

Issue No.19

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# QAI CHRONICLE

*Featuring:* TOFD

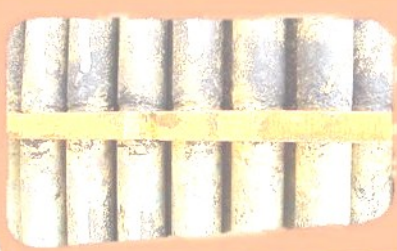
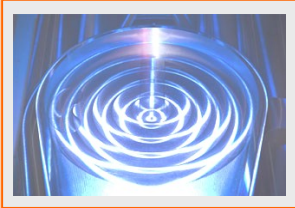
# Magnetec Inspection, Inc.

[www.magnetec-inspection.com](http://www.magnetec-inspection.com)

" FROM THE FIELD "

*Excellence in Eddy Current Inspection Technology & Failure Analysis*

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## Subject:

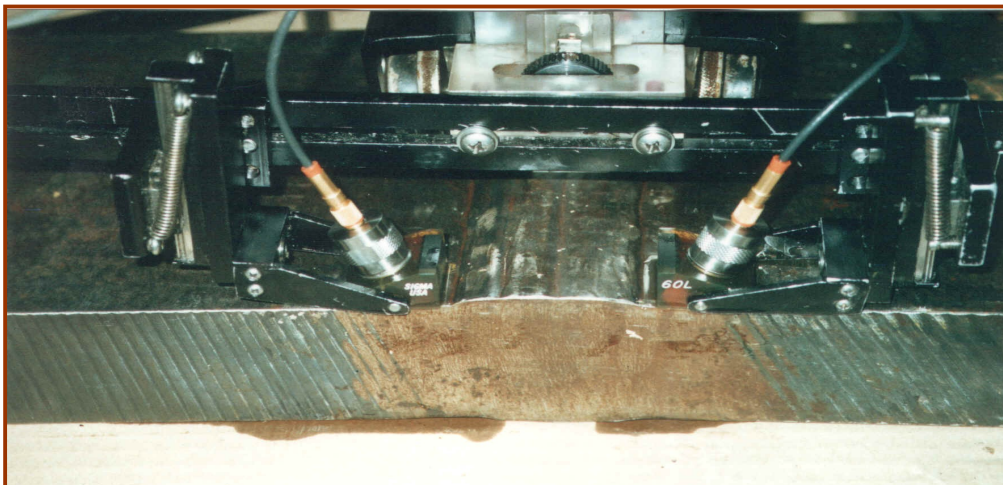
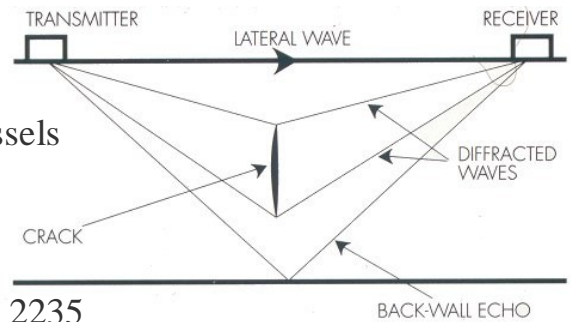
## Time Of Flight Diffraction (TOFD)

Magnetec Inspection, Inc. is pleased to announce we now offer TOFD inspection techniques

Time Of Flight Diffraction (TOFD) is an advanced weld examination technique utilizing a single line scan to accurately detect and size weld defects of all types. It is a fast and efficient way to scan a lot of weld in a short time period. Dead zones near the front and back surface can be enhanced using combined TOFD and convention pulse echo techniques.

### Features:

- Replace radiography for ASME Section VIII vessels
- Single pass examination for vessel welds
- Qualified for ASME Section VIII, Code Case 2235-5, welds up to 13.5 Inches
- Analysis and reporting software per Code Case 2235
- Qualification block design and fabrication
- Economical and field proven



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**TOFD is commonly performed on welds of piping or vessels.  
TOFD examinations**

- Give a computerized image and record of the inspection results.
- Allow more accurate sizing of defects than traditional ultrasonic inspection techniques.
- Facilitate characterizing lack of fusion defects or other planar flaws (cracks) since sizing is not sensitive to defect orientation.
- Are typically very fast once all of the probes have been positioned and setup on a rail. In many cases, an entire weld can be inspected with a single pass of the rail.

The TOFD technique uses two probes in a transmitter-receiver arrangement. When sound is introduced into the material via the transmitter the defect will oscillate. Each defect edge works as a source point of ultrasound signals. These signals are called diffracted waves and their appearance relate to the orientation of flat or spherical defects. These diffracted signals are received via the receiver probe. The diffracted signals are evaluated with leading edge computer analysis package.

