

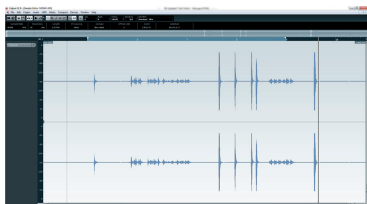
DIGITAL SHOT MONITORING SYSTEM

- ◆ Excellent acoustic coupling between pipe and transducer
- ◆ State of the art recording and processing equipment
- ◆ Programmable low-cut filter can block out background noise
- ◆ Acoustic signals can be monitored real-time and digitally recorded BENEFITS
- ◆ Crisp and clear audio signals make easy identification of gun detonation
- ◆ Rapid and informed decisions can be made real-time



Wells Digital Shot Detection System is used to monitor and record downhole acoustics associated with TCP perforating. By monitoring these acoustics signals at surface real-time, the operator can be confident if positive gun detonation occurs.

A sensitive acoustic transducer, packaged inside a customized block, can be attached tightly onto all types of pipe. When the perforating gun initiates, a tremendous amount of acoustic energy is transmitted up the tubing. The transducer block assembly detects these signals and converts them to electrical sound pulses that are digitally recorded by a separate recorder.



CUBASE LE6 SOFTWARE CUBASE

A key feature of the transducer block is its excellent acoustic coupling properties. Conventional, metallic microphone packages can cause a lot of ringing making it difficult to identify positive gun detonation.

The Zoom® H4n Handy Recorder is a versatile, state of the art digital recorder widely used in the music and film industry. Its ability to potentially cut out background noise makes it ideal for noisy wellsite environments. Data is always recorded on an SD memory card, but the included speaker can be connected to allow listening of the acoustic signals real-time.

Once the perforating job has been successfully completed, the digital audio files can be edited before presenting them to the operator. Steinburg's renowned CUBASE LE6 software can be utilized to crop long files and filter out any excessive background noise.