

# LOGIQ® Array Compensated Resistivity Tool (ACRt™) System

## Fast, Accurate, State-of-the-Art Array Induction

Halliburton's LOGIQ® Array Compensated Resistivity Tool (ACRt™) logging system combines a new asymmetrical array sonde geometry with novel architecture and processing to produce the shortest array induction type tool in the industry without compromising dynamic range and accuracy.

The tool incorporates a transmitter that operates at three frequencies simultaneously with six sub arrays of antennas strategically spaced from six to 80 inches from the transmitter. Unlike other array induction tools, the receiver arrays are asymmetrical which makes for a much shorter tool when compared with standard symmetrical arrays common in the industry.

From the operation at multiple frequencies, accurate correction of skin effect can be applied to the measured conductivity data.

The information obtained by the six receivers is used in conjunction with a direct measurement of mud resistivity and caliper, to automatically, and in real time, correct the measured conductivity by borehole effects. This information is then combined by a focusing algorithm to produce five radial resistivity curves with different depths of investigation (10, 20, 30, 60, and 90 inches).

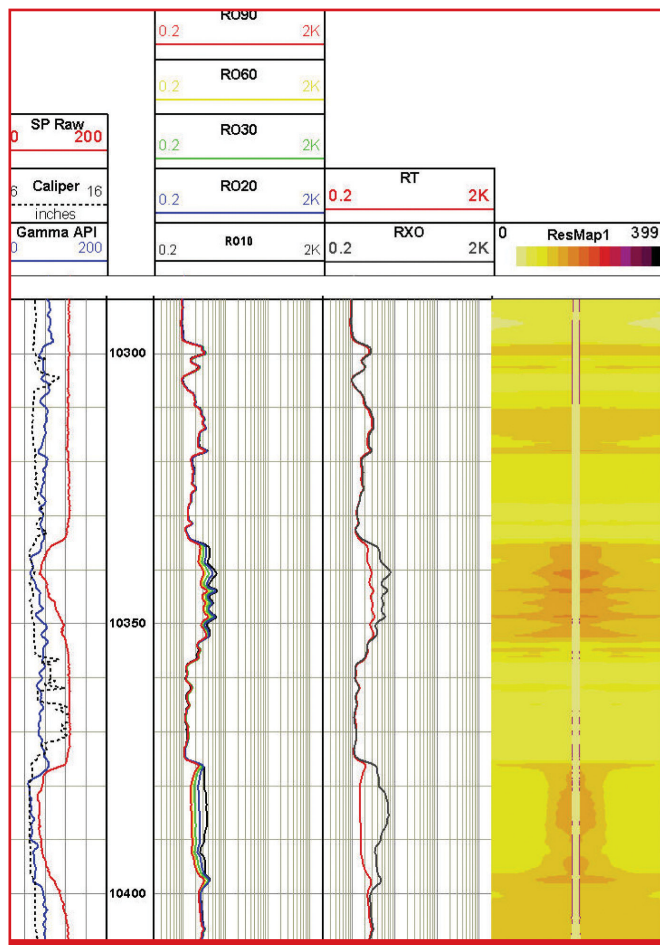
The software focusing algorithm can also produce the five radial resistivity curves with different vertical resolution (1, 2 and 4 feet). These curves are used for thin bed analysis and correlation and comparison with other logs.

The radial resistivity curves can be used to find  $R_t$ ,  $R_{xo}$ , and the diameter(s) of a linear invasion profile,  $D_1$ ,  $D_2$  or they can be used to create a resistivity invasion image that helps clarify the invasion processes in the formation.

Other unique features of the LOGIQ ACRt tool is the fact that the tool is temperature characterized and has two thermometers in the sonde to correct in real time any temperature effects that occur, especially in the short arrays.

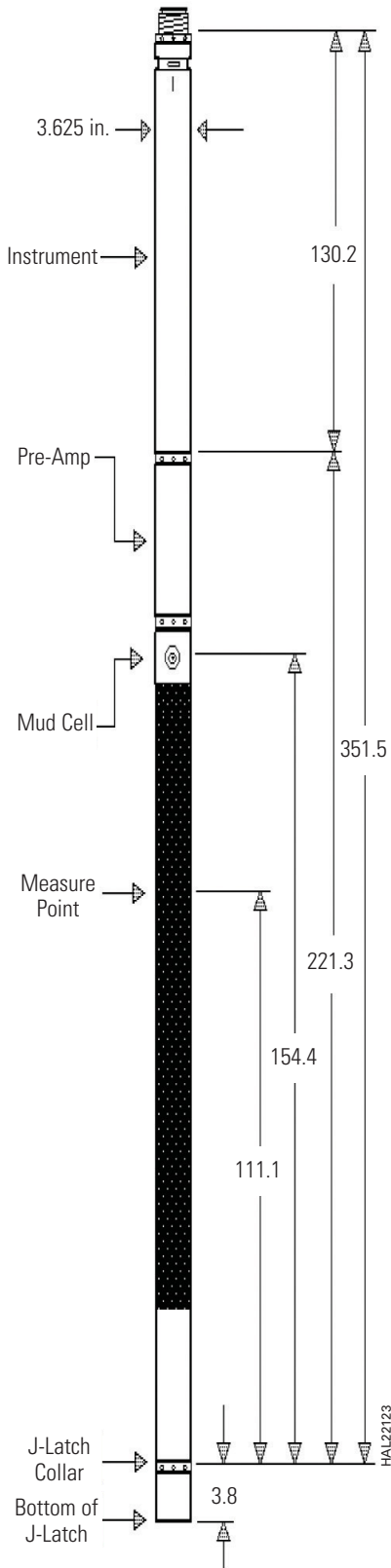
### Features and Benefits

- Comprehensive, multi-frequency data acquisition at multiple spacings for accurate invasion profiling
- Real time  $R_t$ - $R_{xo}$ - $D_i$  log data processed via 2D software focusing



LOGIQ® ACRt™ log data is processed via 2D software focusing, with radial resistivity curves computed in real time at focal depths of 10, 20, 30, 60 and 90 inches.

- Integrated mud resistivity cell and proprietary thermal correction scheme for accurate, real time corrections of borehole and thermal effects
- Accurate, shallow induction measurements for reliable  $R_{xo}$  without the need for washout-sensitive pad-type micro-resistivity sensors
- Absent mechanical caliper data, borehole corrections can be driven by electrical caliper derived from short-spaced induction data



### LOGIQ® ACRt™ System Specifications

Maximum Logging speed	6,000 ft/hr	1,830 m/hr
Operating Temperature Rating	350°F	177°C
Operating Pressure Rating	20,000 psi	1,400 bar
Minimum Borehole Diameter	4.75 in	121 mm
Maximum Borehole Diameter	12.25 in	311 mm
Length	19.5 ft	5.9 m
Weight	308 lbs	140 kg