

Join Our International Clientele

When you work with Nray Services Inc. you join an international clientele including:

3M • AE Turbines • Alliant Techsystems • Argonne National Laboratories • Boeing • Chromalloy Nevada • CiDRA • Coltec Industries (Walbar Canada) • Dynegy • Department of National Defence Canada • Department of Foreign Affairs and International Trade Canada • Edison Welding Institute • Howmet Corporation • IBM • Inflation Systems Inc. • Liburdi Engineering • Lockheed Martin • Meyer Tool • Oak Ridge National Laboratory • Oregon State University • Pontificia Universidad Javeriana • Pratt & Whitney Canada • Pratt & Whitney USA • Precicast • Precision Cast Components • Procter & Gamble • Rolls-Royce • Royal Military College (Canada) • Schaefer Engineering • Square D • Technical Ordnance • University of Texas at Austin



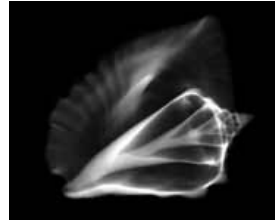
Prints

Nray Services Inc. has a collection of artistic prints developed from neutron radiographs. These prints are very unique and are very attractive when matted and framed.

The collection includes an assortment of flowers, seashells and a variety of complex mechanisms.



Neutron Radiograph of a Rose



Neutron Radiograph of a Seashell

Prints are available in 5"x7" and 8"x10" sizes, and also as greeting cards with envelopes.

Call for more information or to place your order.

Contact Us

Neutron radiography has a history of widespread use within the nuclear and aerospace industries. Since its inception, Nray Services Inc. has been working with clients in and outside these industries to develop new applications for this excellent testing methodology.

Bring us your non-destructive testing challenges and let Nray Services Inc. demonstrate how its neutron radiographic solutions can help you to clearly see things you never dreamed possible.

To learn more about the possibilities of applying neutron radiography in your testing environment, please contact us.



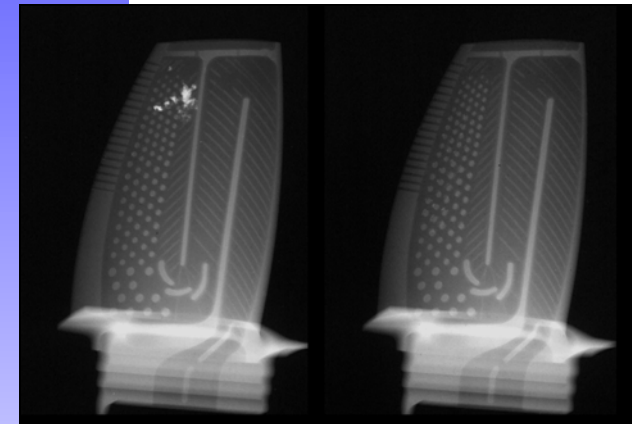
Inspecting, Detecting and Protecting for a Safer Tomorrow

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NEUTRON RADIOGRAPHY
FAST - RELIABLE - EFFECTIVE



**INSPECTING, DETECTING AND
PROTECTING FOR A SAFER TOMORROW**



Corporate History

A spin-off company of Atomic Energy of Canada Limited (AECL), Nray Services Inc. has been a privately owned corporation since 1994. With testing facilities within the Metropolitan Toronto area, Nray Services Inc. is well positioned to service an international clientele.

Operating under a worldwide license from AECL, Nray Services Inc. provides non-destructive testing examinations and related products and services to an international clientele in the aerospace, high technology, defence, explosive, manufacturing, research and development, and the artistic and historical sectors.

Since 1994, Nray Services Inc. has developed an excellent reputation for delivering cost effective, unique solutions in time-critical environments that surpass those available through traditional X-ray and ultrasonic testing methods.

Nray Services Inc.'s business continues to expand as more and more companies recognize the need to go beyond their in-house testing capabilities and utilize the power of neutron radiography.

Neutron Radiography

Neutron radiography is a non-destructive testing technique that allows imaging of otherwise undetectable defects in a variety of materials including electronic, mechanical, and military parts and assemblies.

Using beams of penetrating radiation to interrogate an object, neutron radiography generates images that allow visualization of areas that attenuate the beam differently than

neighbouring areas. The unique capabilities of neutron radiography derive from its ability to image hydrogenous materials (e.g. water, oil, plastic, rubber, explosives) within components made of metals such as steel, brass, aluminum and nickel.

Neutron Attenuation

Neutrons are attenuated by matter either by scattering from the nucleus of a target atom or through absorption by that nucleus. Elements that are close together in atomic number will have very similar X-ray attenuation and yet may have markedly different neutron attenuation characteristics that can be detected through neutron radiography. This makes possible a suite of inspections that can not be done with other radiographic techniques such as imaging light elements inside heavier elements, I.e. wax inside lead or hydrogenous materials inside metal.

Contrast Agents

Tremendously powerful contrast agents have been developed for neutron radiography, some of which are as much as a thousand times more effective than the available contrast agents for X-ray. Thus, the risk of damage to delicate structures from contrast agents is abated.

Image Generation

Nray Services Inc. uses one of several methods to produce test reports. These methods include:

- Direct: for high resolution and contrast
- Radioscopy: for dynamic inspections
- Indirect or Transfer: for radioactive objects.

Products and Services

Neutron Radiographic Inspection Services

Nray Services Inc. provides non-destructive neutron radiographic inspection services to test and report on the acceptability, to client specified criteria, of newly manufactured or used parts and assemblies.

Neutron Radiographic Supplies

Nray Services Inc. distributes a full range of supplies

required for neutron radiography including:

Conversion Screens
Shielding Materials
Vacuum Cassettes
Indicators
Film
Electronic Imaging Systems
Activation Foils

Training and Development Services

Nray Services inc. provides training in neutron radiography for those needing to develop the knowledge and skills necessary to achieve neutron radiography certification.

Applications

Nray Services Inc. utilized neutron radiography in a wide range of industrial applications. The applications are limited only by the imagination of our clientele and include:

- Testing air-cooled jet engine turbine blades for residual core material and other cooling passage blockages
- Reliability testing of detonators in explosive devices
- Testing of high-reliability explosives for presence of transmitters and receivers and for explosive loading uniformity
- Testing for internal flaws such as cracks, inclusions, voids, bubbles, foreign materials, density variations and misalignments.
- Testing braze quality and the presence of braze materials in manufactured parts.
- Determining capacitor delamination.
- Determining bonding flaws in adhesives.
- Inspecting radioactive objects such as a gamma source in its shielding.
- Testing reliability of air bag or parachute initiators
- Inspection of artifacts uncovered through archaeological digs.
- Testing for aluminum corrosion products.
- Testing for missing or misplaced o-rings.
- Testing for hydrogenous foreign substances in sealed units.