Drill String Acceleration Tool

Description

The Drill String Acceleration Tool (DSA), developed entirely at BRG-LDEO, has been used on numerous ODP projects. Its primary purpose is to measure and record the drill bit acceleration and vibration signals during drilling. The DSA tool contains a single-axis high sensitivity accelerometer for heave measurements, a three-axial high frequency accelerometer for drill bit variations and a high resolution pressure sensor. For ease of deployment, the DSA has been designed as a removable extension of the APC/XCB/RCB core barrels. Using standard threaded connections, the DSA is attached to the top of a selected core barrel prior to core barrel deployment. Except during connection and disconnection of the DSA, coring activities are not affected by its presence. Upon DSA/core barrel retrieval, the DSA is disconnected and the data are downloaded to the third party data acquisition system in the Downhole Measurements Lab (DHML) for immediate analysis.

Applications

♦ Downhole heave measurement
♦ Drill string vibration measurement
♦ Fluid pressure measurement
♦ Reconfigurable to suit

Specifications

- Weight: 75 lbs (34.1 kg)
- Length: 47 in. (119.4 cm)
- Acceleration measurement range (HSA channel): +/- 2g
- Acceleration measurement range (LSA channel):
  - Option 1: +/- 4g
  - Option 2: +/- 25g
- Acceleration sampling rate (all channels): 100 Hz
- Temperature/pressure sampling rate: 1 Hz
- Frequency bandwidth (HSA channel): 0 - 2 Hz
- Frequency bandwidth (LSA channel): 0 - 50 Hz
- Temperature measurement range: 0° C - 85° C
- Temperature resolution: .5° C
- Pressure measurement range: 0 - 10,000 psi
- Pressure resolution: 1 psi
- Pressure measurement precision: 0.1% FS
- Total data recording time:
  - Drill mode: 100 min.
  - HEAVE mode: 8 hr.
- Power source: 6 "AA" alkaline batteries
- Total operation time for one set of batteries: ~ 9 hr.
Deployment of the Drill String Acceleration Tool

- Standard ODP Fishing Neck
- 3.5” Stainless Steel Pressure Case
- Quick-Connection allows rapid connection to the APC/XCB and RCB

Measures:
- Hydrostatic pressure
- Multi-axis acceleration

11/2001