

Logging-While-Coring Resistivity-at-Bit System

Description

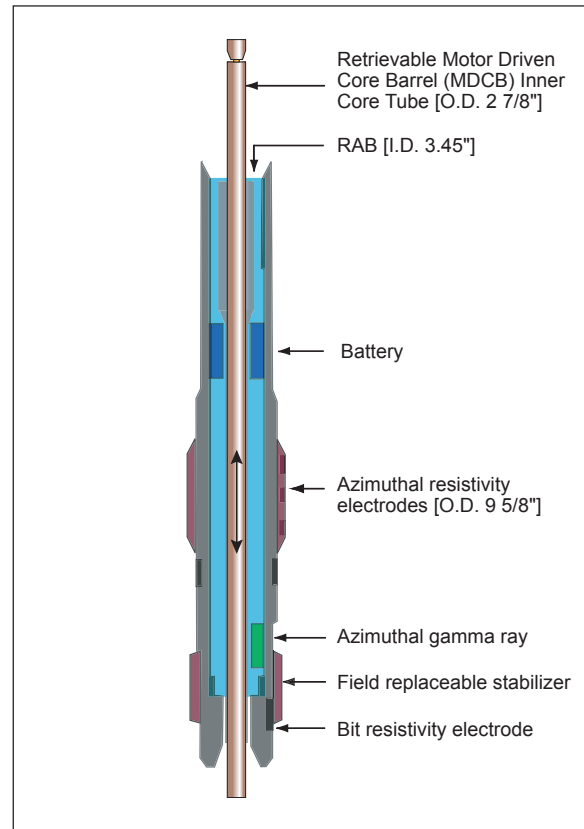
The Logging-While-Coring (LWC) system, developed jointly by the Borehole Research Group, Schlumberger Drilling and Measurements, and Texas A&M University, takes advantage of existing logging, drilling and coring technologies and synthesizes them into a powerful new exploration system. Recent improvements in battery technology have enabled the reformatting of the electronics in an 8-inch Schlumberger Resistivity-at-Bit (RAB) tool. By placing smaller batteries in the drill collar wall and fabricating a new resistivity button sleeve, an existing ODP core barrel can pass through the RAB to carry out coring operations while making azimuthal geophysical measurements. The coring tool technology consists of the Motor Driven Core Barrel (MDCB) system developed by Texas A&M, which needed only minor modifications and the fabrication of crossovers and drilling subs. The assembled system was successfully tested at the Genesis test facility in Sugarland, Texas, then successfully deployed at sea to acquire resistivity images and ocean bottom sediment cores at Hole 1249B on Leg 204.

Applications

- ◆ Core-log data integration capability
- ◆ Assessment of borehole breakouts for local and regional stress analyses
- ◆ Detection of formation heterogeneity using azimuthal resistivity images
- ◆ Lithological characterization



Assembly of the RAB Coring Tool aboard the *JOIDES Resolution*.



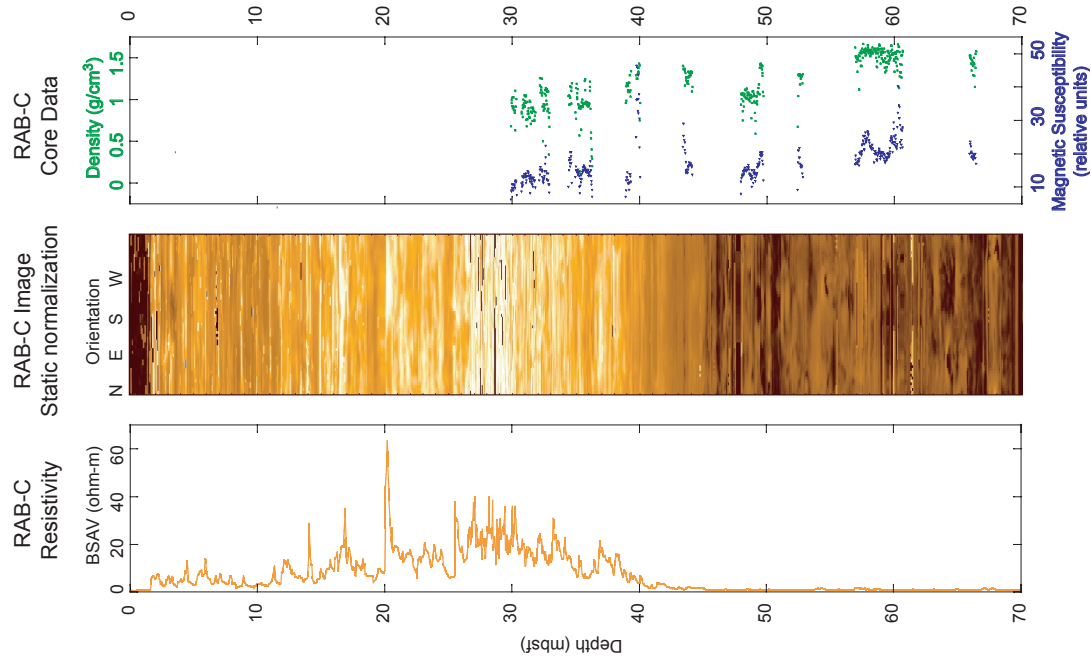
Schematic representation of the RAB Coring Tool (RAB-C).

Specifications

Core size:	2.345 in. w/ liner 2.562 in. w/o liner
Core length:	30 ft (9.144 m)
Core barrel:	Must use MDCB inner core tube
Bit requirement:	RCB 9.875 in. Tri-Core Bit
Max. inside diameter of RAB:	3.45 in.
Max. tool outside diameter:	9.5 in.
Tool body outside diameter:	8.25 in.
Stabilizer:	Use slick 9.5 in. stabilizer
Recommended rate of penetration:	50 m/hr
Battery life:	~ 60 hr
Combinability:	Not combinable with other LWD/MWD tools
Maximum temperature:	150° C
Maximum pressure:	15,000 psi
Minimum vertical resolution:	2 in.



Assembly of the RAB Coring Tool during an early test in Texas.



Resistivity image and average resistivity data from the RAB coring tool plotted with physical properties data from cores collected with the resistivity-while-coring system.