

Running Procedure

Tool: Universal Jet Thruster (UJT)

UJT Patent Pending



Position in the BHA

For the purpose of this procedure the UJT is ran below the motor and above the bit.

Procedure Information

- Please keep in mind the motor is always turning and the fluid is always moving.
- During this procedure it is important to stay within all the BHA components operating values.

Mill out operation

The Universal Jet Thruster is in jet mode while running in the well bore. Once the BHA is approaching the first plug, run in the hole using the speed mentioned in the thru tubing company's procedure.

Monitoring: While milling the first plug, monitor differential on motor as you would normally do without the UJT.

Throughout this mill out the UJT will change between milling mode and jetting mode several times on its own. The UJT will shift to milling mode when the bit sees approximately 160 lbs of resistance and will then send the flow through the bit. When the resistance mills off, the UJT will switch back to jet mode and this will happen several times with each plug. Depending on the type of plugs it should only take 3-5 minutes to compromise. After the plug is compromised and begins moving down-hole the stump will travel down until it normally reaches sand or perforations. The difference here is the stump in being "vacuumed" to the bit instead of being "jetted" down-hole. Depending on the type of plugs, milling the stump should only take a few minutes as well. Once the stump has been milled up and you were able to run in hole the UJT will stay in jet mode.

Monitoring: When running in the hole between the plugs, monitor only the differential pressure on the motor. If there is a minimal differential or none, increase the run-in hole speed and keep pushing as there is no longer any plug debris in front of the bit. Continue to do this until you are at the maximum running speed allowed by the customer.

The difference of running in the hole with only the agitator versus the UJT, with an agitator is the UJT will force the stump of the plug to be dealt with immediately and there will be nothing in front of the mill other than residual frac sand until the next plug is reached. This means no pieces of plug debris.



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Running Procedure (*continued*)

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Procedure Information (*continued*)

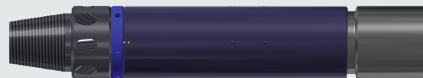
While running in the hole between plugs there is a powerful venturi action across the face of the bit that is created. This is drawing the debris and the sand past the face of the bit and making a low pressure below the bit to aid to run in the hole. When the next plug is reached there will be no plug debris remaining from the prior plug and each subsequent plug should mill as easily as the first. If there is a problem with hanging up, increase the pump rate to add jetting force through the UJT in order to gain greater agitation through the agitator. More rate = better pulling force. Only apply the added rate until the next plug is reached, then resume to normal milling rate. Continue doing this for all the plugs until TD is reached.

Pull out operation

After reaching the desired depth and being ready to pull out of the well bore, simply pull out of the hole at maximum speed allowed by the Coil Tubing company or the customer. Pulling out of the well bore with the UJT allows for significantly faster pull out times as a result of the turbulent flow created around the BHA, which does not allow debris to get stuck around the bit and will also leave the well bore completely clean. It's also recommended to pump all the way to the surface.

Note: At surface some spline "play" may be noted however this is a normal wear on the UJT.

If you have any questions or concerns please contact Dave Griffith with Thruster Energy Corp.
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