AUTOMATED ULTRASONIC TESTING
(CORROSION MAPPING)

AUT (Automated Ultrasonic Testing) uses mechanized scanners with magnetic wheels that attach to the pipe or vessel.l. The scanners then move the 0 degree (longitudinal/straight beam) transducer over a predetermined grid pattern of the test area while the computerized interface gathers the thickness data and displays it. This provides multiple views of the data including the raw A- scan, B-scan (side view), and C-scan (top side). From these views, the operator can interpret the position, extent, and depth of any defects and allow identification of individual flaws such as pitting and general wall loss on the I.D surface. The scans will also show laminar defects in the plate including inclusions, plate laminations, and blistering.

One of the most important features of the AUT system is the ease of repeatability. The encoded scans record the transducers position so each recorded signal also shows the probes X and Y coordinate position. This means that the position and size data of every flaw can be compared with previous scans of the same area to track flaw growth and corrosion rates.

One of the main limitations to performing AUT inspections is that the test material must be accessible to the scanner with no immediate obstructions. To try and mitigate this problem Echo NDE has various types and sizes of scanners to find a solution to each unique situation.

ADVANTAGES:

- Highly reproducible technique that allows for monitoring of flaw growth
- Computer-controlled data acquisition to reduce chance of human error
- Data gathered with probe coordinates for easy verification
- Defects presented in 3D imagery
- Large areas rapidly scanned with proven coverage of inspected area
- Easier to distinguish flaw signals from geometric signals
- Excellent ability for trending flaw growth when previous inspection results are available

LIMITATIONS:

- Scan areas must be accessible to scanner without immediate obstructions.
- Scan surface must be in clean condition, thin paints are acceptable as long as there is no flaking or disbondment.
- As with all ultrasonic inspections, when inspecting coarse-grained material, structural noise due to the scatter of ultrasound by inhomogeneities can be produced which may interfere with the detection of flaws in the material.

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