Schlumberger

# ACTive DFLO

## CT real-time flow measurement tool

### APPLICATIONS

- Fluid injection profiling
- Fluid placement control
- Leak detection
- Treatment effectiveness monitoring
- Diversion confirmation

### BENEFITS

- Enables accurate, efficient fluid placement by providing downhole flow monitoring data in real time
- Evaluates treatment effectiveness quickly, so adjustments can be made without delay
- Reduces operational time by enabling a wide range of CT services to be used in the same run

### FEATURES

- Real-time fluid direction detection and flow velocity measurement
- Robust design with:
  - high compressive load
  - no centralizers or arms
  - no spinners or protruding elements
  - resistance to $H_2S$, solvent, and acid
  - flow-through capability
  - ball-drop compatibility
- Modular design for different configurations
- Full compatibility with ACTive* real-time downhole coiled tubing services
- Accurate depth control with integral casing collar locator
- Optional gamma ray measurements
- Pressure and temperature sensors to monitor treatment
- Fast-rate telemetry
- Compatibility with distributed temperature sensing (DTS)

As part of the ACTive Q* CT real-time flow measurement service, the ACTive DFLO* CT real-time flow measurement tool provides downhole fluid velocity measurement and direction detection in real time while maintaining pumpthrough capability.

The measurements are conveyed to surface on CT with real-time fiber optic telemetry. Effective in a wide range of downhole environments, the ACTive DFLO tool provides additional feedback on the effectiveness of the intervention. In particular, the tool helps track the direction that the fluid takes due to the reservoir's response to the treatment. Intervention parameters such as pumping rates, injection depth, and fluid volumes can be adjusted with increased confidence, because they are based on the real-time downhole information provided by the ACTive DFLO tool and input into the Techlog* wellbore software platform.

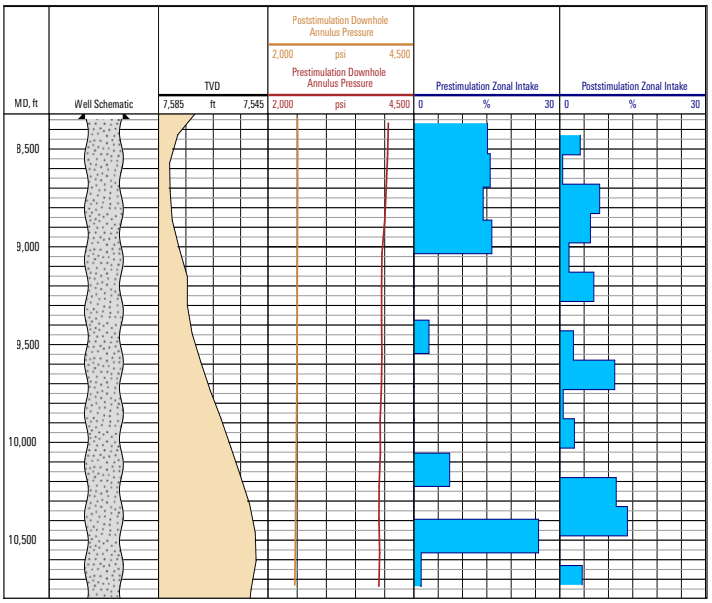
Combining ACTive DFLO tool readings with other ACTive services measurements—such as pressure, temperature, gamma ray, casing collar location, tension compression, or DTS—enhances the effectiveness of real-time CT services. The combined monitoring of those critical downhole and distributed parameters improves the understanding of the treatment as it progresses, and in turn, increases the effectiveness of ACTive services.

As an alternative to complex interventions that include production logging tools for simple postjob evaluation profiles, or profiling before and after a specific treatment, the ACTive DFLO tool can also profile flows across a producing or injecting interval to better inform decisions on treatment options.


*ACTive DFLO tool.*

# ACTive DFLO

| ACTive DFLO Tool Specifications | |
|---|---|
| **Equipment Specifications** | |
| OD, in [cm] | 2.125 [5.4] |
| Makeup length, in [cm] | 161.94 [411.3] |
| Total weight, lbm [kg] | 115 [52.2] |
| Flow path diameter, in [cm] | 1 1/16 [1.75] |
| Max. ball drop size, in [cm] | 7/16 [1.1] |
| **Operational Specifications** | |
| Operating temperature, degF [degC] | 300 [149] |
| Pressure rating, psi [MPa] | 12,000 [82.7] (at max. tensile rating) |
| Tensile strength, lbf | 45,000 (at max. pressure rating) |
| Max. torque, ft.lbf | 800 |
| Max. internal flow rate, bbl/min | 2 |
| Fluid compatibility | All common treating fluids including acid; $H_2S$ compatible |
| Max. proppant concentration, ppa | 1 |
| **Measurement Specifications** | |
| Fluid type | Single-phase fluids |
| Velocity measurement range, ft/min [m/s] | 2 to 1,500 [0.01 to 7.62] |
| Velocity measurement accuracy | 5% |




*Comparison of pre- and poststimulation injection profiling along the openhole horizontal section. The acid stimulation targeted the middle section and resulted in a more uniform water injection distribution along the open hole. Surface injection pressure was reduced from 1,000 to 0 psi.*

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