Tornar BOP Cleaning operation, removing debris from BOP after milling a window in 13 5/8” casing on a major operators well.

Challenge

The operator got stuck with their 12 1/4” BHA while drilling. After performing jarring operation it was decided to shoot off the BHA with wireline explosives and run a whipstock. Whipstock was set in 13 5/8” casing and window was milled. Due to debris accumulating in BOP it was decided to do a proper BOP Clean-up.



Region: North Sea
Customer: Major Operator
Field: Monan
Well type: Oil & Gas

Case benefits

The industry strives to minimize BOP downtime and recover debris from BOP and Riser. BOP downtime has become an issue especially in deep and ultra-deep water environments. Regular mandatory BOP pressure tests are being performed. Subsequent failures, often due to debris within the BOP, require pulling the marine riser, repair of BOP and rerunning the same. Such operations, depending on water depth, can take days or up to a couple of weeks.

Key capabilities

- Effective BOP and Riser cleaning
- Configuration to suit any BOP requirements
- Drill pipe connection
- One piece mandrel
- Non-rotating stabilizer and magnet
- Most powerful magnets in the industry
- Proprietary Tornar™ flow port technology

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Solution

The operator chose Archer's 17.45 inch Tornar® BOP cleaner, a solution that has been specifically designed and developed to remove debris from 18.75 inch subsea BOP stack safely, rapidly and reliably. Tornar technology combines Archer proprietary Tornar flow ports with a powerful industrial magnet to ensure the maximum extraction of harmful debris from the well. The Tornar flow ports positioned within the large body stabilizer create a high-rate drilling fluid cyclone, even at low pump rates. A proprietary riser cleaner is also available to maximize debris recovery for subsea applications. The differential pressure caused by the cyclone generates a powerful suction effect, which extracts any accumulated debris from the BOP and retains it in the drilling fluid – just like a vacuum cleaner. The powerful 17.45 inch industrial magnets incorporated within the cleaning string improve the overall efficiency of the system by ensuring the effective and complete retrieval of metallic debris from the BOP and its surrounding area.

Results

The Tornar BOP cleaner proved to be a highly effective solution for the task at hand, with a considerable amount of swarf recovered from the BOP. Subsequently the BOP test was completed successfully and safely. Had the BOP test been conducted without recovering such large volumes of debris from the well, it may have been unsuccessful or potentially resulted in permanent damage to the BOP. Based on the results from the operation the operator has approved Tornar technology as the primary BOP cleaning solution in order to minimize BOP downtime and maximize operational safety.



3-Stage Tornar® BOP Magnet



BOP Magnet

Typical applications

- After window milling
- After section milling
- Wellbore cleanout
- Prior to BOP testing
- BOP and marine Riser pulling

Additional Information

- Wash down at 1000gpm. Minimal returns at shakers, predominately clumps of fines composed of mostly mudstone with some swarf. Rare (total approx. 20 in total) 2-5cm blocky, dark grey mudstone cavings.
- Wash up with 1000gpm. Similar minimal amounts of returns. Similar composition as before. Rare (approx. 14 in total) 2-5cm blocky, dark grey mudstone cavings.
- Clean up (5 x up/down passes) with 1000gpm. Almost no returns at shakers. Traces of fines as before. Rare (approx. 16 in total) 2-5cm blocky, dark grey mudstone cavings.
- Successful use of Tornar as 14kgs of swarf was recovered that would have otherwise remained in BOP.

