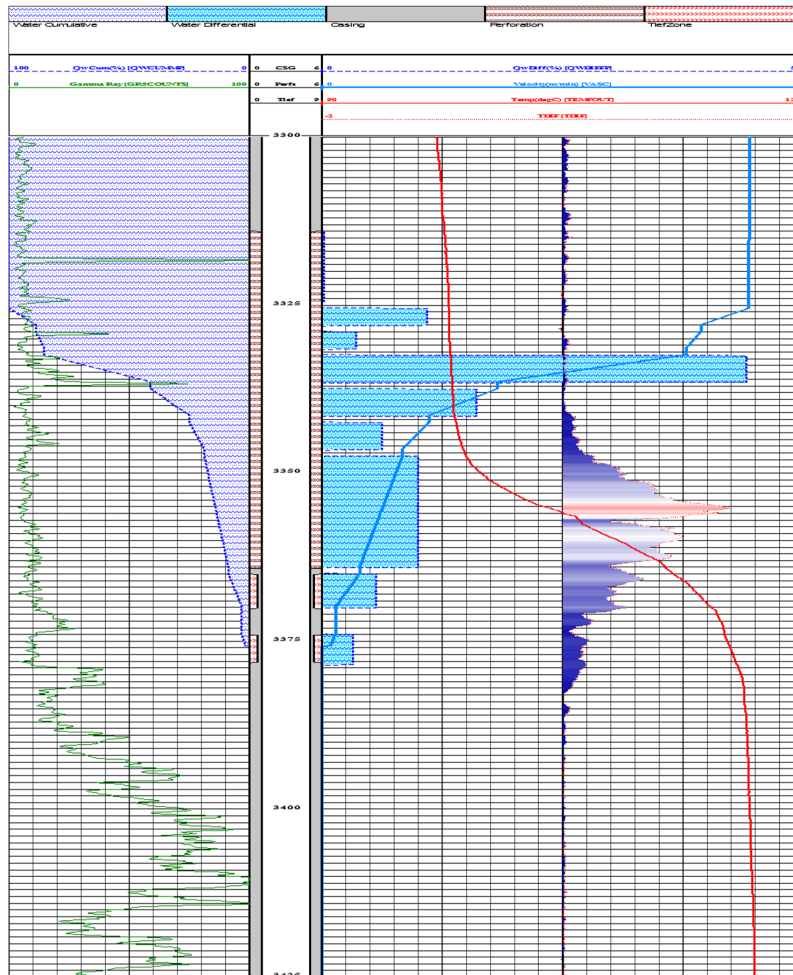


ACTIVATION FLOW TOOL

AFT™

Oxygen Activation Tool Borehole Water Velocity Measurement



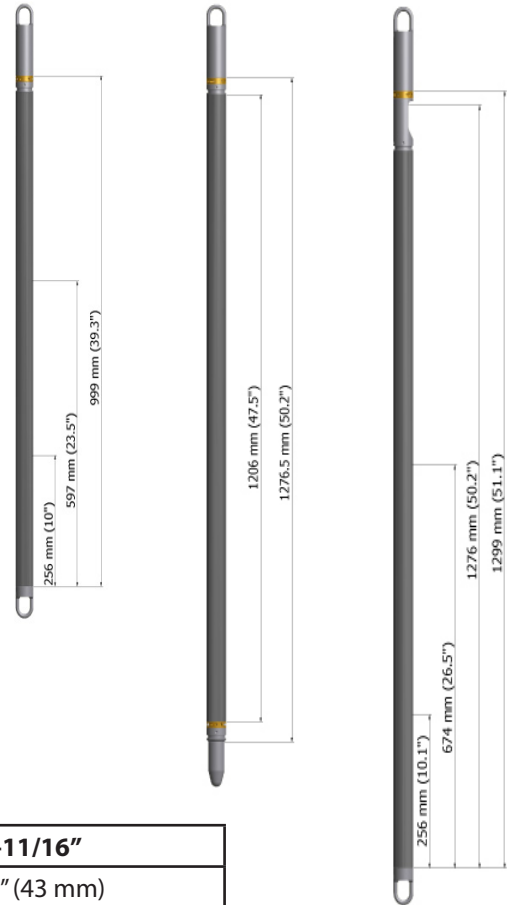
The Activation Flow Tool (AFT) records the velocity and direction of water or carbon dioxide in and around the borehole through the use of oxygen activation. With a known borehole geometry, flow volume can be easily calculated. The AFT has four gamma ray detectors that can be strategically placed in the string depending on the expected flow rates. The measurement is sensitive enough to detect flow rates as slow as 2 ft/min in either the up or down direction. The AFT tool is particularly useful in horizontal applications, channel detection and perforation profiling.

ACTIVATION FLOW TOOL

AFT™

Physical Principles

- 14 MeV neutrons -oxygen is transmuted to N16, decays with 7.3 second half life
- High-energy beta and gamma radiation
- Gamma rays -6.065 MeV, 6.13 MeV, 6.93 MeV, 7.13MeV
- Higher count rates in period of approximately 5-7 half-life times
- Oil or gas (single phase) - no oxygen content but some Carbon Hydrogen groups Gamma energies above 3 MeV but below 6 MeV
- Single phase water flow -3 MeV to 8 MeV GR detectors
- GR detectors -3 MeV to 6 MeV, and 6 MeV to 8 MeV distinguish water from Carbon Hydrogen groups
- Estimation water flow from Carbon Hydrogen flow-water hold up



Tool Specifications

	1-3/8"	1-11/16"
Diameter	1.37" (35 mm)	1.68" (43 mm)
Length	166.0" (421.6mm)	137.95" (350.4 mm)
Weight	52.91lb (24 kg)	
Pressure Rating	15,000psi (103MPa)	
Temperature Rating	300°F(150°C)	
Power	170 Vdc / 120 mA 260 mA when generator triggered	
Logging Speed	Stationary AFT 30 ft/min GR-CCL-Temp	
Output Signal	Digital Communication compatible with Warrior Logging System	

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