LABORATORY TESTING INC.
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November 2013, Volume XXX

LAB NEWS

Revolutionary War Cannon Inspected to Ensure Safety

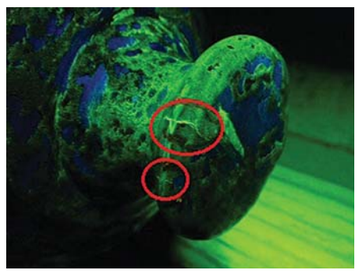
The barrel of a Revolutionary War cannon on display at Fort Mifflin was inspected for cracks at LTI. Fort Mifflin's staff had intended to put the cannon into use during demonstrations for school and scout groups and during public living history events, but first needed to determine if the barrel was structurally sound to ensure the safety of staff and visitors. Visit www.FortMifflin.us for information.


Cannon barrel inspected at LTI

Fluorescent Magnetic Particle Inspection was an ideal method to identify discontinuities on the surface of the barrel, since it was made of a material that could be magnetized and the process would not damage the test piece. The inspection process is performed by spreading a solution of fine iron oxide particles with high magnetic permeability over the barrel as it is magnetized. Cracks and other discontinuities distort the surrounding magnetic field, causing the particles to be drawn to and collected in these areas for a visible indication of the defect.


Spraying barrel with iron oxide solution

The inspection was performed by a certified Level 2 MP Inspector, including interpretation of the indications that were observed during the process. A complete report of the test results was provided to the Fort for their review.


Noting cracks on the barrel knob

Fort Mifflin is located on Mud Island in the Delaware River south of Philadelphia. For nearly six weeks in the fall of 1777, American troops in Fort Mifflin delayed British naval attempts to re-supply their occupying forces in Philadelphia. On the morning of November 10, 1777, the British began a more aggressive assault on the Fort. Bombardment by cannon and grenades continued through November 15, when the garrison evacuated and set fire to what was left of the Fort.

Fort Mifflin was subsequently rebuilt and expanded, beginning in the late 18th century under the direction of Peirre L'Enfant. L'Enfant was a French-born American architect and civil engineer best known for designing the layout of the streets of Washington, D.C.

The Fort was decommissioned in 1954 and designated as a National Historic Landmark in 1970. The property is owned by the City of Philadelphia and operated by the non-profit organization Fort Mifflin on the Delaware. The fort remains a unique mixture of military architecture dating from 1795 to 1875.

Destructive Testing Gets a Face Lift

Mechanical Testing and Metallography have gone through some major renovations this past year including relocating and upgrading their work areas, and expanding the size of the departments for future growth. The final lab in our Destructive Testing area, Chemistry, is next on the list for a face lift, with improvements scheduled to begin in early 2014.


Hardness Testing & Stress Rupture Next Door

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Holiday Hours

LTI will be closed the following days for end-of-year holidays:

Tuesday - December 24
Wednesday - December 25
Wednesday - January 1, 2014

Enjoy the Holidays!

Contact LTI

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LAB NEWS

Reapproved for Nuclear Industry Testing

LTI was recently audited and reapproved for a three-year term by Nuclear Industry Assessment Committee (NIAC) member Crane Nuclear Inc. to provide chemical analysis, mechanical testing, metallurgical testing, nondestructive testing, dimensional inspection, calibration, specimen machining and sample preparation. Their audit verified implementation of LTI's quality system manual and compliance with applicable portions of NCA-3800, NQA-1 2008/09 Addenda, NQA-1 1994, 10CFR50 Appendix B, 10CFR21, and N45.2 as related to performing these services.

Under the NIAC Shared Audit Program, the assessment results were shared with thirty-four other NIAC member companies that also have a business relationship with LTI.

According to Frank Peszka, Director of Quality, "As a result of this single NIAC audit, LTI is approved to provide materials testing, nondestructive testing and metrology for all of these companies. This is the largest group of NIAC members, so far, approving LTI based on a NIAC audit."

In addition to NIAC member approvals, LTI has been successfully audited by NUPIC and many other suppliers, fabricators and manufacturers in the nuclear industry. Services performed include a variety of testing, analysis and inspection of materials and parts for:

- Construction of new nuclear sites
- Upgrading or repairing existing facilities
- Utilization of unqualified source material
- Root cause failure analysis

Visit our Power-Generation page under Industries on the LTI website.

LTI Hosts Fluke Workshop

LTI hosted attendees of the Met/Cal Procedure Writing workshop presented by Fluke Calibration in November. Krista Erickson, Technical Support Engineer from Fluke's office in the state of Washington, led the five-day workshop. The course was designed to provide instruction on procedure writing and hands-on experience with the latest version of MET/CAL software.

Fluke Met/Cal workshop hosted by LTI

Nadcap Reapproval

The Performance Review Institute has renewed LTI's Nadcap accreditations in Nondestructive Testing and ISO/IEC 17025 compliance with Merit Status of 24 months. LTI had been granted 18-month merit status for many years, but the extended 24-month term is significant in recognizing our ongoing commitment to quality.

LTI has been Nadcap accredited in nondestructive testing since 1992. The current accreditations are valid through January 31, 2016.

See LTI at Corrosion 2014

NACE INTERNATIONAL

Booth 1528

March 9 -13, 2014
Henry B Gonzalez Convention Center
San Antonio, TX

A Vested Interest in LTI

Laboratory Testing Inc. is a family-run business currently owned by second-generation family members, Joan and Mike McVaugh. Between them, there are six children who make up the third-generation.

All six third-generation members have worked for LTI at various times while attending school. In addition, one of their family-business policies requires this next generation to attend college and gain work experience outside the company before moving into key positions at LTI. So far, four of the third-generation members and two spouses have moved into supervisor, management and human resources positions within the company - Brandon McVaugh, Brad McVaugh, Mike and Angela Hiller, Brittany and Nick Lukens.

With so many family members involved, there is definitely a vested interest in the growth and success of LTI. Since the company was founded by their grandfather back in 1984, this third generation has grown up with the business and has been exposed to many aspects of its operations from a young age. As family members and future owners, they know that satisfied customers and dedicated, happy employees are critical to the long-term success of LTI. They make every effort to meet customer and employee needs.

Fatigue Testing Launched With the Fatigue Crack Growth Test

Another test used in determining the mechanical properties of materials has been introduced at LTI. Fatigue Crack Growth Testing, also called da/dN testing, is performed according to ASTM E647 and test method Compliance (FCGR-C) with all of the following capabilities:

- *Control Method* – Constant Load, increasing, decreasing, and constant delta K, and constant Kmax
- *Loads* - from 50 lbs. to 55,000 lbs.
- *Temperature* – between -250° F and +400° F
- *Test Specimens* – C(T) compact tension; M(T) middle tension
- *Fixturing* – C(T) and M(T) specimen geometries in a range of sizes

The fatigue crack growth test generates a curve displaying the crack growth rate as the cyclic stress intensity factor (delta K) is varied. Fatigue Crack Growth Test results are provided in a Certified Materials Test Report that will include the data points, a da/dN-dK plot, and if required, threshold and/or Paris Law values.

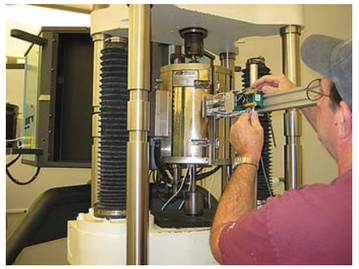
Fatigue / Fracture Toughness Test Lab

Work is underway to further expand the Fatigue Testing capabilities available at LTI and we are doubling our capacity with more test machines. The next service scheduled for introduction in early 2014 will be Axial Fatigue Testing for bolts and specimens.

LTI works with customers to provide adaptable testing for specific test and engineering needs. Contact us to discuss how we can meet your needs.

Improved Technology for Optimal Elevated Temperature Tensile Test Results

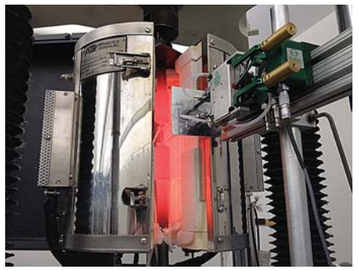
The latest technology in extensometers is proving that Elevated Temperature Tensile Testing can be even more reliable. The addition of a newly designed extensometer to our system has improved stress/strain curve accuracy, repeatability and turnaround reliability. In addition, the upgrade allows a wider range of specimen sizes and a broader range of samples to be tested, including sheet and tubing.



New extensometer measuring strain

Elevated Temperature Tensile Testing uses a combination of heat and tension to evaluate the behavior of high performance materials. During the test, the extensometer measures the strain on the specimen as the load is increased. The stress/strain curve and all of the data are recorded by the fully-computerized system and summarized in a Certified Material Test Report.

LTI has been providing Elevated Temperature Tensile Testing and the results our customers need to evaluate their materials for years. Our system tests to loads of 120,000 lbs. and processes up to three samples at once in a furnace carousel that can heat specimens to 1800° F. LTI is Nadcap and A2LA accredited, and performs Elevated Temperature Tensile Testing to ASTM E21.



Furnace after heating specimen