Advanced Logic Technology

WellCAD™ 5.6

Release notes

October 2022

Highlights

New in Casing Integrity Module:

Cased Hole Ultrasonics workspace to process reflected waveforms and determine casing thickness and a cement quality index.

New Licensing System

A single solution to support trial, dongle, node-locked and network licenses.
No license files and multiple setups needed anymore.

Cased Hole Ultrasonics Workspace (Casing Integrity Module module)

A user friendly and dynamic solution to determine casing thickness and cementation quality from ultrasonic waveforms.

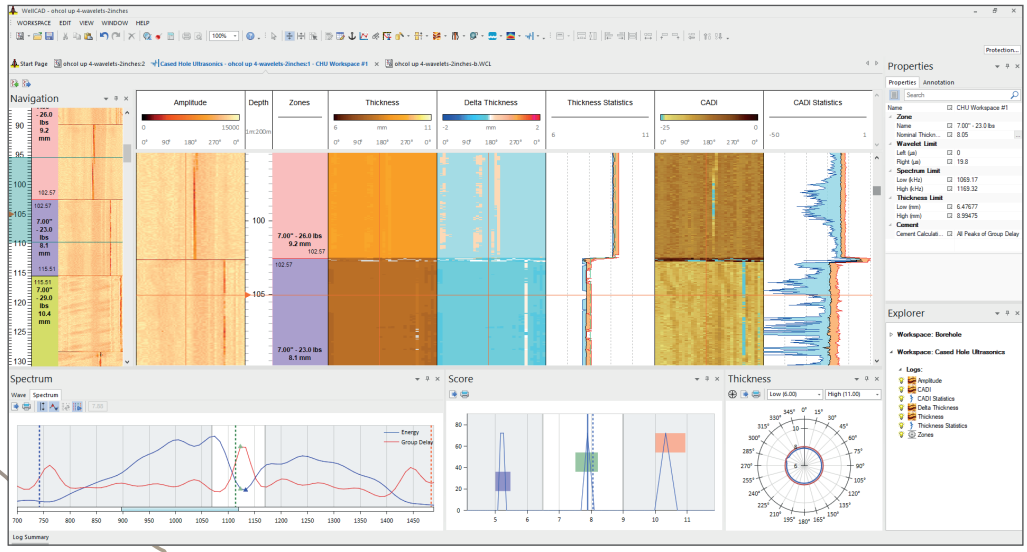
Ultrasonic imager tools scan the entire casing circumference for a full 360° data coverage. The emitted ultrasonic pulses interact with the casing wall causing reflections from the internal and external casing surfaces, part of the energy is trapped inside the casing wall and some is transferred to the material behind the casing.

Reflected amplitude and travel time images from the internal surface are recorded as well as the **reflected waveforms** in different azimuthal directions per scan point.

Ultrasonic imagers like the ALT ABI43 or Schlumberger's USIT record such wavelets. The ABI43 2G produces 36 wavelets (i.e. reflected waveforms) at each sample depth on a high baud rate wireline or coupled with a DDS.

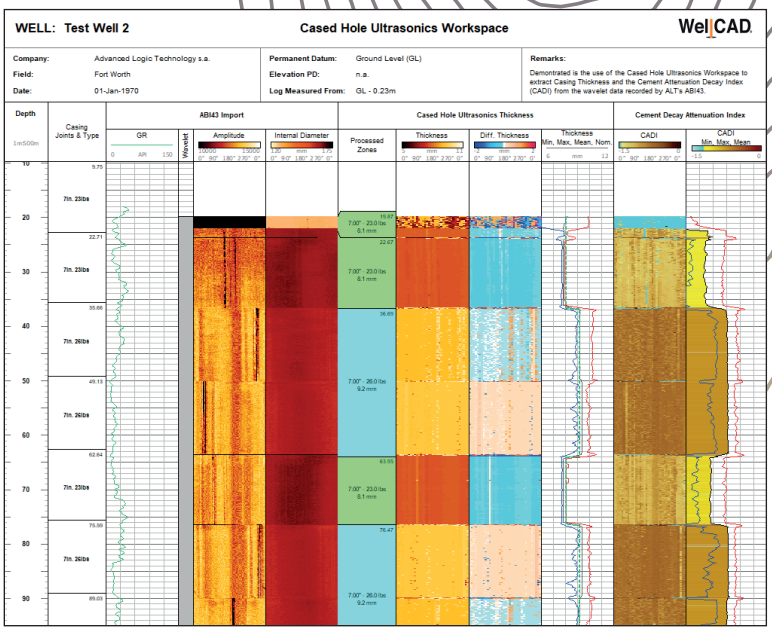
The **Cased Hole Ultrasonics (CHU)** workspace allows a detailed analysis of these **wavelets** for resonant frequencies. The results provide casing thickness and allow detection of corrosion and deformation of the casing. An analysis of the decay rate of the ultrasonic signal provides a **qualitative cement bond index** (CADI – Cement Attenuation Decay Index).

The CHU workspace is **fully integrated** into WellCAD and is part of the **Casing Integrity add-on module.**

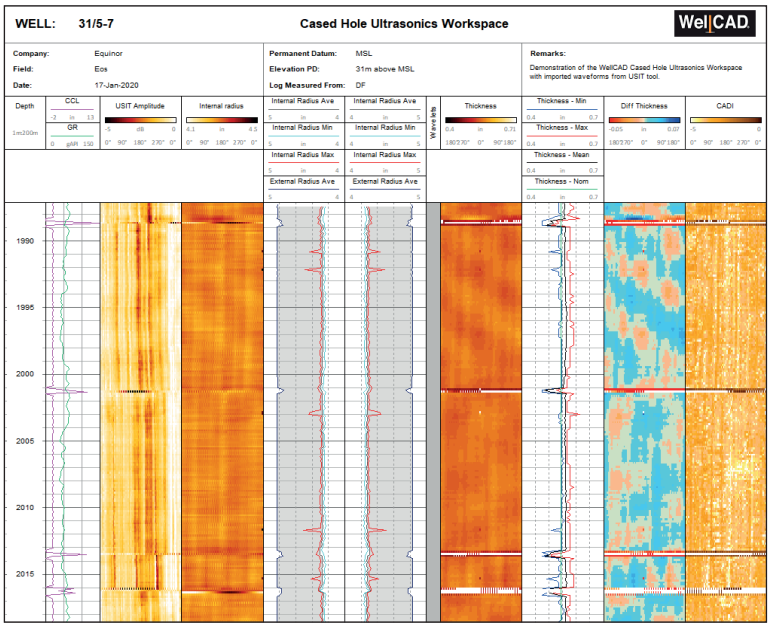


Import and re-processing of **ALT's ABI43 2G** and **third party** (e.g. USIT) ultrasonic imager recorded wavelets.

- The workspace presents **transparent** and **user friendly** tools to analyze the energy spectrum, group delay and score for each wavelet and allows determination of the most appropriate processing parameters.
- Harmonic markers, correlation (Score) values, thickness indicators and statistics provide **guidance** and **confirmation** to the interpreter.
- **Real-time calculation** of thickness, differential thickness and statistics, and **graphical result feedback** aid the user in validating casing types, identifying corrosion, defects and deformations.
- Processing parameters can be adjusted and stored for **individual zones** and are visually highlighted.
- A **Navigation Bar** allows for **fast scanning** of the well and its individual processing zones and is located in a separate panel of the workspace.
- The workspace is **fully integrated** into the WellCAD ecosystem supporting integration with other data, combined analysis with casing internal information and professional reporting.
- With the ultrasonic wavelet post-processing tools in WellCAD users will gain access to processing capabilities that are usually restricted to dedicated and costly software applications / modules.



ABI43 in test well with different casing types and cement qualities



Schlumberger USIT waveforms processed in the CHU workspace to derive thickness and CADI

New Licensing System

A single, user friendly and transparent solution to support trial, dongle, node-locked and network licenses.

From WellCAD 5.6 onwards WellCAD will be using a different software key product named Sentinel SL (supplied by Thales). The following document outlines the main aspects about Sentinel SL licensing.

What will change

- The FlexNet licensing system which is currently in use for trial and network licenses will be replaced and **depreciated** by the end of 2022.
- From WellCAD 5.6 onwards **no WellCAD setup will be available for FlexNet** licenses. (WellCAD 5.5 users can still continue using their FlexNet licenses.)

What are the advantages of the new licensing system

- Sentinel SL licenses are **easier** to install, update and maintain.
- **Dongle licenses** are supported as in the past (no dongle exchange necessary).
- New **software key licenses** will be used for trial, subscriptions, node-locked and network licenses.
- Software key licenses are easier and faster to issue and are simply **activated using a code** provided by email (no asking for HostIDs and sending license files).
- A **single WellCAD setup** will support all license types.
- Trial licenses can be **updated** into a subscription, perpetual or network license **with a single click.**
- Network licenses are much easier to install and maintain.
- **Any computer** in a network can act as a network license server.
- **Borrowing** of licenses from a network is supported.
- Network licenses can be **self-rehosted.**

Which licenses are available in the future

The following table lists the available WellCAD license types:

License Type	Node-Locked	Network
Perpetual	Software Key / Dongle	Software Key
Subscriptions and Trial	Software Key	Software Key

ALT will contact all FlexNet users asking them to try the new network licensing method and progressively replace FlexNet based licenses.