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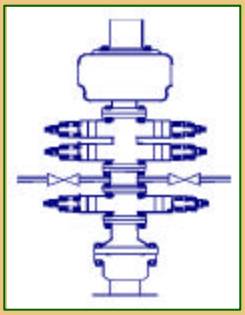
The Benefits of BOP Stack Cleaning

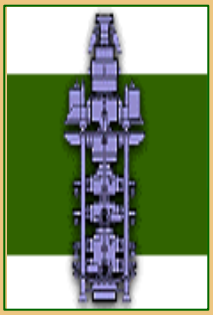
Before and After Alternative Methods

SUMMARY: What are the benefits of blow out preventer stack cleaning? From a stand-alone method to use in conjunction with other cleaning methods, like mechanical cleaning tools, high impact jetting tools provide the wellbore cleaning professional with options.

By David G. Hines and Glenn P. Ray



Surface BOP Stack



Sub Sea BOP Stack

Effective BOP Stack cleaning has been controversial because the typical conventional circulating method relies on chemical cleaning only. However, some Operators and Rig Site Supervisors believe that this method alone does not clean the stack completely.

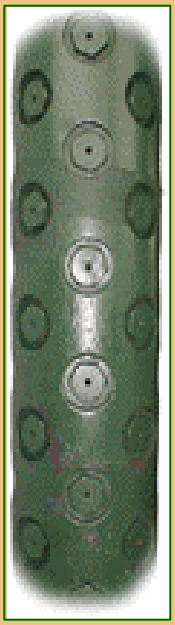
The BOP stack has several areas that are very hard to reach and require a combination of mechanical and chemical cleaning technology to remove undesirable solids and other debris from the interior of the stack, i.e., Annular Blowout Preventers and Ram Blowout Preventers. These "drilled and mud solids" can cause the BOP stack to malfunction if they are not removed. Improper working BOP stacks can lead to equipment failure resulting in flow at the surface, rig fires, underground blow outs and pressure kicks during drilling or workover operations.

Despite the controversy, mechanical jetting is one of the most effective cleaning methods recognized by the Manufacturers Quality Control.

The DSC Jetting Tool provides a high pressure, low cost means to perform cleaning operations on BOP Stack and well control equipment. The DSC Jetting Tool shown below provides a compact package for pressure cleaning BOP Stacks with water jetting action. Many Operators have turned to mechanical jetting as both the sole cleaning method and as a pre- and post-treatment with chemical washes.

As a high pressure washing method, mechanical jetting utilizes rig pump pressure and sixty-four (64) strategically placed one quarter inch (¼") jets.

While usually viewed as a good surface cleaning method, it also can act as a deep cleaning method, according to D. Jeff Harrison, VP of DSC's Wellbore Cleaning Division, Lafayette, Louisiana. "Jet washing will be your deepest form of cleaning," said Harrison, "Not only can you jet the stack very quickly, but you can deep clean it, as well."



DSC Jetting Tool

The **DSC Jetting Tool** has 64 strategically placed ¼ inch high impact nozzels.

The **DSC Jetting Tool** comes in several "near well bore" sizes.

It also uses pressure washing techniques for both gumbo mud removal and scale cleaning and is as simple as adding on to the bottom of the workstring. It's advantageous in its portability as compared to other methods and cleaning options.

It's also a benefit to Operators because little or no chemicals are needed for enhanced cleaning. Thus, it conserves chemical usage and creates less wastewater and frees up the BOP Stack quicker than removing the stack and breaking it down.

While it is a fairly simple method to use, there are several points to follow when it comes to jet cleaning. Harrison suggests the following:

- Run in the hole slowly.
- Rotate the workstring continuously.
- Pump at the maximum safe rate within pressure limitations.
- Jet riser, BOP's and wellhead area.
- Function the BOP's to clear the ram cavities.
- Circulate water continuously at the maximum safe rate down the choke, kill and booster lines to help remove released mud solids and debris.

According to Harrison, the fluid returns will probably turn nearly black with mud and debris. If it is an extremely dirty BOP Stack, it might be necessary to jet the BOP Stack again using a solution of DSC Gold Surf or Well Wash and water.

▪ *WATERJETTING APPLICATIONS*

Removal of mud solids is considered to be the largest, single potential application of water jetting. It involves a whole set of concerns which are driven by the Wellbore Cleaning Industry. In abstract terms, this process is called surface preparation or "creating the situation so the BOP Stack can function as expected." Good surface preparation is the key to the performance of the BOP mechanics. At least 50% of premature BOP Stack failures are traced back to "surface preparation" whether referring to hydraulic or air accuated. Well Control equipment manufacturers are very sensitive to the details of surface preparation. Cleaning with water or water-chemical enhanced systems produces a surface superior to any time consuming physical method alone.

- ***COMPONENTS OF SURFACE PREPARATION***

Even though the details differ for Sub Sea and Surface BOP Stacks there are three parallel components:

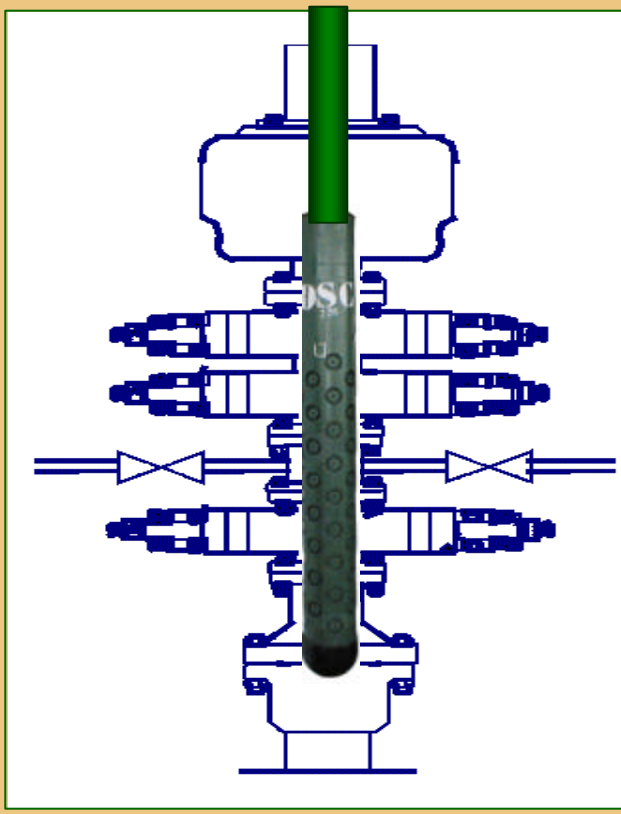
- Invisible Contaminants – is the pipe dope, thread compounds, oil, grease, chemical, salt or any resins from mud products.
- Visible Contaminants – how much rust, sand, gumbo clay, LCM products, mud cake and debris remains on the surface.
- Profile – is the 'profile' clean from all solids? Are the smaller crevices filled with crushed materials or have they been cleaned out?

- ***WRAPPING IT UP***

Water jetting of solids in the BOP Stack can offer Operators several advantages as a stand-alone method or as part of a cleaning regimen. It enhances the method of choice with quick removal time, better agitation or deep cleaning.

However, as with any method, education is important on how it works and how to operate it properly so no damage is done to any well control equipment.

"It is more the operator, a good water jetting tool and a good water jetting tech that will achieve impressive cleaning results," concludes Harrison. "However, when you try something new, you want to be sure that you understand how to go about BOP Stack cleaning because understanding the process will enhance your bottom line".



DSC JETTING TOOL in BOP Stack