

Case Study: JetString™ Sub with Bull Nose



Challenge

Workstrings Operations in Canada had a request from an Operator (Suncor) to develop an improved jet sub design for flexibility to run as part of the drill string or as a dedicated run with a bullnose. This 2-in-1 tool would help the operator improve the cleaning of downhole equipment such as the BOP cavity, Wellhead, Subsea Tree, etc. and be versatile to save trip time with the flexibility to run in the drill string.

Workstrings International's Solution

Workstrings developed a 2-in-1 **JetString™ Sub with Bull Nose** that can be run together as a conventional jet sub tool or in-line the drill string as a short trip. The **JetString™ Sub with Bull Nose** has adjustable nozzle ports that can be dressed open or closed to direct the desired flow and TFA (Total Flow Area). The sub was designed and verified with FEA (Finite Element Analysis) and an actual flow test. The design and test data considers the drill string in which the component will be used. The first design was with a 5 7/8" XT57 drill string, and was designed to meet a tensile capacity of 1,000,000 lbs. As calculated, the body shall feature a tensile capacity of 1,000,000 lb. The performance of the end connections was not taken into account for this design. The sub has a Max Working Pressure of 3500 psi.

The **JetString™ Sub** port configuration can be designed as required for the operator to provide improved coverage for jetting. The jet spacing can be designed for the specific operation. Drop-in nozzles can be used similar to what is used in a tri-cone bit therefore they are readily available, on the shelf, and easier to install and remove than screw in type nozzles. The nozzles come in various sizes, 8/32" to 28/32" and solid, allowing the operator to re-dress the tool on the rig and re-direct flow as needed in the tool.

One huge benefit while running the **JetString™ Sub** is that the nose port is a jet also that allows it to blank off and run in the drill string during short trips without having to run a closed TIW below a standard jet sub design. This flow restriction in the tool nose port allows the flowrate to be utilized through the side jets for the optimum jetting force.

The **Bull Nose Sub** also has a nose port that allows it to be dressed as needed to run open or closed ended compared to a standard bullnose sub with fixed open port. The Bull Nose Sub is covered with a urethane covering for ease of running in the hole and protection of downhole equipment.

Results

The operational advantages of this new design concept are as follows;

- Save's rig time by using one tool with adjustable jets allowing for operational efficiencies.
- Improves jetting/cleaning of BOP, Wellhead, and Subsea Tree cavities due to improved jet flow configuration providing better jetting coverage.
- Improves the BOP cleaning therefore post-jetting there is a reduction of surface maintenance times due to the cleanliness. This correlates to improved HSE due to less debris in the cavities that would need to be disposed of.
- Enhanced assembly for directional jetting, along with adjustability of nozzle size selection. Many standard jet subs designs have fixed ports with no adjustability.
- The readily available jet sizes reduce cost from special designed jets.

Testimonial

"During Suncor's TNEX campaign with the Transocean Barents, Workstrings was challenged to develop and provide an enhanced jetting assembly with directional jetting and flexibility in configuration. Workstrings delivered an inline & bullnose jet sub assembly for use on the project with very positive results. The flexibility of the jetting assembly to be configured as a bullnose or inline allowed for operational efficiencies (short tripping) to perform wellhead / Christmas tree jetting operations; saving rig time. The benefits of the directional jets were well noted; especially for BOP cleanliness post-jetting. The directional jetting of the jet sub resulted in a cleaner BOP which led to reduced on surface maintenance times and improved HSE.

After using Workstrings JetString™ & bullnose sub on the Suncor TNEX campaign and experiencing the benefits over a conventional bullnose sub, I would recommend and endorse its use."

Workstrings International

Workstrings International is the leading rental provider of high-quality, high-specification downhole tubulars and accessories in the world including drilling landing strings, completion landing strings, intervention risers, and specialty tubulars.

Workstrings operates globally in 40 locations and provides value-added engineering services and operational support while maintaining the industry's highest health, safety and environmental standards.

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<https://workstringsinternational.com/spec-sheets/index.asp>

Global Headquarters

Broussard, LA - USA

Phone: +1 337-989-9675

Email: info@workstrings.com

Engineering & Marketing

Houston, TX - USA

Phone: +1 281-999-0047

Email: marketing@workstrings.com

EMEA Corporate

Aberdeen - UK

Phone: +44 1224-724900

Email: sales.uk@workstrings.com

www.workstringsinternational.com