

ENHANCED PIPE DETECTION TOOL (ePDT)

The enhanced Pipe Detector Tool (ePDT) is a two-inch O.D. advanced ferromagnetic metal thickness evaluation instrument. The integrity of multiple concentric tubular strings can be evaluated in-situ. In most cases, this eliminates pulling the production tubing string, or disassembling the surface completion hardware to facilitate data acquisition.

ePDT is Nine's choice for next generation thickness instrument. It is based on evolutionary pulsed eddy current physics which permits quantitative thickness measurements for up to five concentric pipes. The state-of-the-art instrument includes a new patented antenna that significantly improves measurement capabilities. This allows evaluation of tubulars ranging from 2-7/8-inch to 26-inch O.D.

Application & Features

- Simultaneously assess metal thickness of multiple tubulars strings
- Locate collars and shoes of concentric strings
- Aid P&A risk management by determining integrity of adjacent strings
- Determine tubulars condition prior to workovers or re-fracs
- Verify condition of casing patches and patched casing.
- Establish trend-lines for tubulars degradation over time
- Pin-point leak source location by combining with ANT, MFC, RBL, PLT, etc.
- Warrior™ acquisition system compatible
- 2-inch O.D. – deployed centralized
- Clear real-time visualization for QC and onsite evaluation
- Combinable with all Pegasus Series Tools
- Quantitative 4 to 5 pipe thickness evaluation (dependent on total metal thickness)
- Pre-job planner software that combines a powerful forward modeling module and simulation tool
- User-friendly module of post-processing via “plug-in” to MIPSPro / PIP Well Integrity Platform

The ePDT is fully combinable with Nine's Pegasus instruments, including Multi-Finger Imaging Calipers (MFC), Array Noise Tool (ANT), Production Logging Tools (PLT) and our Digital Radial Bond Tool (RBL). The combination yields a comprehensive evaluation of well integrity, providing accurate thickness information for multiple pipe strings as well as leak detection, multi-phase fluid flow and cement bond quality.

During real-time logging via Warrior™ the software provides a comprehensive wellsite quality control display which offers clear visual indication of tool performance and pipe conditions. Post processing is performed with Nine's proprietary module contained in the industry leading Well Integrity Evaluation Platform – MIPSPro™ and PIP™. When using PIP, all MFC, ePDT and ANT data can be processed, viewed and interpreted side-by-side within a single software platform.

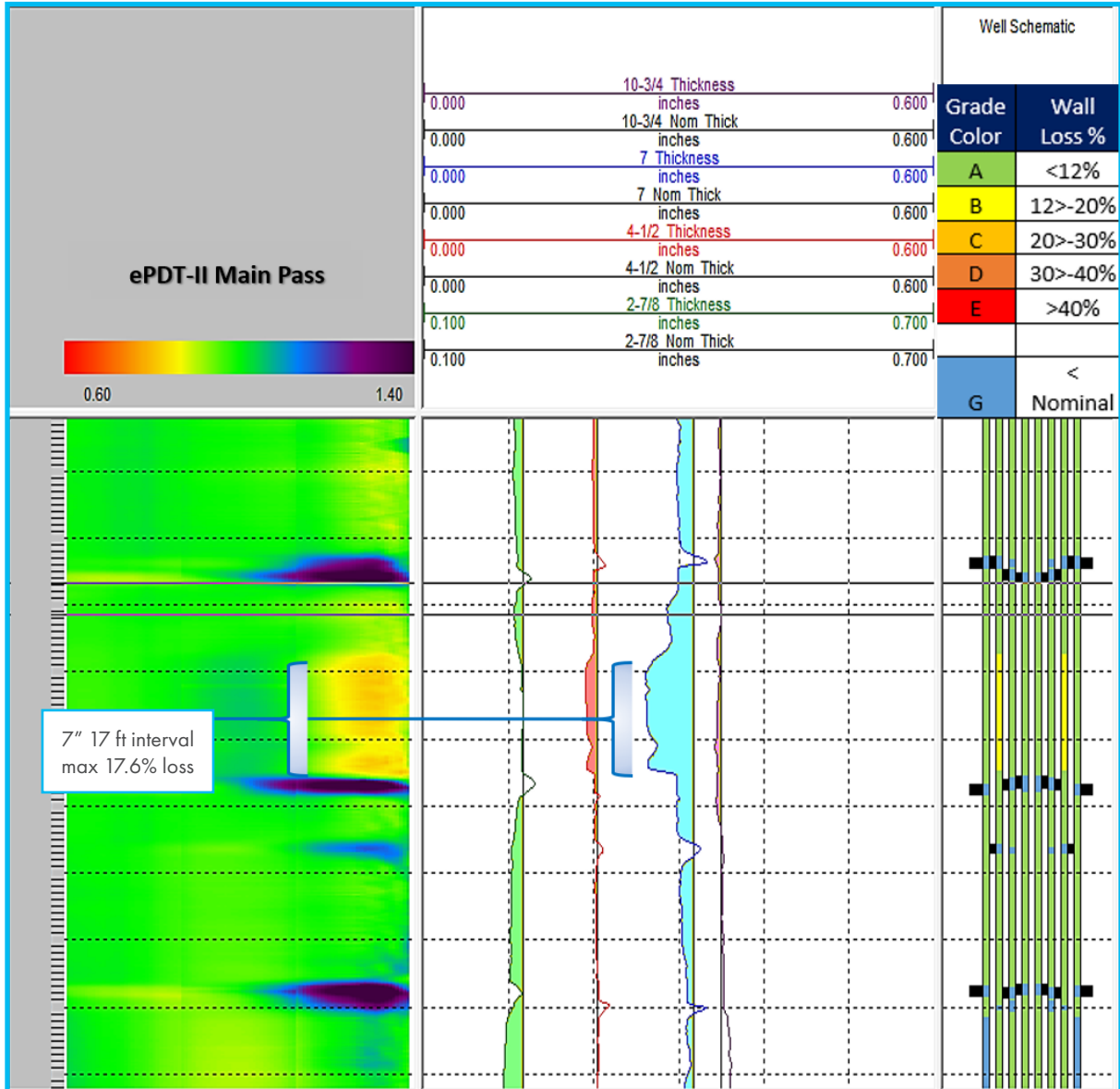


EPDT-II

SHOWING 2" (51MM)
AND OPTIONAL 1.69"
(43MM) ANTENNA ARRAY

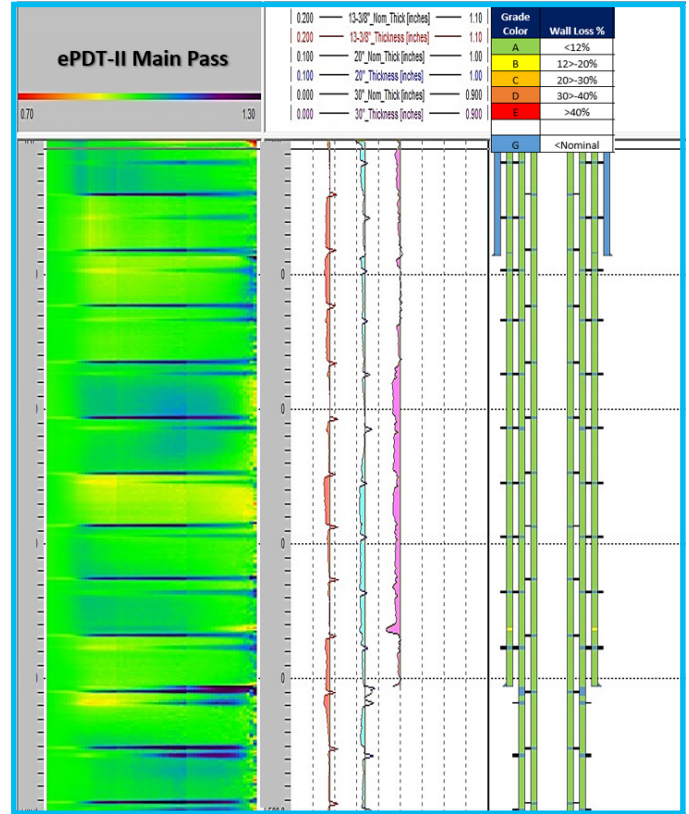
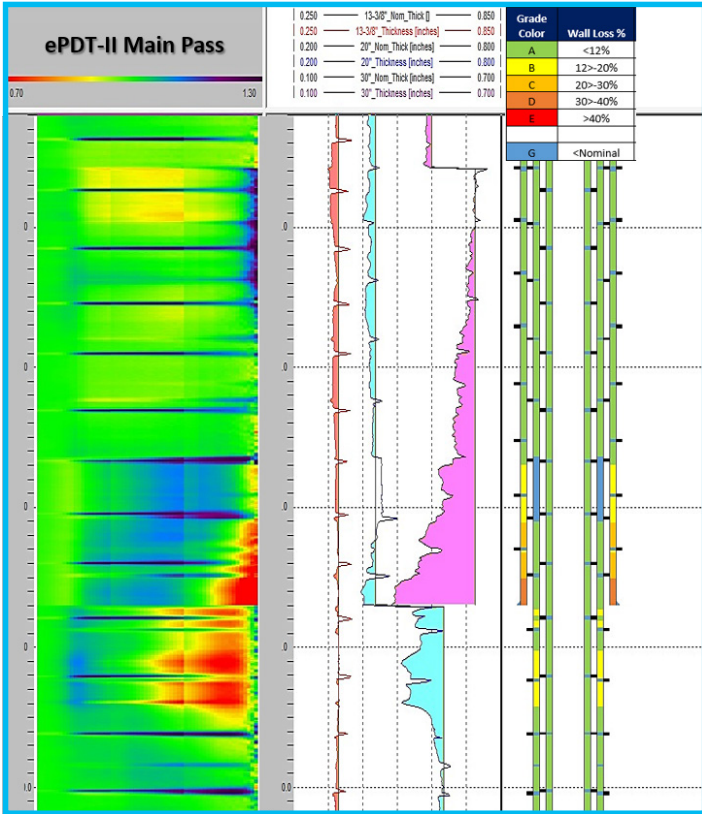
GENERAL SPECS	
ePDT – Enhanced Pipe Detection Tool	
Maximum Diameter	51 mm (2.0 in)
Temperature Range	-20 to 17°C (-4 to 350°F)
Maximum Hydrostatic Pressure	138 MPa (20 kpsi)
Overall Length	2317 mm (91.2 in)
Makeup Length	2288 mm (90.1 in)
Maximum Total Pipe Wall Thickness	92 mm (3.6 in)
Measurement Range	60 to 609.6 mm (2.362 to 24 in)
Recommended Logging Speed	1.5 to 9.1 m/min (5 to 30 ft/min)
Working Voltage	150V ~300V
First (A) Pipe Measurement	
Maximum A Pipe Wall Thickness	25.4 mm (1.0 in)
Thickness Accuracy	0.16 mm (0.006 in) or +/- 0.6% of Thickness
A Pipe (2-7/8 in) Minimum detectable fault	12.7 mm (0.5 in)
Second (B) Pipe Measurement	
Maximum B Pipe Wall Thickness	25.4 mm (1.0 in)
Thickness Accuracy	0.46 mm (0.018 in) or +/- 1.8% of Total Thickness
B Pipe (2-7/8 in + 7 in) Minimum detectable fault	38.1 mm (0.5 in)
Third (C) Pipe to Fifth (E) Pipe Measurement	
Maximum C, D, E Pipe Wall Thickness	25.4 mm (1.0 in) max per pipe
Thickness Accuracy	1.27 mm (0.05 in) or +/- 5% of thickness
C, D, E Pipes (2-7/8 in + 7 in + 13-3/8 in) Minimum detectable fault	76.2 mm (3 in)
Measurement Point (From the shoulder of lower split ring to the mid-point sensor)	
Sensor	53.52 cm (21.07 in)

enhanced Pipe-Thickness Detector Tool 4-Pipe Analysis



Well 1: ePDT-II Reveals Extensive Corrosion Damage to 30 and 20 inch casings

Well 2 :ePDT-II Reveals Insignificant Corrosion Damage to 30 and 20 inch casings



For more information, and to find a representative near you, visit nineenergyservice.com