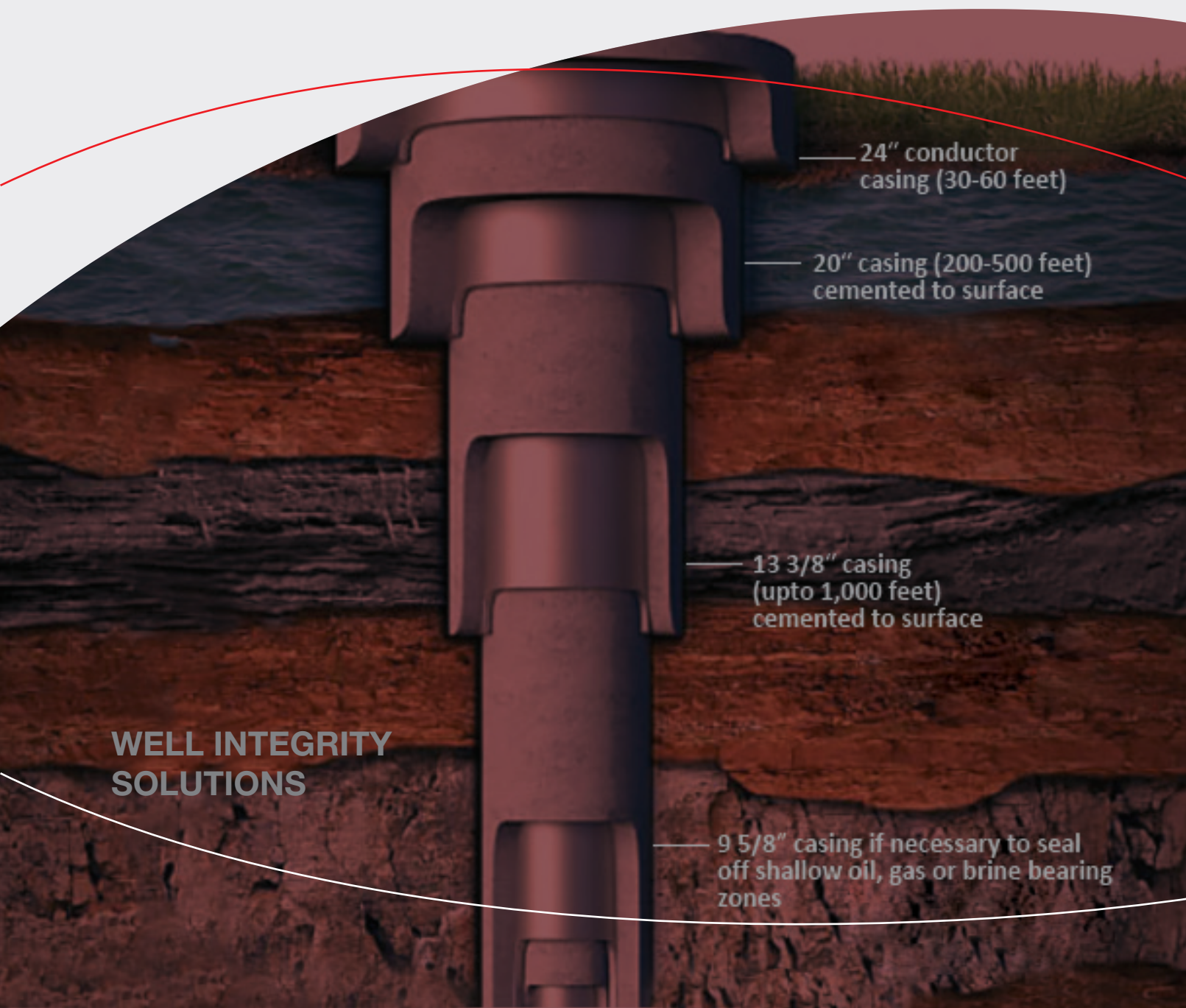


GINNOVO

MED-4G

Multi-Barrier Electromagnetic Defectoscope Ginnovo-4



24" conductor casing (30-60 feet)

20" casing (200-500 feet) cemented to surface

13 3/8" casing (upto 1,000 feet) cemented to surface

9 5/8" casing if necessary to seal off shallow oil, gas or brine bearing zones

WELL INTEGRITY
SOLUTIONS

Multi-Barrier Electromagnetic Defectoscope Ginnovo-4 (MED-4G)

The MED-4G is the latest downhole tool designed to measure the thickness of multiple casing walls individually. The main application of the tool is the corrosion progress monitoring and surveying of a well completion. Additionally, the given curves can be used to evaluate existing perforations quality.

Principle of measurement is based on creating secondary magnetic fields and multiple parameters such as casing wall thickness and its diameter, wellbore temperature, eccentric distances between casings, magnetic permeability and electrical conductivity of metal casings.



Completely Damaged Tubing

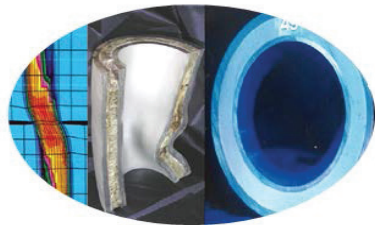


Figure 1. MED-4G Tool

Applications

- Pipe thickness determination (single completion).
- Individual wall thickness calculations (dual Completion).
- Determination and location of damaged sections such as cracks (vertical and transversal), ruptures, and parted collars.
- Determination of zones with external and internal corrosion.
- Location of perforation intervals and depths of completion components

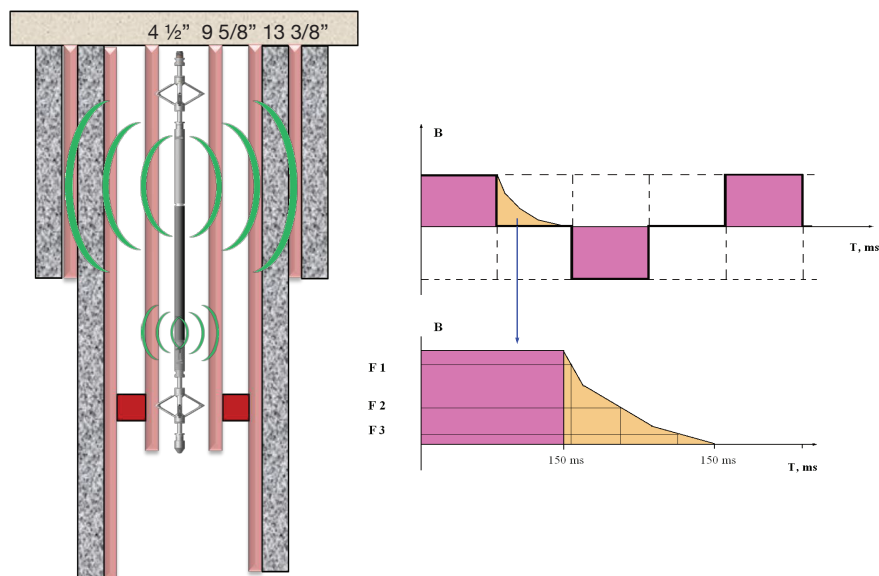


Figure 2. MED-4G Principal

Key Features

- Ability to adjust decay time window during logging to capture the response of outer casings.
- High resolution
- Through-tubing screening
- Stainless steel scanning
- Well completion monitoring: Corrosion progress and repeatability

Key Advantages of MED-4G

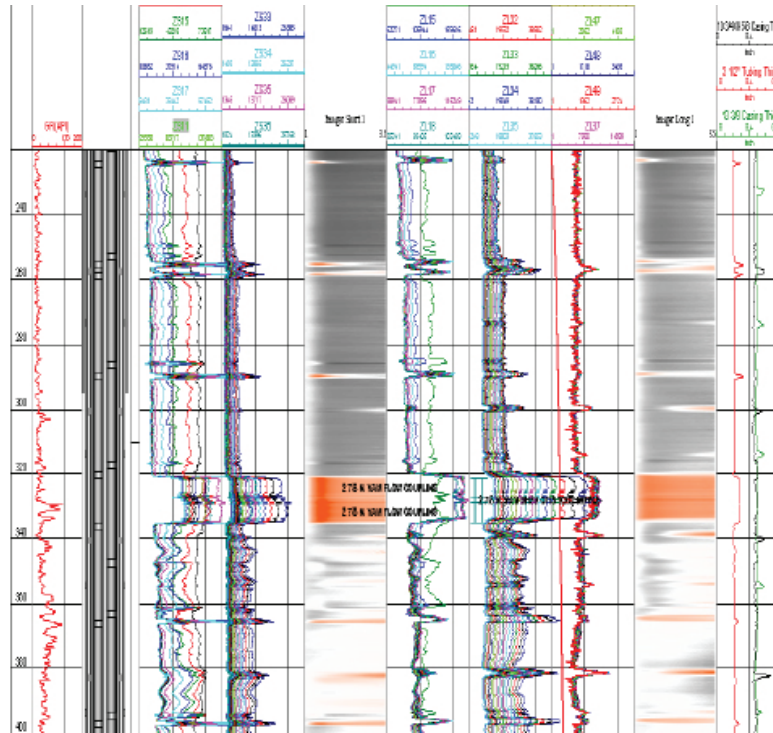
1. Wall thickness determination in dual completion scenarios.
2. Deep scanning radius of 20 inch
3. Ability to scan multiple barriers within maximum total wall thickness of 2.5 inch
4. Tool is capable of processing accurate quantitative data (for first 4 barriers) with an ability to provide and qualitative data in percentage for the 5th outer barrier
5. Ability to differentiate between internal and external corrosion (in case metal loss is above 30%)
6. Stainless steel scanning (ferromagnetic completions)
7. Very advanced modelling and interpretation software
8. The tool is made of titanium body, which can withstand highly corrosive environments

Specifications

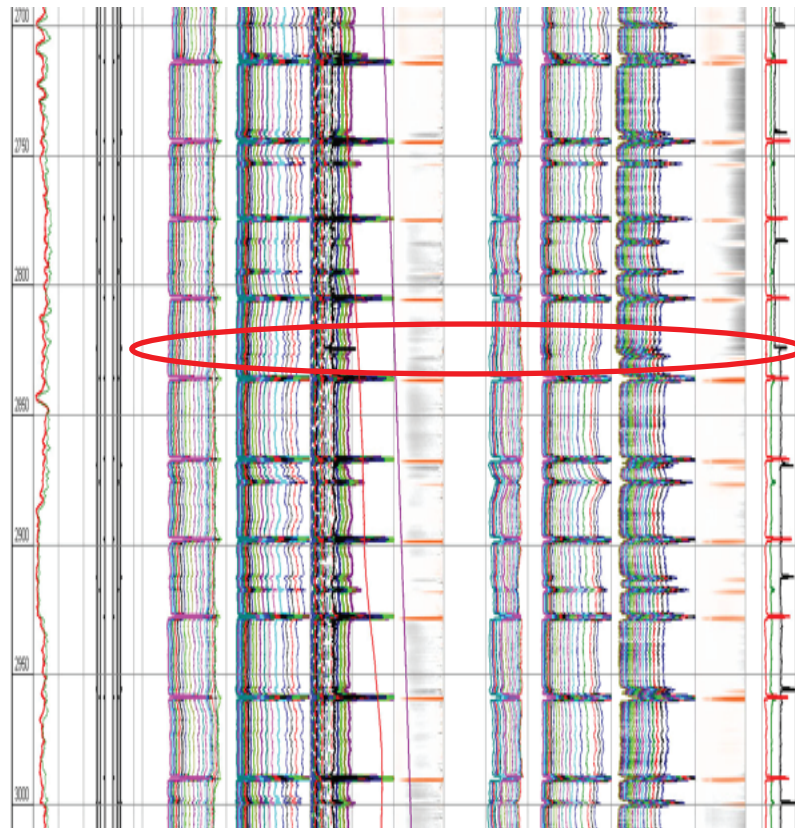
General Specs	MED-4G
Tool OD, in	1.69
Tool string length, ft	8.5
Maximum Pressure, Psi	14,500
Maximum Temperature, °F	302
Temperature sensor resolution, °C	0.01
Logging Speed, ft/min	10
Coil Depth of investigation, in	20"
Total Wall thickness, in	2.5" (63mm)
Pipe OD Range, in	2 3/8 - 20"
Wall Thickness Measurement, Accuracy	
First Pipe Measurement, in	0.015
Second Pipe Measurement, in	0.020
Third Pipe Measurement, in	0.027
Third Pipe Measurement, in	0.035

Log Examples

TBG 3 1/2", 9 5/8" CSG and 13 3/8" CSG Thickness logs (Quantitative) Dual Completion

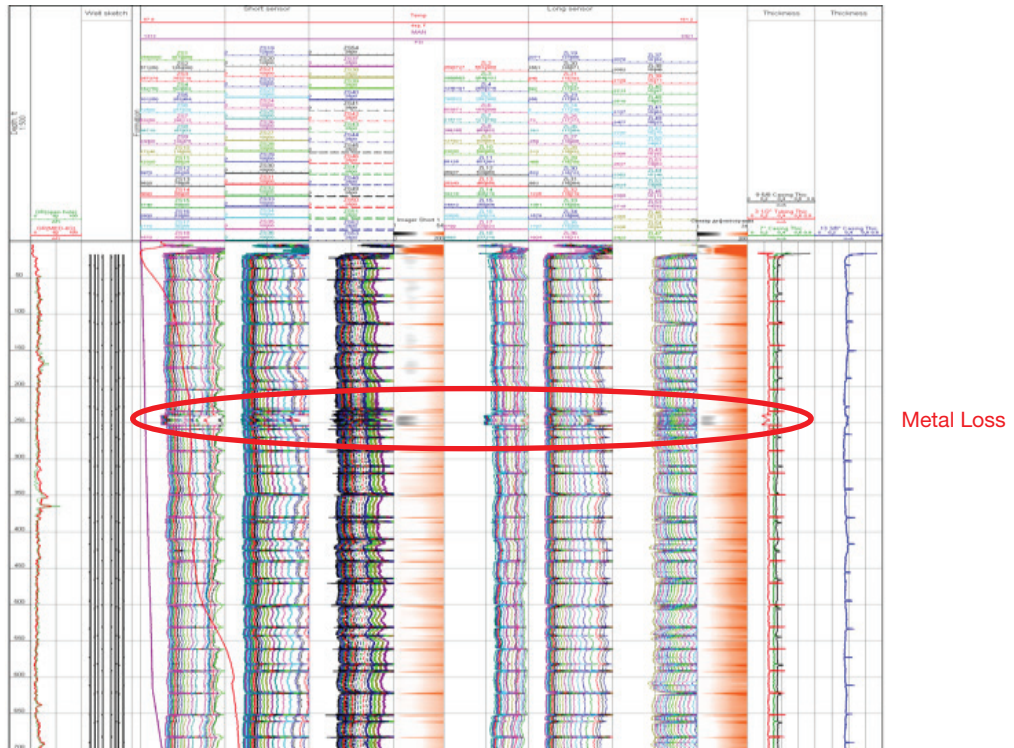


Response to change in Casing Thickness

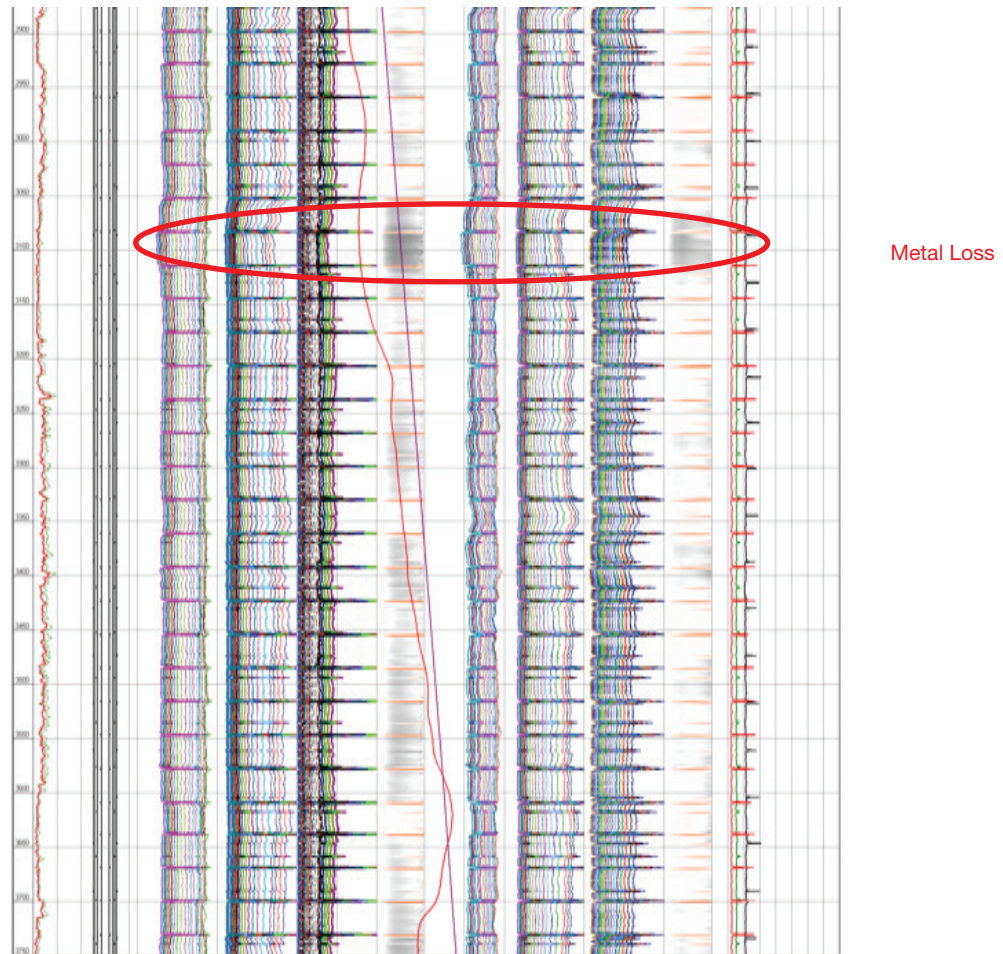


9 5/8" Casing Size Change
36 lbs/ft to 43.5 lbs/ft at 2835ft

Corrosion Log in Oil Producer



Corrosion Log 3000-4000 ft



GINNOVO

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