THE EVOLUTION OF CANADIAN PIPELINE WELD TESTING

Since the 1950s, when Canada's pipeline network started to grow, the pipeline industry has used technology to test the welds that hold their pipelines together. As Canada changed and advanced, so did this technology. Here's how pipeline testing has constantly improved to better detect problems in the line.

canadian energy pipeline association | association canadienne de pipelines d'énergie

What was happening in plain sight

The Maple Leaf flag is raised for the first time.

Canada's first TV station
CBFT Montreal begins broadcasting in 1952.

1965

Barcodes
Barcodes on products start to be used in stores.

"O Canada" is officially declared our national anthem.

1980

The PC
"Time" magazine names the personal computer "machine of the year" in 1982 – the first time the "person of the year" didn't go to a human.

Internet
In the early '90s, the web becomes available to the public.

iPhone
The first iPhone is released in 2007.

Nunavut becomes a territory.

1999

50s & 60s

Radiography
X-ray and gamma ray technology are commonly used to inspect the quality of welds that connect pipe together.

70s

Ultrasonic testing
In 1971, an engineer named Tony Richardson designed in Canada an ultrasonic inspection system that worked with a relatively new automated welding system. UT technology eventually allowed operators to find smaller defects without using radiation.

80s & 90s

Automated ultrasonic testing
Thanks to advancements in computer technology, AUT technology improves and eventually comes into common use. AUT is a faster, more reliable and more accurate way of inspecting welds.

90s & 2000s

Phased array ultrasonic testing
PAUT gives operators the ability to find, size and assess pipeline weld defects in 3D. The technology also becomes more portable for companies to use.

Meanwhile in the ground...

*Dates reflect when these pipeline technologies came into common use in Canada.

HOW IT WORKS?

- X-ray and gamma ray images show if there are cracks in a weld.
- Ultrasonic testing shows the clear passage of sound through the weld and back.

- **Medical connection:** You probably noticed that radiology and ultrasounds are also used in health care. PAUT, for example, is used to noninvasively examine the heart.
- **Pipeline smart pigs** travel inside a pipeline and also use ultrasonic technology to measure pipe thickness and determine metal loss.

Sources: <http://www.ndt.net/article/map/ca_map/ca.htm> • <http://www.ndt.net/article/ndt-canada2013/content/papers/63_Ferguson_Rev1.pdf>