



## *Simultaneous Triple Induction (STI) Tool*

The STI tool provides accurate resistivity measurement with high resolution—vital for determining true formation resistivity ( $R_t$ ) and characterizing invasion, two essential parameters of formation evaluation.

The STI tool is the first commercially available induction logging device for making simultaneous 10, 20 and 40 kHz deep and medium resistivity measurements.

Developed as an improved version of the industry-standard 6FF40 induction tool, the STI tool features phase shift compensated, dual-spaced measurements at three simultaneous operating frequencies. The STI tool has improved measurement accuracy and enhanced vertical resolution versus standard induction tools.

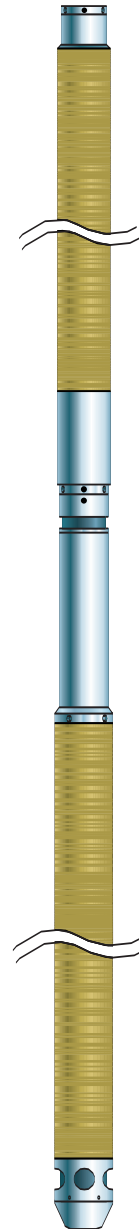
Additionally, both the STI tool's in-phase ("R") and phase quadrature ("X") components of each induction signal are resolved. These innovations increase reliability of induction measurements with better resolution of thin beds. Post-processing of STI data with MFE-25 dynamic resolution enhancement matches all readings to 30 in. (76 cm) vertical resolution.

To compliment the deep and medium induction resistivity measurements, a spherically focused laterolog (SFL) is included in the tool design. This provides valuable shallow resistivity determination, as well as enabling invasion profiling.

The STI tool can be combined with a variety of other services.

### *Features, Advantages and Benefits*

- Determines true formation resistivity ( $R_t$ )
- Provides input for water saturation computation
- Quantitatively evaluates invasion
- Defines bed boundaries
- Provides correlations





# Simultaneous Triple Induction (STI) Tool

## Specifications

### Tool Dimensions

Tool weight .....390 lb (177 kg)  
 Tool length without standoff .....28.7 ft (8.8 m)  
 Tool length with standoff .....29.4 ft (9.0 m)  
 Diameter .....4 in. (102 mm)

### Induction section

Operating frequency .....simultaneous 10, 20, and 40 kHz  
 Outputs .....R and X components, transmitter current  
 Inputs .....frequency select, tool cal, transmitter drive  
 Measurement range .....0.5–10,000 ms/m  
 R-Channel accuracy .....5% of reading; ± 1 ms/m  
 X-Channel accuracy .....5% of reading; ± 20 ms/m

### Full vertical resolution

Deep signal (ILd) .....96 in. (244 cm)  
 Medium signal (ILm) .....72 in. (183 cm)

### Enhanced vertical resolution

ILd and ILm .....30 in. (76 cm)

### Median radial depth of investigation @ Geometric Factor Limit

Deep signal (ILd) .....61 in. (155 cm)  
 Medium signal (ILm) .....32 in. (81 cm)  
 Median radial depth of investigation @ 10,000 mS/m  
 Deep signal (ILd) .....48 in. (122 cm)  
 Medium signal (ILm) .....26 in. (66 cm)

### Spherically focused resistivity section

Electrode system .....Integrated into mandrel  
 Outputs .....V0 and I0  
 Inputs .....cal, zero, return select  
 Measurement range .....0.2–2000 ohm-m  
 Accuracy .....5% of reading  
 Full vertical resolution .....30 in. (76 cm)

### Median radial depth of investigation

@ Geometric factor limit  
 @ 10,000 mS/m .....16 in. (41 cm)

### Maximum ratings

Pressure .....20,000 psi (138 MPa)  
 Temperature .....350°F (177°C)

