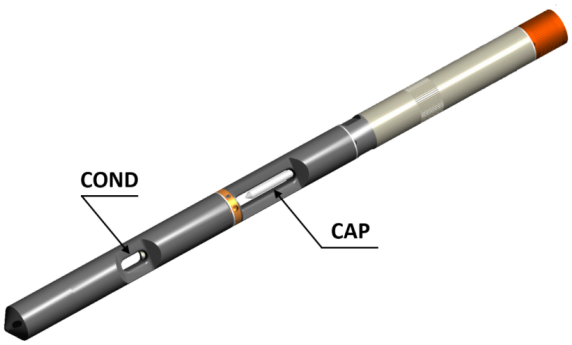
CAP (Capacitance Logging Tool)

Deployment	Borehole
Log Name	CAP
Math Symbol	Y_f
Measured Property	Fluid electrical capacitance
Sensor Type	Capacitor
Units	
SI	dimensionless
Oil Metric	dimensionless
Oil Field	dimensionless

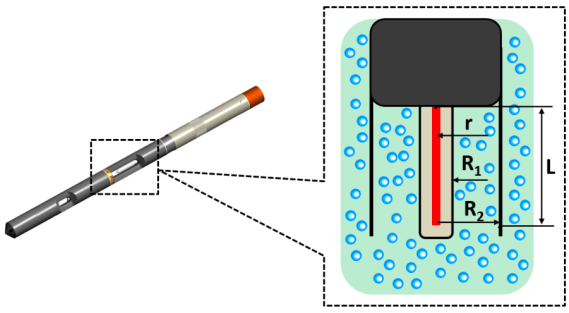


Applications

- Assessing borehole multiphase flow components

Sample Logs

Tool Schematic



Mathematical Model

$$Y_f = F_{\text{cap}}\left(\frac{Y_w s_w + Y_o s_o + Y_g s_g}{\mathring{Y}_w}\right)$$

where

$\{s_w,\ s_o,\ s_g\}$ – volumetric fractions of water, oil and gas phase ($s_w + s_o + s_g = 1$),

$\{Y_w,\ Y_o,\ Y_g\}$ – are reference values for capacitance of water, oil and gas at given temperature and pressure,

$\mathring{Y}_w$ fresh water capacitance at NTP,

F_{cap} – non-near function specific to each tool.

The typical values are:

Y_{gas}	7
Y_{oil}	15 – 30
Y_{water}	100