



Annulus Pressure While Drilling (APWD)

DESCRIPTION

The APWD is a fully calibrated and temperature compensated instrument that provides measurements while drilling. The sensors are also equipped to perform Formation Integrity Tests (FIT) and provide pressure measurements while the pumps are off. The tool is fully programmable allowing custom adjustment of sampling times and measurement start times. All measurements are logged to memory and can be sent up hole for real time analysis.

FEATURES & BENEFITS

- Real Time Measurements of Annular Pressure.
- Memory Recordable Measurements.
- Fully Retrievable.
- Early Lost Circulation Detection.
- Early Detection of Well Blowouts.

SENSOR MEASUREMENTS

The APWD can be run along with the MWD system in a NMDC in wide range of collar sizes (from 4.75in to 9.5in) and can provide the following measurements in several flexible configurations:

Eight real time variables (limit on Legacy tools).

14total data points including:

- | | |
|---------------------|----------------------------|
| •Average Pressure | • Peak Z Vibration (raw) |
| •Peak Pressure | • Peak X-Y Vibration (raw) |
| •Resting Pressure | •Annular Temperature |
| •ZVibration Flag | • Z Vibration (raw) |
| •X-Y Vibration Flag | • X-Y Vibration (raw) |
| •ZShock Flag | • Z Shock (Counts) |
| •X-Y Shock Flag | |



APPLICATIONS

- Keeping the ECD inside a narrow operating margin.
- Detect and manage hole cleaning.
- Early shallow water flow detection.
- Underbalance Drilling.
- Kicks and Influx detection.
- Barite Sag monitoring.
- Accurate Leak off and formation integrity tests.
- Discriminate influx or weeping.

CALIBRATION

- Pressure sensor and board are “burned in”.
- Calibrated over 7 pressures and 8 temperatures.
- Tools are temperature and pressure calibrated.
- Dead weight gives pressure accuracy under 1 psi.
- Two calibrated temp sensors placed on circuit board and transducer.
- Circuitboards and pressure transducers are calibrated togetheras a pair.

SPECIFICATIONS

Module Diameter	1.875”
Module Length End	34.9” (88cm)
connections Max	10 pin Kintec connector
Temperature Max	175C (347F)
Pressure Transducer	20,000 psi
Rating Accuracy %	15,000 to 29,000 psi
Full Scale	0.1%
Repeatability Sub	1 psi
sizes OD	4.759.5”