MULTI-FINGER CALIPER

PURPOSE:

- The **Magnetic Thickness Detector (MTD)** is a 1-11/16 in O.D electromagnetic corrosion measuring instrument primarily run through tubing with the unique ability to simultaneously inspect tubing and the casings behind it. The integrity of the casing string can be evaluated with neither the requirement for costly workover rig, nor the time-consuming removal of the tubing completion. The **MTD** tool is capable of evaluating quantitative thickness measurements up to three concentric pipes, and qualitatively evaluating the 4th string of pipe.

TOOL OVERVIEW:

- The tool samples the pulsed eddy current transient decay response every 1ms for a duration controlled by the logging mode. This data can be transmitted real-time to surface or stored downhole during memory logging as the **MTD** tool is fully Pegasus Star compatible. When run with the Pegasus Star platform, the **MTD** is fully combinable with Multi-Finger calipers (MFC), Gamma-Ray/Temperature/CCL (GTC). The combination provides a comprehensive evaluation of the well integrity, providing accurate thickness information for multiple pipe strings as well as the cement bond quality.

- The **MTD** tool has two sets of sensors, one short (“C”) and one long (“A”), which deliver high-energy electromagnetic pulses into the pipes surrounding the tool. Based on the Pulsed Eddy Current (PEC) physics principles, the tool records the composite decay of the eddy current signals that are used to evaluate the pipe conditions.

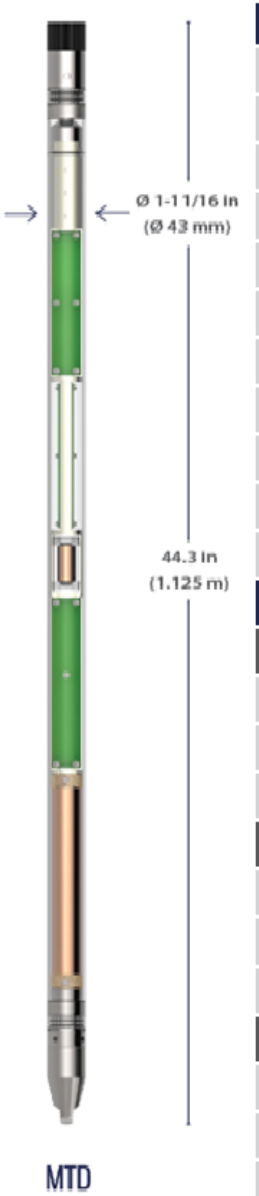
- The long sensor records up to 60 channels spanning the decay time from 1ms to 300ms. This captures the fast decay of alloy pipes to the far-field signals of large casings. The short sensor has a smaller measurement aperture that scans the inner pipe at higher vertical resolution.

- Log processing is performed by GOWell, utilizing its proprietary module built within the industry leading Well Integrity platform – MIPSPro. All MFC and **MTD** data can be processed, viewed and interpreted side-by-side within a single software platform.

ADVANTAGES/APPLICATIONS:

- Slim tool with 1-11/16 in O.D, capable of running through tubing instead of having to pull the tubing string to evaluate.
- Log up to 18-5/8” casing
- Quantitative 3 pipe thickness evaluation
- Qualitative evaluation of 4th pipe string
- Fast logging of single strings
- Cost effective workover operation
- Multiple conveyance methods
- Combinable with all Pegasus Series Tools
- Pre-job planner software with forward modeling module
- Fully configurable tool caters to a wide range of downhole conditions.
- Processing with user friendly module of MIPSPro Well Integrity Platform
- Warrior Compatible

TOOL DIAGRAM AND SPECIFICATIONS / INFORMATION:



	MTD43C-G P/N 100514064
GENERAL SPECS	
Maximum Pressure	15,000PSI (103MPa)
Temperature Range	–4°F ~ 350°F (-20°C ~ 175°C)
Diameter	1-11/16 in (43 mm)
Length	44.3 in. (1.125 m)
Weight	12 lbs (5 kg)
Recommended Logging Speed	30ft/min (single pipe), 8ft/min (double pipe) and 6ft/min (triple pipe)
Thru-wired or Bottom Only	Thru Wired
Measuring Range	2.362 in. ~ 18.625 in. (60 mm ~ 473.1 mm)
Metallurgy	17-4 SST, Titanium & Al-Bronze
Total Pipe Wall Thickness	1.75 in. (44.4 mm)
Combinability	13pin PegasusStar
WALL THICKNESS MEASUREMENT	
First Pipe Measurement	
Maximum Pipe Wall Thickness	0.9 in. (22.86 mm)
Thickness Accuracy	0.0075 in. (0.190 mm)
First Pipe (2-7/8") minimum aperture **	0.5 in. (12.7 mm)
Second Pipe Measurement	
Maximum Pipe Wall Thickness	1.2 in. (30.48 mm)
Thickness Accuracy	0.01 in. (0.254 mm)
Second Pipe (2-7/8" + 7") minimum aperture **	1.5 in. (38.1 mm)
Third Pipe Measurement	
Maximum Pipe Wall Thickness	1.5 in. @ 0.06 in. Accuracy (38.1 mm @ 1.52 mm Accuracy)
Thickness Accuracy	0.06 in. (1.52 mm)
Third Pipe (2-7/8" + 13-3/8") Minimum Aperture **	3 in. (76.05 mm)

MTD PROCESSED DATA EXAMPLE: