High Resolution Temperature/ Acceleration/Pressure Tool
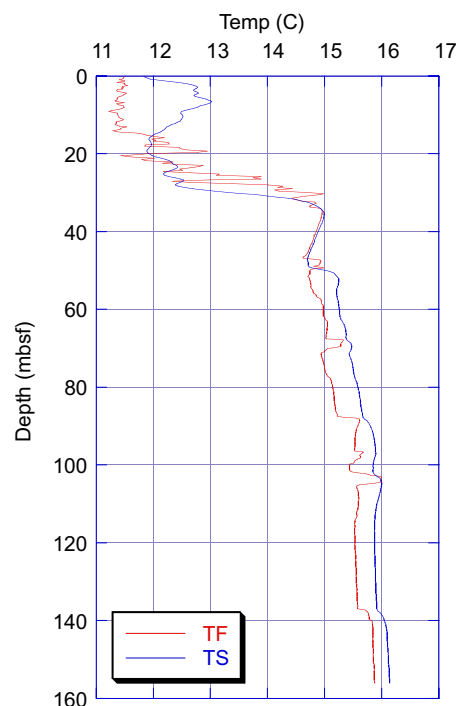
Description

The High Resolution Temperature/Acceleration/Pressure (TAP) tool acquires borehole temperature, tool acceleration and hydrostatic pressure data. It can be run in one of two modes: memory mode, where the tool is fastened to the bottom of a tool string and data are stored in the onboard memory; or telemetry mode, where the tool is run alone and data are recorded in real time by the third-party data acquisition system. Fast and slow response thermistors detect borehole fluid temperatures at two different rates. The thinner, fast-response thermistor detects small abrupt changes in temperature, while the thicker, slow-response thermistor estimates the temperature gradient and thermal regimes more accurately. A 3-axis accelerometer is also included to measure tool movement downhole; these data have been instrumental in analyzing the effects of heave on a deployed tool string, which enables fine tuning of the Wireline Heave Compensator.

Applications

♦ Heat flow measurement
♦ Detection of fluid movement
♦ Fracture identification
♦ Ship heave characterization

The TAP tool is a 2.7 meter long memory or real-time logging tool used in the characterization of borehole temperatures and the motion of the downhole tools relative to the surface.

Temperature profile recorded by the TAP tool. The fast and slow response thermistor values are represented by the red and blue lines, respectively.

Specifications

Weight::	110 lbs (49.9 kg)
Length:	8.895 ft (2.71 m)
Diameter:	3.25 in. (8.26 cm)
Temperature rating:	105° C (220° F)
Acceleration measurement range:	+/- 2g
Acceleration resolution:	1 mm/s^2
Acceleration sampling rate:	
Low resolution mode (LR):	4 Hz
High resolution mode (HR):	8 Hz
Temperature measurement range:	-4° C to 85° C
Temperature resolution:	0.005° C
Pressure measurement range:	0 - 10,000 psi
Pressure resolution:	1 psi
Pressure measurement precision:	0.1% FS
Temperature/pressure sampling rate:	1 Hz
Total data recording time:	
HR mode	5 hr.
LR mode	8 hr.
Power source:	8 "D" alkaline batteries
Total operation time for one set of batteries:	~ 40 hr.

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OCEAN DRILLING PROGRAM

Deployment of the Temperature/Acceleration/Pressure (TAP) Tool