



Compact™ Memory Logging (CML)

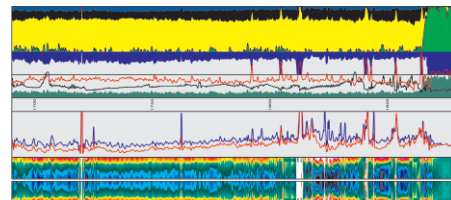
Weatherford's CML service provides wireline-quality open-hole logs without the wireline. Small-diameter (2 1/4-in.) Compact tools are conveyed on or inside drillpipe, by slickline, or on wireless coiled tubing. CML provides fast and efficient logging in highly deviated or horizontal wells and in vertical wells with bad hole conditions.

CML service provides the following measurements:

- Array Induction
- Photodensity
- Neutron porosity
- Compensated sonic
- Cement bond log
- High-resolution shallow resistivity
- Dual laterolog
- Microlog/MicroLaterolog*
- Twin-arm caliper
- Gamma ray/CBL
- Hydraulic tension/compression
- High-resolution temperature
- Ultrasonic gas detector

The tool string is powered by battery pack, and data are stored in nonvolatile downhole memory. Log values are recorded every half second and converted to depth logs when the string is recovered at the surface.

* Not currently available in applications requiring conveyance in drillpipe



Analysis of porosity, saturation, and permeability variations along a horizontal re-entry.



Memory modules contain 32 MB (expandable to 128 MB) of nonvolatile memory, or enough for 18 hours of triple-combo data.

Highlights of CML Service and Associated Tools

- With or without wireline
- Proven reliability from latest aerospace technology
- Standard crew complement of two
- Exceptional 100°/100 ft dogleg capability in 5 3/4-in. wells
- 2 1/4-in. tool OD passes through 2 1/2-in. restriction
- 20-hr triple combo logging with standard battery pack
- Rated at 125°C and 12.5 kpsi



Compact™ Memory Logging (CML)

Applications

- High-angle, highly deviated, extended-reach, and horizontal wells
- Vertical wells with borehole instability, restrictions, other adverse conditions
- Wells that are typically not logged because of technical or cost considerations

Features, Advantages and Benefits

- CML data match conventional wireline logs in quality and range of measurements to provide more cost-efficient performance in wells where real-time formation evaluation data are not required.
- Conveyance of small-diameter CML tools via drillpipe, slickline, or wireless coiled tubing is faster and more efficient than logging with wireline, saving hours or even days of valuable rig time while reducing risk exposure.
- Flexible conveyance methods and the small 2 1/4-in. diameter of *Compact* tools ensure more trouble-free logging in deviated, extended-reach, and problematic vertical wells.
 - The risk of tool failure, stuck tools, and damage to the tool string is reduced.
 - CML tools are subjected to wellbore conditions for shorter periods of time than logging-while-drilling (LWD) tool strings, reducing risk exposure.
- The reliability of tools used in CML service is proven in thousands of wells—from shallow vertical to complex horizontal—around the world.

