

Sediment Temperature 2 Tool

Scientific Application

The SEdiment Temperature 2 (SET2) tool is designed to take temperature measurements in sediments too consolidated to use the Advanced Piston Corer Temperature-3 (APCT-3) tool. The SET2 is the second generation of the SEdiment Temperature (SET) tool that evolved from the Davis-Villinger Temperature Probe (DVTP), named for its creators.

Operation

The SET2 is deployed using the Motion Decoupled Hydraulic Delivery System (MDHDS). The SET2 is lowered into the hole and released electronically using the Electric RS (ERS) Overshot/MDHDS tools. The smooth tapered probe tip is designed to create a seal against the sediments as it is pushed in so that in situ temperature measurements can be recorded. The temperature measurement is taken at the tip of the Thermistor String by the Thermistor. Typical recording time for the tool in sediment is 20 min. After temperature measurements are recorded, the tool is retrieved by ERS/MDHDS and the SET2 is moved to the laboratory for data download.

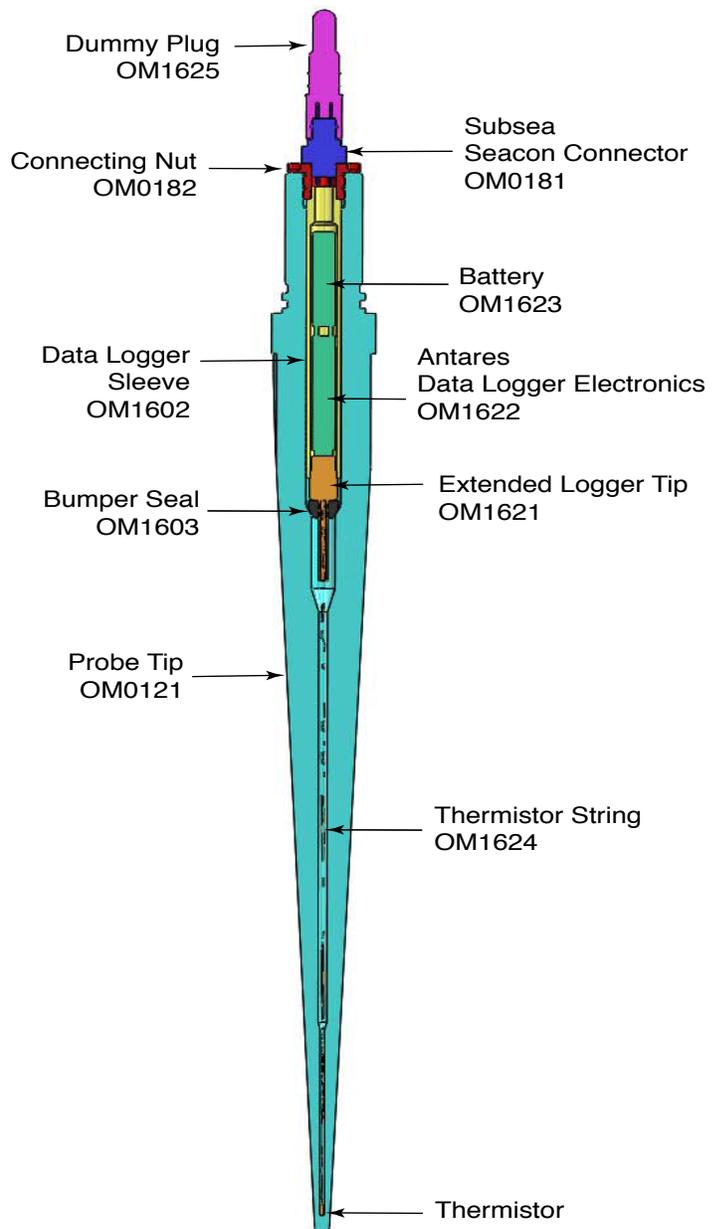
Features

Compatibility

The tool can be deployed by MDHDS/ERS or the Collected Delivery System (CDS), increasing usability.

Decoupled from Heave

The SET2 is deployed on the MDHDS or CDS, which allows the probe to be disengaged from the Bottom Hole Assembly (BHA) after it is pushed into the sediments. This minimizes the effect of drill string movement (from ship heave) on the probe's temperature measurement.



Schematic of the SET2 tool.

Data Recording

The tool is capable of storing 18 hr of temperature data collected at 1 Hz. This provides sufficient measurement detail and recording time to assure good quality data.

Specifications

Temperature Measurements

Analog thermistor data

Measured Range: -2° to $+50^{\circ}\text{C}$

Resolution: 0.002°C below 20°C

Communications

Standard 2-wire RS-232 serial link via external data port through Antares deck box

Data Storage

64920 measurements (e.g., 18 hr of 1Hz data)

Physical Dimensions

Probe Tip: Conical, continuously tapered at an included angle of 5° from 55.5 to 8 mm in diameter

Tool: 77.4 cm long

Weight: 5.4 kg

Operating Range

Formation

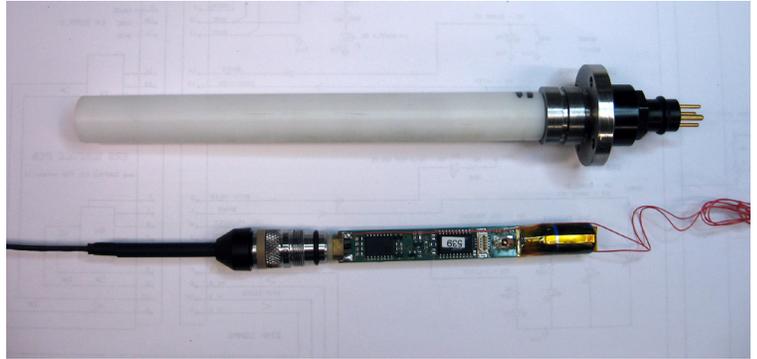
Soft to semi-consolidated sediments (e.g., chalks or firm clays)

Ambient Temperature Range

-20°C to 75°C

Maximum Depth

7000 m (equivalent to $\sim 10,000$ psi)



SET2 Tool Data Logger.

Limitations

Not used in hard rock (e.g., chert, dolomite, limestone, or basalt)