Drilling Mud Sound Spectroscope

Acoustic Attenuation Spectroscopy (AAS)

Solutions to the safety of deep water drilling

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Sound Spectroscopy for drilling mud as a special application of the Acoustic Attenuation Spectroscopy (AAS)

Previous state of the art :

„Acoustic Attenuation Spectroscopy (AAS) is commonly used to measure particle size distributions (PSD) in the range 5 nm to 100 microns of aqueous, as well as, non-aqueous colloidal samples such as Chemical Mechanical Polishing (CMP) slurries, Ceramic Slips, Printing Inks, Minerals, Catalysts, Metal Oxides, Pigments, Cosmetics, O/W and W/O emulsions, and others.

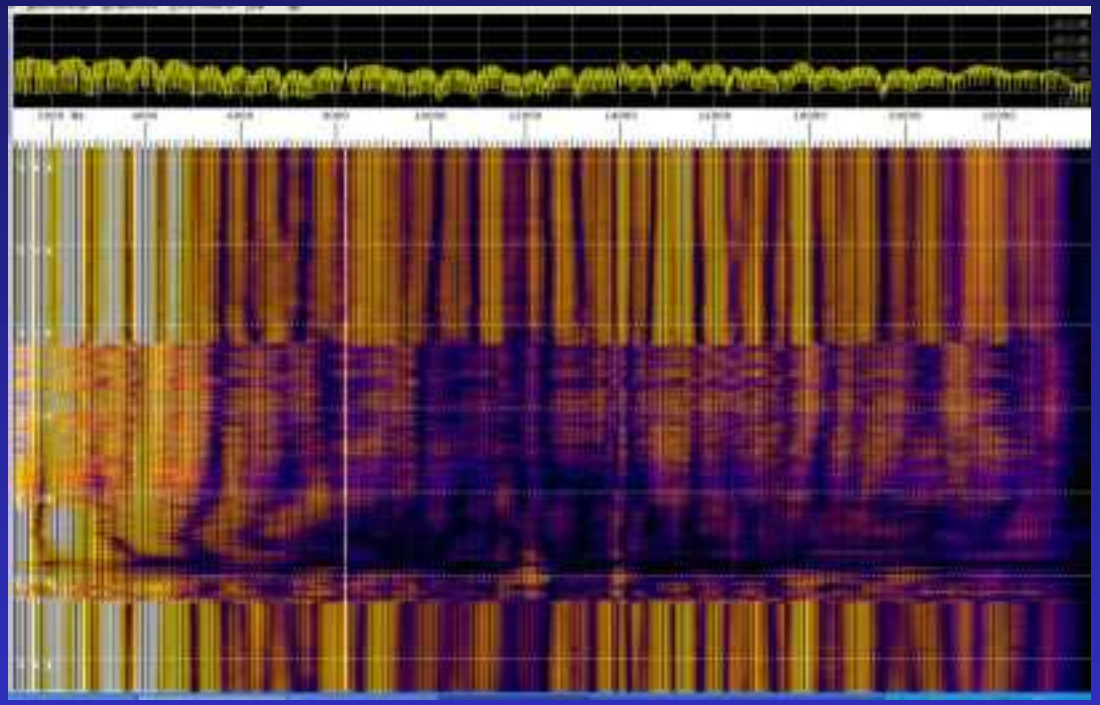
Commonly measured attenuation levels are in the range of near zero to over 100 dB/cm in the frequency range 1-100 MHz. The percent solids level (discrete-phase concentration) of measured samples is typically in the range 0.1 to 60% volume although Greenwood et. al. have used long-path measurements on lower-concentration samples. „

Acoustic Attenuation Spectroscopy for Process Control of Dispersed Systems
J. Gabriel DosRamos, Matec Applied Sciences, 56 Hudson St., Northborough, MA 01532 USA

Sound Spectroscope detected gas bubbles

Acoustic Attenuation Spectroscopy (AAS)

1 inch Gas bubbles in water based mud

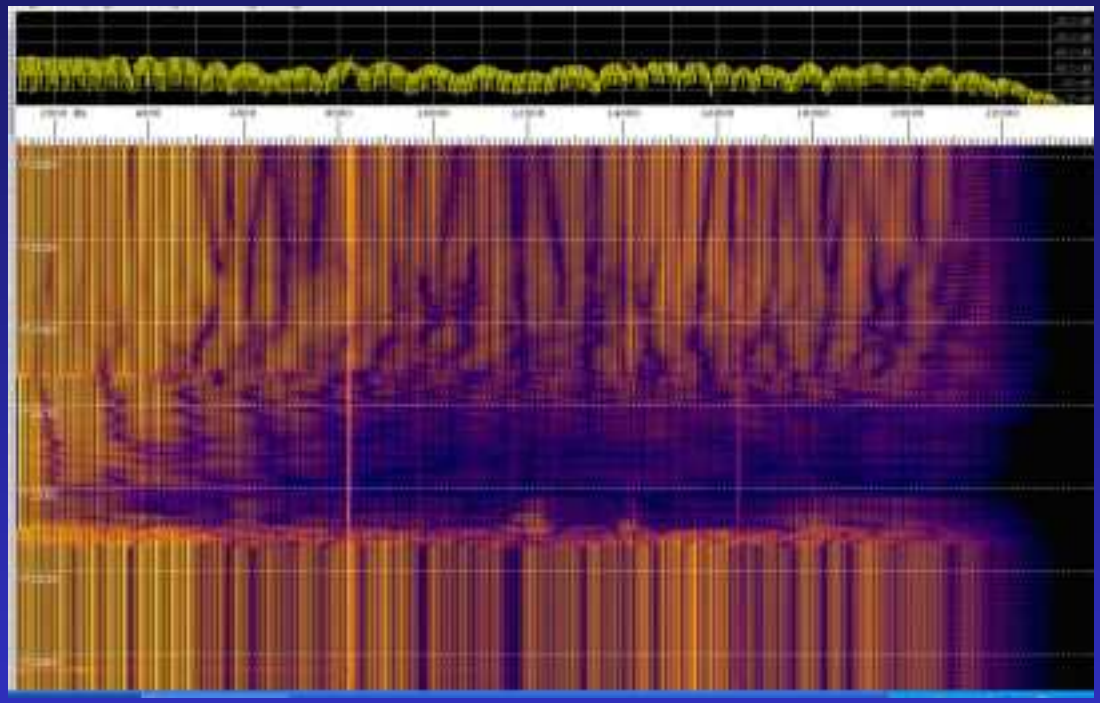


Long Sound path without reflection on the drill pipe

Sound Spectroscope detectect fluid bubbles

Acoustic Attenuation Spectroscopy (AAS)

immiscible liquid hydrocarbons in water based mud

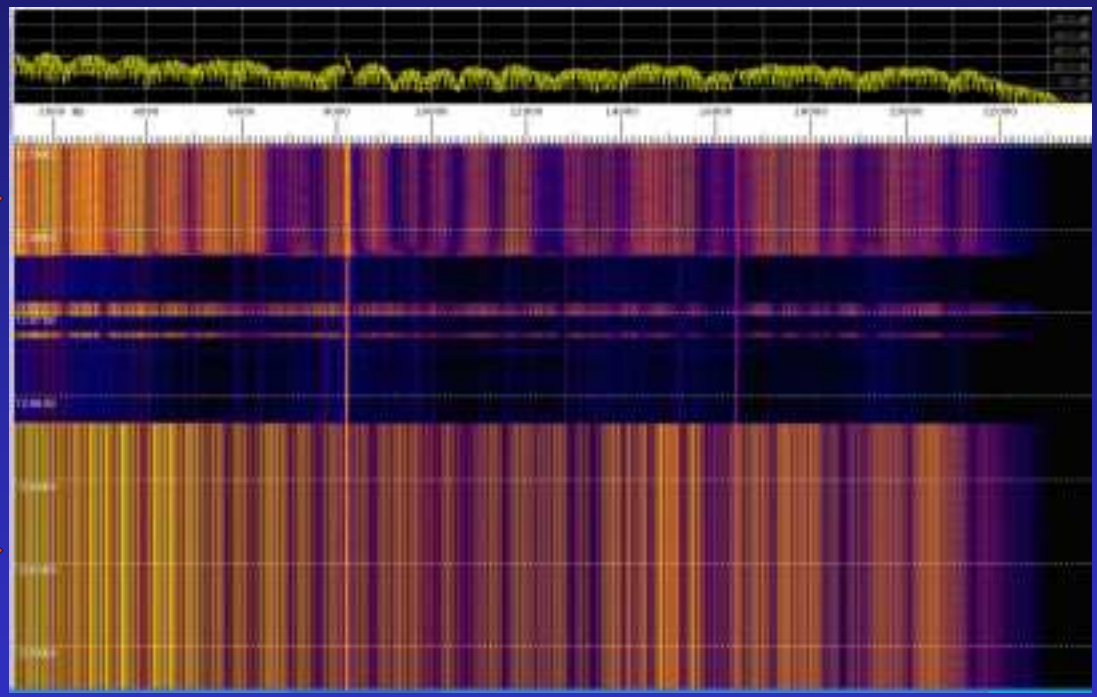


Long Sound path without reflection on the drill pipe

Acoustic Attenuation Spectroscopy in different densities of mud

process water

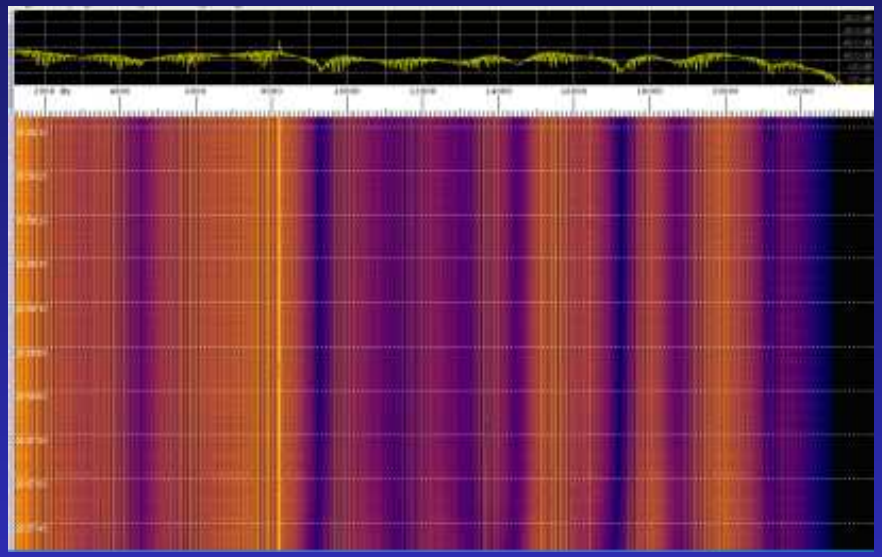
water based mud
11,3 lb/gal Bentonite



More information on the attenuation and speed of mud:

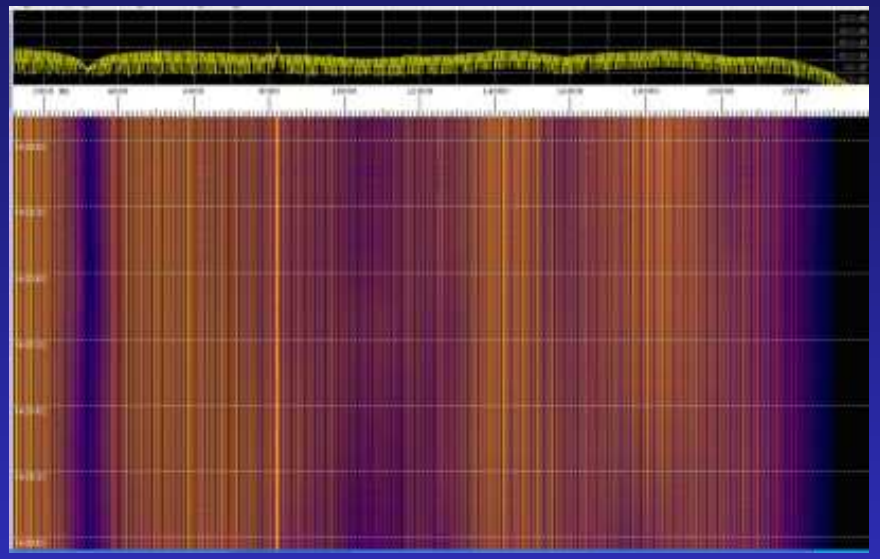
http://de.slideshare.net/fmj2/experimentalstudy-measurement-of-sonic-speed-of-drilling-muds-under-shear-stress

Acoustic Attenuation Spectroscopy in different densities of mud



water based mud 20,2 lb/gal

Barite



water based mud 15,6 lb/gal

Barite

More information on the measurement of mud:

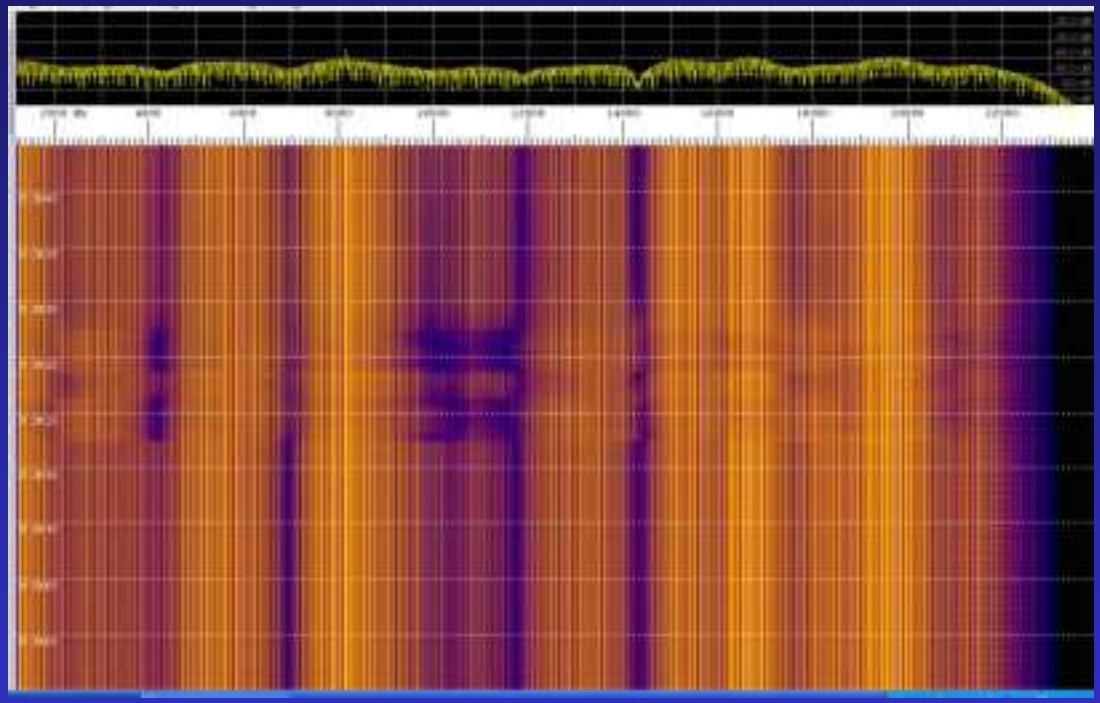
http://de.slideshare.net/fmj2/experimentalstudy-measurement-of-sonic-speed-of-drilling-muds-under-shear-stress

Acoustic Attenuation Spectroscopy in different densities of mud

0,5 inch Gas bubbles in

water based mud 20,2 lb/gal

Barite



More information on the measurement of mud:

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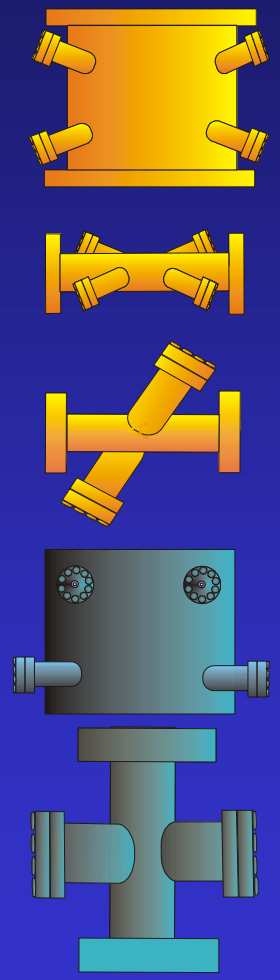
Sound Spectroscope for all Solutions

Acoustic Attenuation Spectroscopy (AAS)

The Mud spectroscopes can be with all the solutions for early gas kick detection and combined with the inflow control devices.

All muds, regardless of whether oil based or water based can be safely monitored with the highest densities of up to about 20 lb / gal on inflow.

Evaluation of sound velocity is so high resolution, even the smallest tributaries are recognized by gaseous or liquid hydrocarbons.



Drilling Mud Spectroscope for the Deep Sea

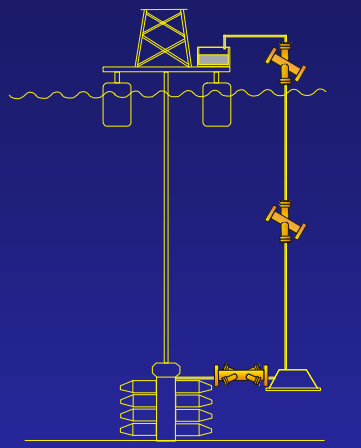
Acoustic Attenuation Spectroscopy (AAS)

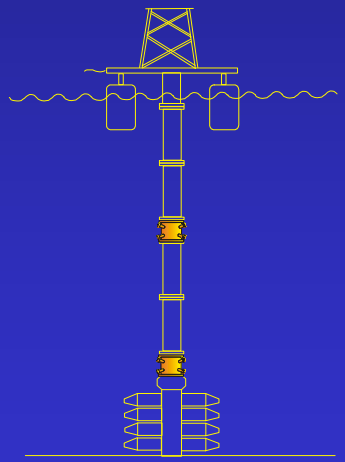
Same sensors for all applications

Drilling Mud Spectroscope for the Deep Sea

Acoustic Attenuation Spectroscopy (AAS)

IBJ technology offers its solutions to all interested parties to use.





Patents pending

Vorrichtung und Verfahren zur frühen Erkennung von Zuflüssen in Untergrundgasbohrungen
Deutschland DE102014003552
Angemeldet 12. März 2014

Vorrichtung und Verfahren zur frühen Erkennung von Zuflüssen in Untergrundbohrungen
Deutschland DE102014014668
Angemeldet 1. Oktober 2014