

WELL COMMISSIONER (WC)

Specialized Tools: Liner Top Test Tools

The WELL COMMISSIONER* tool from M-I SWACO is unique in that it is designed to allow inflow and negative tests to be carried out on a liner overlap and the liner shoe track on the same trip as the wellbore cleanup. It can also be used to perform an inflow or negative test on the liner top and liner shoe track at any time during the life of the well. Regardless of when the tool is run, it results in significant savings in rig time compared to other methods of performing an inflow test. Significant reduction in oil-contaminated seawater or brine volumes generated is also possible where OBM is in use.

Advantages

The WELL COMMISSIONER tool eliminates the need for a controlled displacement of the entire well to lower density fluid through the choke with the blowout preventers closed. It also eliminates a dedicated run with a retrievable packer to perform the test, saving significant rig time. Positive tests on the casing or liner can also be carried out. Significant reduction in waste volumes of contaminated fluids is also made.

Features

- One-piece mandrel
- Integral RAZOR BACK (scraper) lantern
- Integral liner-top dress mill
- Internal bypass under packoff element
- Standard tool rated to 5,000 psi (345 bar) differential up to 302°F (150°C)
- High-pressure tool rated to 7,000 psi (483 bar) differential up to 302°F (150°C)

How it works

The WELL COMMISSIONER tool is run on the drillstring, spaced out to land on the liner-top Polished-Bore Receptacle (PBR) when the cleanout string is at final depth. The integral RAZOR BACK* lantern cleans ahead of the packoff element and prepares the area in which the tool itself is to be set. The bypass under the element is open while running in hole and allows high-rate circulation without the need for fluids to go around the outside of the element (Figure 1).

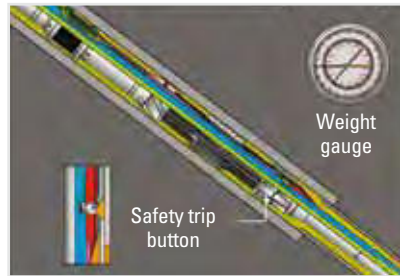


Figure 1. Pick up off the liner and begin circulating and conditioning the mud.

Advantages

- Saves rig time and improves effectiveness of cleanup
- Simple to operate
- Allows inflow/negative test on same trip as cleanup
- Allows drilling and milling with tool in string
- Reduces waste volumes



Operation

When the integral liner-top dress mill lands on the PBR, it can be used to dress off the PBR top if required. A tieback mill can be run below the tool to clean inside the PBR.

A low-density water- or oil-base fluid is then pumped into the upper portion of the drill pipe to reduce the hydrostatic pressure on the liner overlap and liner shoe track. While back pressure on the drill pipe is held, the tool is set down on the liner top, the packoff element is set and the bypass closed. Back pressure bleed-off is the inflow test performed by monitoring for an increased pressure in the drill pipe, indicating inflow (Figure 2). When the test is complete, repressurize to the previous back pressure, pick up to release the packoff element and open the bypass. The normal cleanup and displacement to completion fluid can now be conducted.

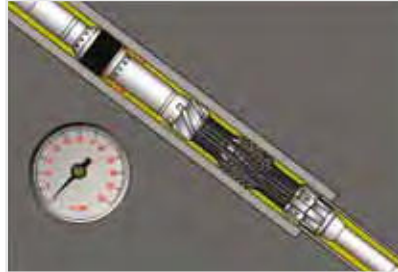


Figure 2. Slowly bleed down the work-string pressure to begin the inflow test.

The MULTI-FUNCTION CIRCULATING TOOL* (MFCT) can be run above the liner top to boost circulation rates.

Operating Parameters

If an MFCT unit is proposed in the same string as the WELL COMMISSIONER tool, M-I SWACO will perform a torque and drag analysis to verify the effective tension in the string at the liner top while tripping in hole at 150 ft/min (46 m/min) without rotation.

When a WELL COMMISSIONER tool is run in conjunction with an MFCT unit, at least 10,000 lb (4,536 kg) effective string weight (tension) should be available below the tool when it is at operating depth. If this is not the case, consideration should be given to increasing the shear rating on the MFCT unit or running a Clutch-Type, Heavy-Duty MFCT unit or adding drill-collar weight to the string below.

It is recommended that a tieback mill is run below the WELL COMMISSIONER tool to polish the inside of the tieback receptacle of the PBR. This reduces the risk of a cement sheath, or other debris buildup, preventing the tool from seating on top of the tieback receptacle or PBR. Maximum running-in-hole/pulling-out-of-hole speed is 150 ft/min (46 m/min). The required inflow test pressure can only be achieved, if the resulting loading on the liner hanger system is within operating guidelines.

Operating parameters

Tool (casing) size, in.	Maximum rotating speed in tension, rpm	Maximum rotating speed in compression, rpm	Maximum compression at tool when rotating, lb (kg)
7 – 8 $\frac{1}{8}$	100	60	5,000 (2,268)
9 $\frac{1}{8}$ – 10 $\frac{1}{4}$	120	90	10,000 (4,536)

These are general guidelines only and are subject to review, if required, for individual circumstances.