

## **Cased hole logging in wells for evaluation of well integrity**

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### **Abstract**

The requirements of operators and authorities for getting information about the conditions of casings and cementing of wells for cavern storage have grown in the recent years, especially in terms to determine the safety status. To guarantee the safety status of a well these conditions have to be known properly. The casing geometry and the quality of cementing are parts of this. Cased hole logging is a way to get these information about the wells. The properties of tools and measuring principles are versatile. As all tools have restrictions in their application and expected results the combination of tools needs to be selected for the specific tasks. Typical tools used for this are:

- Multi-Finger-Caliper
- Ultrasonic-Tools
- Electromagnetic Tools
- Cement-Bond-Logs
- Radiometric Logging Tools.

The cased hole logging tools/services that will be introduced, are provided by service companies. To get the results wanted, it is important to execute pre job planning, same as a supervision at well site to ensure the general log quality. The delivered logging data also need a detailed log quality control check afterwards. Only if the quality of the data is good it can be used for analysis and evaluation of well integrity. Longtime experience shows that the requirements of amount and accuracy of logging data as well as reliability of the data have increased in the last years (e.g. for High Resolution Multi-Finger-Caliper).

Beside the standard interpretation of plots, the data could be used for calculations e.g. for stress analysis of internal and external pressure as well as axial load. These calculations could cover the status quo and the planned operation period of a well.

Examples will be shown for interpretation and evaluation.

**Key words:** Geophysics, well logging, cased hole logging, well integrity