

DeepLook-EM

APPLICATIONS

- Fluid front monitoring
- Bypassed pay identification
- Reservoir simulation optimization
- Enhanced reservoir characterization
- Drilling optimization

The DeepLook-EM* crosswell electromagnetic (EM) system directly measures formation resistivity between wells to produce a reservoir-scale resistivity image. The two wells in which the DeepLook-EM transmitter and receiver tools are run can be separated by up to 1,000 m [3,280 ft], depending on the constraints of the well environments, formations, and resistivity contrasts. A Global Positioning System is used for synchronized communication of the tools, which are deployed on standard wireline equipment.

Generating a magnetic moment more than 100,000 times that of standard induction tools, the DeepLook-EM transmitter tool induces electrical currents to flow in the formation. The currents induce a secondary magnetic field that is detected by the four-coil array of the receiver tool. The data are inverted for formation resistivity using a baseline model constructed with Petrel* seismic-to-simulation software.



Deployed on standard wireline equipment, the transmitter and receiver tools of the DeepLook-EM crosswell electromagnetic system directly measure the interwell resistivity.



DeepLook-EM transmitter (left) and receiver (right) tools.

DeepLook-EM

DeepLook-EM Interwell Distances

Transmitter Well	Receiver Well	Well spacing, ft [m]
Open hole	Open hole	3,280 [1,000]
Open hole	Steel casing	1,476 [450]
Open hole	Chromium casing	1,640 [500]
Chromium casing	Chromium casing	1,148 [350]

Specifications

	DeepLook-EM Transmitter	DeepLook-EM Receiver
Temperature rating, degC [degF]	150 [302]	150 [302]
Pressure rating, MPa [psi]	138 [20,000]	103 [15,000]
Well size—min., cm [in]		
Open hole	11.5 [4.5]	6.5 [2.5]
Cased hole	11.5 [4.5]	6.5 [2.5]
Well size—max., cm [in]		
Open hole	No limit	No limit
Cased hole	35 [13.75]	No limit
Outside diameter, cm [in]	8.5 [3.375]	5.5 [2.125]
Length, m [ft]	9.88 [32.4]	Four receivers: 22.5 [73.8]
Mud type or weight limitations	No fluid restrictions	No fluid restrictions
Well deviation	0°–20°	0°–20°
Frequency range, Hz	5–1,000	5–1,000

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