



NTI[™]
NORTHERN
TECHNOLOGIES, LLC

Nondestructive Evaluation & Testing

Nondestructive Evaluation (NDE) or Nondestructive Testing (NDT) plays an important role in assuring that structural and mechanical components perform their function in a safe, reliable, and cost-effective manner. Our NDE/NDT technicians perform the necessary tests to locate the indicators and discontinuities that may cause failures or shut downs in such systems. These tests are performed in a manner that does not affect the future usefulness of the object or material – hence, the name “nondestructive.” NDE allows for careful and thorough materials evaluation without the need for deconstruction or damage.

NTI’s nondestructive testing services are designed to comply with a wide variety of industry standards, government contracts, military specifications and at times unique customer requirements. We use ASNT Central Certification Program (ACCP), SNT-TC-1A certified technicians and Certified Weld Inspectors (CWIs) to deliver a full range of Level II/III NDT services including certified weld inspection to assist our clients in their material analysis or product qualification testing, quality assurance and audit programs.

We provide nondestructive evaluation, testing and inspection services in all aspects of the oil and gas industries, transmission, refining, storage facilities, and all oil related support industries. We also provide inspection services to the chemical, manufacturing, food processing, building / structural, agriculture, machining and power industries.

Nondestructive Evaluation Services

- **Visual and Optical Testing (VT)** - Visual examination can be an effective way to recognize surface imperfections that could adversely affect a part or component. Visual examiners use knowledge of how a part is manufactured, the function of the human eye, lighting requirements, and precise measuring tools to evaluate materials. Computer controlled camera systems and optical aids such as borescopes may also be used to recognize and measure features of a component.
- **Ultrasonic Testing (UT)** - Ultrasonic examination uses high-frequency sound waves that are transmitted into a material to detect discontinuities or locate changes in material characteristics. Sound is introduced into the object being examined and reflections from internal imperfections, areas of acoustic impedance, or varying geometrical surfaces are returned to a receiver.



Advantages of NTI’s Nondestructive Evaluation & Testing Services

- Validates the integrity of your materials, processes and components utilizing advanced testing methods and techniques.
- Detects deficiencies prior to failure.
- Confirms quality, safety and productivity in critical components, equipment and processes.
- Minimizes both scheduled and unscheduled downtime.
- Promotes better budgetary and management decisions.



Precision · Expertise · Geotechnical · Materials



- **Magnetic Particle Testing (MT)** - Magnetic particle examination is accomplished by inducing a magnetic field into a ferromagnetic material and applying iron particles to the surface of the item being examined. Surface and near-surface discontinuities affect the flow of the magnetic field within the part causing the applied particles to gather at locations of flux leakage, thus producing a visible indication of the irregularity on the surface of the material.
- **Penetrant Testing (PT)** - Penetrant examination is performed with a dye solution. Once applied to the surface, the dye will effectively penetrate any surface-breaking cavity. Excess solution is removed from the object. A developer is then applied to draw out any penetrant that remains unseen. With fluorescent dyes, ultraviolet light is used to make the “bleed-out” fluoresce brightly, allowing imperfections to be readily seen. With visible dyes, a color contrast between the penetrant and developer makes the "bleed-out" easy to see.
- **Advanced Ultrasonic Testing (AUT)** - Advanced applications include Flaw Sizing, Stress Corrosion Cracking (SCC) detection, Hydrogen Induced Cracking (HIC), Inline Inspection verification (ILI), Internal/External Metal Loss, Tank Floor Mapping, and corrosion mapping. Phased Array/Automatic Ultrasonic Testing (PAUT) is an advanced method of ultrasonic testing utilizing a specialized transducer with multiple elements enabling electronic beam steering to scan a test area. Comprehensive software compiles the test data creating a visual image map of the material and inspection findings. Corrosion Mapping utilizes the accuracy of our phased array equipment employed one crawler to create a highly accurate computer generated image map of large areas of material scanned.



Industry NDE / NDT Applications

- Pipelines - Oil & Gas
- Construction Structures / Bridges
- Power Plants
- Refineries
- Fabrication Shops
- Aviation/Aerospace
- Agricultural Processing
- Renewable Wind Energy
- Tank Construction

Pipeline Integrity NDE Direct Examination

- In-Line Inspection Verification Digs
- Advanced Ultrasonic Flaw Sizing
- Phased Array Corrosion Mapping

Welding Quality Assurance

- Welding Procedure Specification (WPS)
- Welder Performance Qualification (WPQ)
- Welding Procedure Qualification Record (WPQR)

ASNT Level III Services

- NDE Consulting
- NDE Personnel Training
- NDE Review / Auditing