

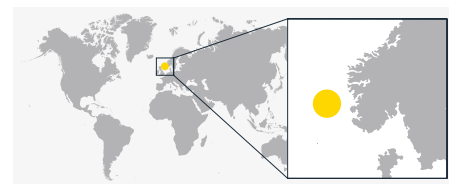


## Case study: Tornar® BOP Cleaner

# Tornar Sub Sea BOP cleaning eliminated BOP down time.

### Challenge

During drilling operations swarf and magnetic debris accumulated in the BOP cavities as fluids were circulated and returned to surface. Operating a BOP in such environments can cause damage to the seals, which in turn can lead to expensive repair operation, or in worst case, malfunctioning BOP in a well control situation. However, cleaning debris from BOP cavities by traditional methods has proven to be especially challenging as the associated technologies have not been optimized for the task. The magnets are too weak, or too small, or both, and the jet subs tend to push debris in to the cavities rather than washing it out. Because of swarf in the 18.75" subsea BOP stack and Riser on COSL Innovator and Promotor semi-submersible drilling rig, it's been mandatory to carry out BOP stack cleaning prior to BOP performance test. Owing to the increased demands of operating in a deep water environment it was imperative for COSL to find an effective and efficient solution to safeguard operations without elevating operating costs.



**Region:** North Sea

**Customer:** COSL

**Field:** Troll

**Rig:** COSL Innovator & COSL Promotor

**Well type:** Oil & Gas

### Case benefits

- Eliminated BOP downtime and maintenance
- Extended BOP operating performance
- Reduced safety and environmental operating risks

### Key capabilities

The Tornar™ BOP Cleaner string removes wellbore debris from blow-out preventer (BOP) cavities rapidly and reliably. Its combination of Tornar™ flow ports and large outside diameter (OD) create a powerful cyclone effect that clears potentially hazardous debris from ram and annular cavities – without damaging the BOP.

- 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 Tornar™ BOP cleaner proved to be the highly effective solution for the task, with a considerable amount of swarf recovered from the BOP stack. Over 100 kg of swarf was recovered from 1 job. Subsequently, the BOP test has been completed successfully and safely since beginning of 2013.

Designed to remove debris from the BOP rapidly and reliably, the Tornar™ BOP Cleaner string combines Tornar™ flow ports with a large OD to create a powerful cyclone of drilling fluid. When the cyclone passes any BOP cavity, the differential pressure engulfs any accumulated debris and retains it in the drilling fluid. Thus reducing problems that lead to equipment failures and downtime.

### Result

COSL have eliminated BOP downtime related to swarf. COSL Promotor and Innovator have 0 hours BOP downtime since they started using Tornar™ BOP Cleaning beginning of 2013. Use of Tornar™ BOP Cleaning eliminates the need of pulling BOP's in milling operations.

After the first time use, COSL stated, "We should have a fair amount of respect for BOP operation in a swarf environment; operation of a BOP in this environment will have relatively large economic consequences."

COSL have done video shoots to confirm that Annular and Rams are free from debris confirming that the Tornar™ performed excellent and eliminated the need of BOP maintenance.



**Tornar® Sub**



**17.45" BOP Magnet**

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