

Radiography

Ultrasonics

Magnetic Particle

Liquid Penetrant

Visual Examination

Positive Material  
Identification (PMI)

CWI Services



# NONDESTRUCTIVE TESTING & RESEARCH

[www.RNDT.net](http://www.RNDT.net)

**ISO-17025**  
ACCREDITED

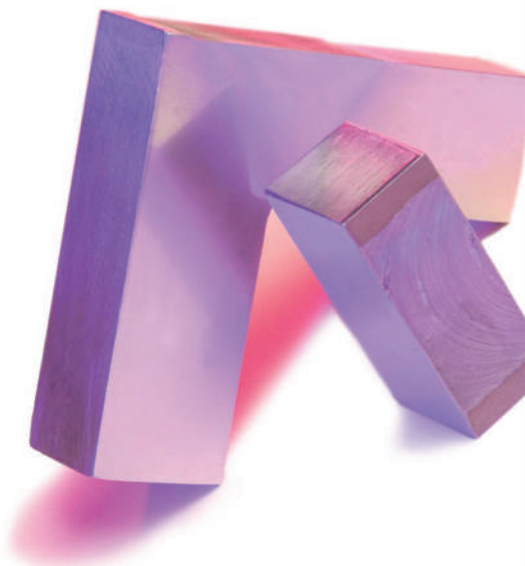




## RADIOGRAPHY

Radiography involves the use of penetrating X- or gamma radiation to examine parts and products for flaws that could be detrimental to their intended use. An X-ray machine or radioactive isotope is used as a source of radiation. Radiation is directed through a part onto a film or an electronic device (plate). When the film or plate is processed, a negative-like picture is obtained that shows the internal characteristics of a part. Possible imperfections show up as density changes in the film, in much the same way an x-ray can show broken bones.

RNDT provides radiographic services in both our laboratory and at customer locations. Our custom built mobile darkrooms are easily set up in less than 10 minutes. Our 12' x 12' & 20' x 20' solid concrete wall exposure rooms allow for very large parts to be examined. We can radiograph up to 8" thick steel. Also, we provide high volume processing of film with a state-of-the-art ecologically friendly automatic processor.



## VISUAL

Probably the oldest and most common method of NDT is visual examination, which has numerous industrial and commercial applications. Examiners follow procedures ranging from simple to very complex, some of which involve comparison of workmanship samples with production parts. Visual techniques are used with all other NDT methods.

By use of many different gauges, micrometers, calipers, rulers, magnifying devices, remote video equipment, and surface conditioning equipment, we provide both lab and field visual inspection services.

## PMI

Positive Material Identification (PMI) is a nondestructive means of determining the chemical composition of metals. In a global sourcing environment, material can inadvertently be mixed up and cause serious issues while in service.

We can quickly and accurately determine the chemical composition of many different metals. We have several X-Ray fluorescent units and experienced technicians that can provide this service anywhere in the USA.



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## ULTRASONICS

Ultrasonic testing uses the transmission of high frequency sound waves into a material to detect imperfections within the material or changes in material properties. The most commonly used ultrasonic testing technique is pulse echo wherein sound is introduced into the test object and reflections (echos) are returned to a receiver from internal imperfections or from geometrical surfaces of the part.

Our Level II and Level III certified UT technicians work to many codes in many industries. From thickness readings on ASTs to performing full length ultrasonic examinations on 40' long seamless pressure vessels.



**RNDT's professional certified technicians and best available technologies are your complete resource for nondestructive testing.**



## LIQUID PENETRANT

Liquid Penetrant testing is probably the most widely used NDT method. The test object or material is first cleaned and then coated with a visible or fluorescent dye solution. After a pre-selected time interval (dwell time), the excess dye is removed from the surface, and then a developer is applied. The developer acts like a blotter and draws penetrant out of imperfections which are open to the surface. With visible dyes, the vivid color contrast between the penetrant and the developer makes the "bleedout" easy to see. With fluorescent dyes, an ultraviolet lamp is used to make the "bleedout" fluoresce brightly, thus allowing the imperfection to be seen readily.

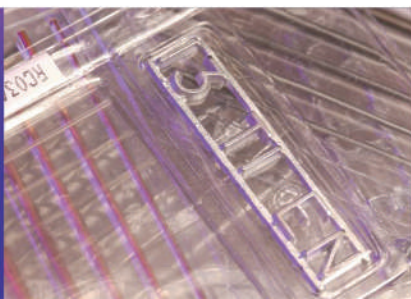
With a wide variety of penetrant materials and a custom made fluorescent penetrant inspection system, we can provide both field and lab, high volume processing of many different parts with both fluorescent and visible penetrants.

## MAGNETIC PARTICLE

Magnetic particle testing is done by inducing a magnetic field in a ferro-magnetic material and dusting the surface with iron particles (either dry or suspended in a liquid). Surface imperfections will allow the magnetic field to leak out of the part, distort the magnetic field and concentrate the iron particles near imperfections, thus indicating their presence.

Magnetic particle testing, or magnaflux as it is sometimes called, uses magnetic leakage fields to detect surface and subsurface cracks and discontinuities.

Our Magnaflux 6000 amp bench units with 8' head stock, portable power packs, yokes, prods, black lights and all required accessories provide the foundation for RNDT to provide quality MT visible and fluorescent, wet and dry examinations in both the lab and field.



**The Technical staff at RNDT has been instrumental in bringing Modal AE and 4-way shear wave + thickness re-testing techniques to the compressed gas industry and wrote several federal regulation (49 CFR) exemption requests to the USDOT that have been approved and are currently in use.**





## Applications

- Aerospace components made of many different alloys
- Airplane wings and landing gear
- All types of welds and bridge structures
- Castings, Forgings and Rounds
- Antiques including: guns, jewelry, and a variety of wood crafted pieces, and statues.
- Blades on high and low pressure steam turbines and diaphragms
- Boiler de-aerator internal inspections
- Both seamless and welded pressure vessels
- Castings, Forgings and Extrusions
- Chemical, pharmaceutical, and petrochemical refineries
- Electronic components
- Extrusions
- Fiberglass reinforced
- High pressure header stub welds
- Induction fan blade weldments at power plants
- Leak tests
- Locomotive wheels
- Low pressure welded vessels
- Machine gun barrels
- Machined parts
- Munitions
- Non-magnetic impellers for ships and hydro-electric power plants
- Nuclear, fossil, and hydro power generation facilities
- Oil tankers & tug boats
- Paper mill components such as
- roll gears, dryer roll heads, and internal baffles
- Paper mill suction pressure rolls
- Plastic tanks and vessels
- Plastics and Composites
- Plastics and Glass
- Press fit connections
- Pump bodies, valve bodies and seats
- Radar antennae cooling systems
- Retaining bands on generator rotors
- Rolled plate and bar material
- Seamless high pressure gas cylinders
- Springs, gears, studs, bolts, nuts, and washers
- Stellite overlay on steam turbine blades
- Valve and pump bodies
- Valve stems
- Vessel domes
- Water and petrochemical above ground storage tanks
- Weldments and structural steel assemblies

### **RNDT also has several special services to offer such as:**

- API 510 pressure vessel assessments
- Administrative and quality system reviews
- Quality assurance and vendor surveillance
- Welder qualifications
- Ultrasonic, welding, and MT equipment calibrations
- Weld procedure development and qualification
- OSHA compliant crane and hoist inspections.

## Common Codes and Standards

**RNDT, Inc. is one of the most experienced ISO-17025 accredited commercial testing and research laboratories in North America. We have staff ASNT NDT Level III Examiners in UT RT AE MT PT & VT and EN-473 / ISO-9712 Level III Examiners in UT RT MT & PT.**

These certifications satisfy global requirements for nondestructive testing personnel including the stringent requirements for the European Pressure Equipment Directive. We also employ ASNT ACCP Professional Level III Examiners in the testing methods of UT RT MT PT & VT, AWS-CWI, OSHA Crane Inspectors and API-510 pressure vessel inspectors in addition to numerous NDT Level II technicians with multiple certifications.

This is a partial list.  
Please call if there is a standard that you require that is not listed.

### **AAR**

M-101, M-107, M-208

### **AMS**

AMS-STD-1595

### **ASME**

Section III, V, VIII, IX, B31.1, B31.3, B30.2, B30.11, B30.16

### **ASTM**

A275, A388, A435, A456, A574, A574M, A577, A578, A745, B509, B510, B513, E114, E164, E165, E213, E446, E587, E588, E709, E797 E1030, E1032, E1208, E1209, E1210, E1219, E1220, E1417, E1418, E1444, E1742, F788, F788M, F812, F812M, F835, F835M F912, F912M

### **AWS**

D1.1, D1.2, D1.3, D1.5, D1.6, D14.1 D15.1, D17.1

### **BSI**

BS EN-1453, BS EN-571-1, BS EN-462.1 & 462-2

### **MILITARY**

MIL-STD-271, T9074-AS-GIB-010/271, MIL-STD-453, MIL-STD-2132, MIL-STD-6866, MIL-STD-1949, NAVSEA-250-1500.1, MIL-STD-6866

### **ISO**

ISO 17025, ISO-Z-540-1

### **OSHA**

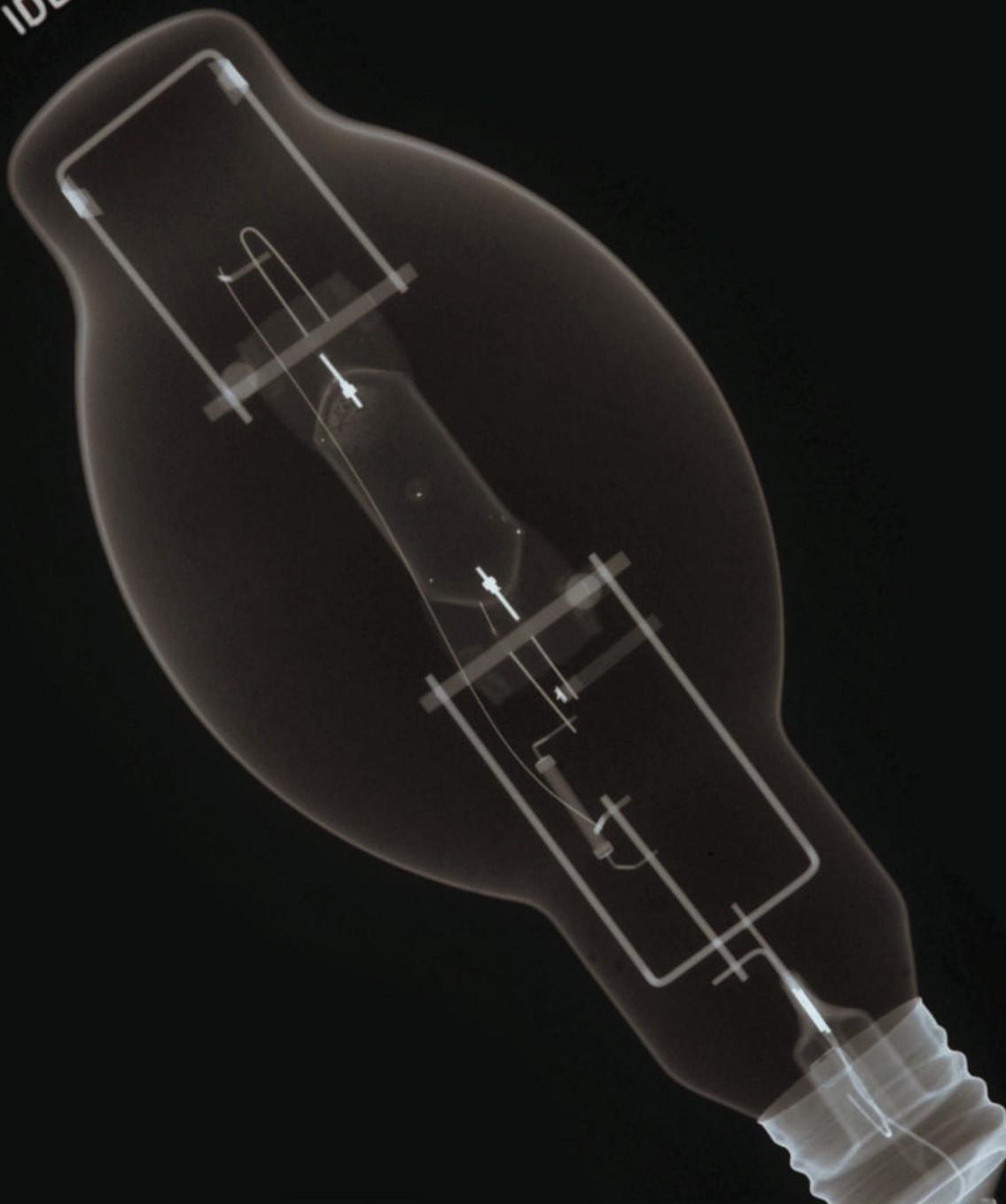
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### **SAE**

J426, J122, J123, J420.



IDEA



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