

Dielectric

Application

The dielectric tool measures the capacitance of the fluid that passes between the probe and the body of the tool. This measurement is used to help determine water percentage and to locate first water entry. It is commonly referred to as fluid capacitance, water hold-up, or water cut.

The dielectric tool is used to do the following:

- Determine water entry points: with the dielectric tool, there is a big change in the frequency readings between water and air. It is easy to identify the water entry point.
- Identify static fluid interfaces: in an observation well (with no flow), the dielectric tool can be used to record where the different well contents, such as water, oil, solvents, and gas are located. The measurements can be used over a period of time to indicate how the fluids are shifting in level.
- Supplement the interpretation of multi-purpose flow regimes during production logging.

The dielectric probe is generally superior to the nuclear or gradiomanometer density log in distinguishing oil from water. This is a result of the high dielectric contrast that exists between water (approximately 80) and oil (range from 2 to 6). Use of the dielectric tool, however, is restricted to flow conditions where hydrocarbon is the continuous phase, which typically requires a water cut of less than 30 to 40 percent.

The tool is useful when oil is the main phase and the water cut does not exceed 30 percent. The contents in some sour wells will result in inaccurate readings.

Features

- Measures fluid capacitance (also known as “water hold-up” or “water cut”) between probe and tool body
- Measurement determines water percentage

Benefits

The Dielectric tool is superior in distinguishing oil from water and is



Dielectric

very easily maintained.

Dielectric	
Type	Part No.
Standard Service	AM006WA0001
H2S Service	AM006WB0001

Spare Parts	
Type	Part No.
Seal Kit	AM006RK0001

Specifications	
	Details
OD	1.375 in (3.5 cm)
Length	26.8 in (68 cm)
Weight	6.6 lb (3 kg)
Resolution	0.1 Epsilon = dielectric Constant = 1 in air
Accuracy	2%
Dielectric Constant Readings	1 to 80
Connector Type	15 pin
Output	12 volt (pin #6)
Temperature Rating	350°F (177°C)
Pressure Rating	15,000 psi (103.5 MPa)
18V Power Requirement (Memory String)	5 mA
100V Power Requirement (Telemetry String)	3 mA