

BLAFRO HEAVE ARRESTOR®

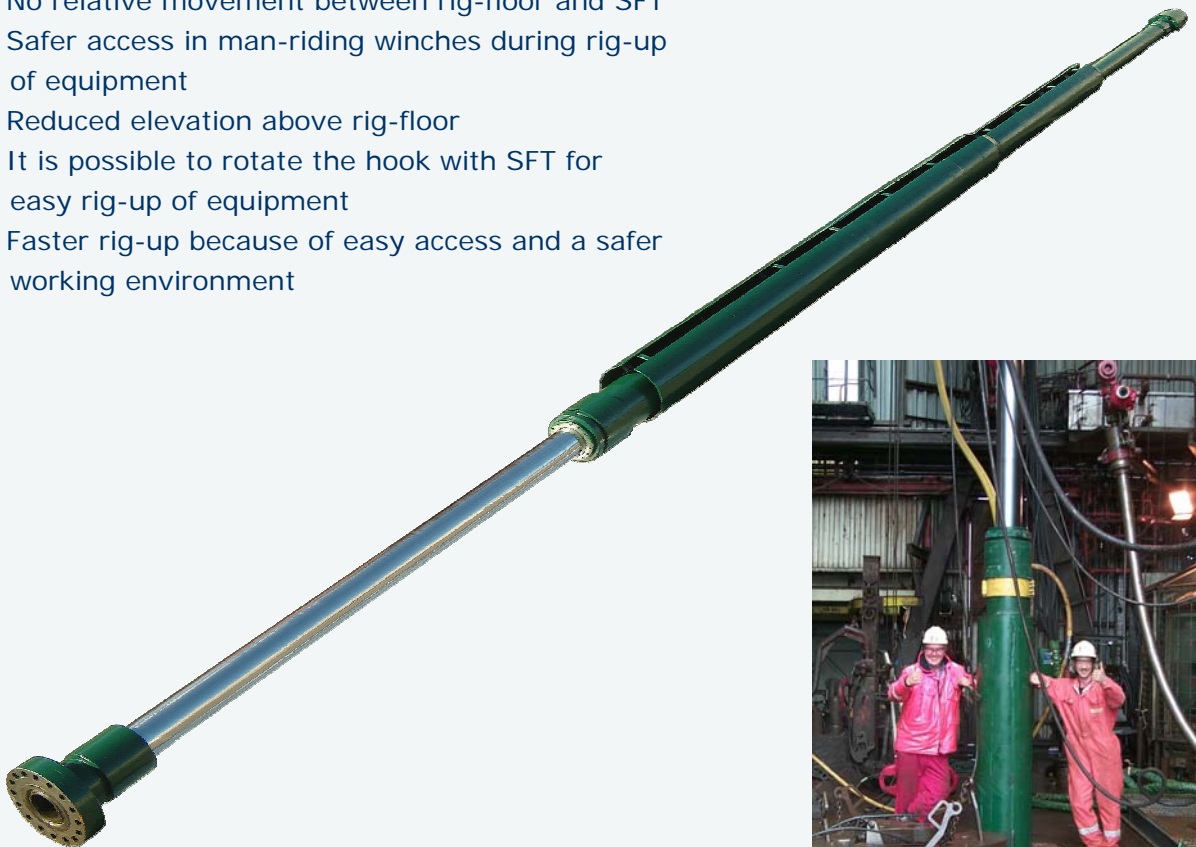
improves HSE during Wire-line and Coil-tubing Operations

Blafro Heave Arrestor (BFHA) is a telescopic pipe assembly which eliminates vertical heave motions of a Surface Flow Tree (SFT) on the drill floor on a floating drilling unit or a Work-over vessel. The BFHA is installed between the Work-over riser and the SFT in connection with wire-line and coil-tubing operations; see the principal sketch overleaf.

With BFHA installed, personnel will be able to work on the SFT during much larger platform heave motions than the 1,5 m recommended today. The basic idea with BFHA is to make wire-line and coil-tubing work safer than it is today, and at the same time, allow for 4 m platform heave motions. This will increase the weather window and save many days waiting-on-weather. This will represent a considerable saving to the Operator.

The HSE-aspects are summerized in the following bullet points:

- No relative movement between rig-floor and SFT
- Safer access in man-riding winches during rig-up of equipment
- Reduced elevation above rig-floor
- It is possible to rotate the hook with SFT for easy rig-up of equipment
- Faster rig-up because of easy access and a safer working environment



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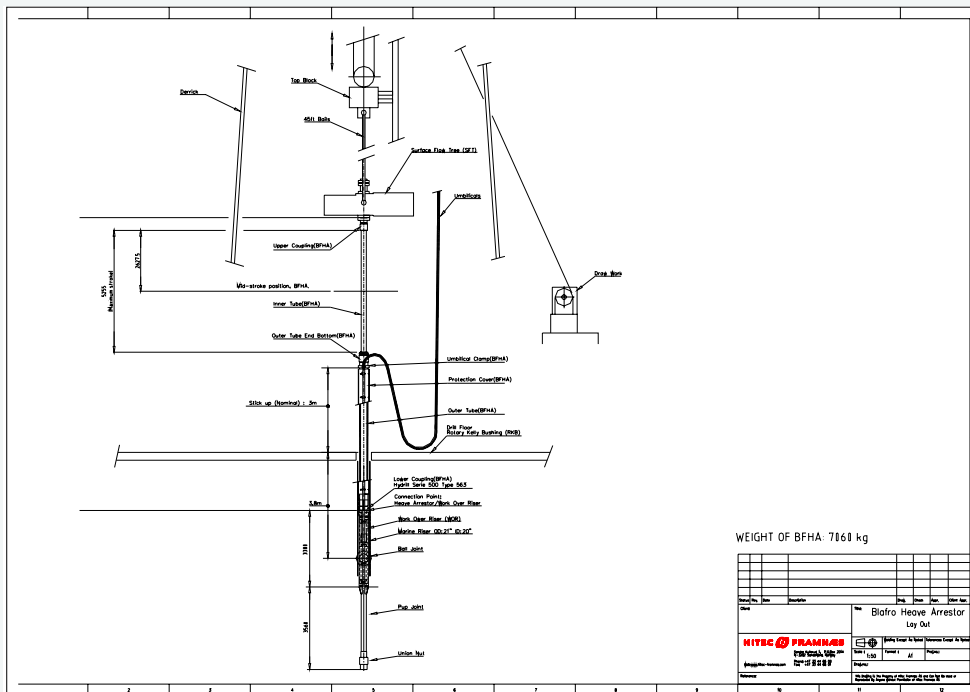
BFHA and SFT on pipedeck of Transocean Searcher, June 2003.

Blafro Heave Arrestor Principal Characteristics

- Design pressure: 600 BarG
- Test pressure 900 BarG
- Design load 460 tonnes
- Operational water depth 500 metres
- Operational weight 7,060 kgs
- Max. heave motions 4 metres
- Operational temperature -20 °C to +130 °C
- Design standard DNV OS-E101-Drilling Plant, ISO/DIS 13628-7
- Detail design and sales Hitec Framnæs AS, tel.: (+47) 33 44 66 00
- Fabrication Bauer Hydraulics AS, tel.: (+47) 52 70 77 70
- Prototype built month/year 10/2001

Hitec Framnæs AS is licensed to develop, market, fabricate and deliver the BFHA.

The tool is being patented by Blafro Tools AS, www.blafro.com.



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