Provides critical drilling dynamics data in real-time and recorded formats

### **Applications**

- · Real-time and post-run drilling optimization
- Damage prevention and root-cause analysis
- · Condition-based monitoring for preventative maintenance

### **Features and Benefits**

- Three-axis shock and vibration data enables the user to identify lateral and axial vibration modes, isolate their source, and implement effective mitigation strategies.
- Color-coded severity levels enhance the accuracy of real-time and postprocessed data interpretation.
- The internal memory of the Total Vibration monitoring sonde (TVMS) records data in two formats: continuous and rapid-sample. The continuous log captures vibration data in 1- to 5-second samples over the full course of the run. The rapid-sample log captures high-frequency data samples at specific intervals during the run. Both logs are available post-run for in-depth analysis.
- When combined with measurement-while-drilling (MWD) systems, the TVMS provides real-time shock and vibration data at the surface.
- By combining TVMS data with surface data, users can gain a more comprehensive analysis of the drilling environment.
- Rapid-sample logs—which are available in recorded mode—enhance vibration frequency analysis, which is essential for determining the root cause of downhole vibration.
- The combination of continuous and rapid-sample logs provides additional insight into the mode and severity of downhole vibration.

### **Tool Description**

The Weatherford TVMS is a downhole MWD sensor that provides critical drilling dynamics data in both real-time and recorded formats. Real-time feedback enables drillers to optimize drilling parameters to help prevent dangerous and costly drilling problems; recorded data enables detailed post-run analysis.

The TVMS is compatible with the Weatherford EMpulse<sup>™</sup> and HyperPulse MWD systems. Drillers can also use TVMS data in combination with data gathered at surface to better understand the causes of downhole shock and vibration and to improve overall drilling operations.



The TVMS measures lateral (X and Y) and axial (Z) shock and vibration with accelerometers on all three axes.



### **Specifications**

Sensors	200-G accelerometers for lateral (X and Y) and axial (Z) shock and vibration
Measurement range	–200 G to 200 G
Measurement resolution	Recorded: 0.1 G Real-time: 0.8 G lateral, 0.4 G axial
Sample frequency	10,000 Hz; low-pass filter set at 500 Hz
Logging rate (continuous log)	User-defined, ≥1 Hz
Maximum operating temperature	302°F (150°C)
Maximum operating pressure	15,000 psi (103 kPa)
Length	28.3 in. (720 mm)





The TVMS can record data continuously for up to 30 days. Users can adjust the rate at which the samples are stored in the log.





The rapid-sample log records high-frequency measurement data from all three onboard accelerometers. Rapid samples can be set to occur automatically at predetermined time intervals during the run, or they can be triggered when a certain vibration threshold is exceeded.



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