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Instructor Corner

Your Network is Out! Are You Prepared?

System failure is an inescapable part of operating a network. A major telecommunications company noted that they experienced one failure for every 146 kilometers of cable in place, while another case study documented 83 failures in 5,612 kilometers of installed cable. While the percentage of failures has not changed significantly since 1985, the financial impact has increased dramatically which is reflective of the growing number of subscribers and increased usage on the networks.

Since you cannot completely protect your system from failure, putting a plan in place, for when it does happen, should be an integral part of your restoration strategy. The restoration plan should spell out the logistics on how temporary and permanent repairs are to take place. This should take into account, amongst other factors, the physical location of the cable, safe access, retrievable slack, and staff and equipment requirements.

When a failure does occur, the extent of damage must be identified, and the optical fiber cable must be restored to service as quickly and as safely as possible. An effective way to do this, in non-retrievable slack scenarios, is to use a restoration jump kit. The restoration jump kit is a lightweight and portable kit containing all of the tools and equipment needed to provide a quick and efficient temporary restoration of your downed network. The kit is made up of two special organizer/closure boxes which are terminated on a 100-300 foot fiber optic cable. Since they are stored on quick deployment reels and packaged in a carry case, the need to deploy large bulky cable reels and locate closure systems is eliminated. It is an invaluable tool for any restoration plan. Once service has been re-established, a permanent restoration can be initiated without concern for time restrictions. The jump kit can then be reloaded with consumables and returned to its place with the rest of the restoration equipment.

“While the percentage of failures has not changed significantly since 1985, the financial impact has increased dramatically which is reflective of the growing number of subscribers and increased usage on the networks.”

Want to Learn More About Preparing Your Own Restoration Program?

The Light Brigade delivers Emergency Restoration courses that can be tailored for your installation requirements. We develop and teach custom courses to companies and organizations at their location anywhere in the world. In addition to training and preparation, we can help you with tools and jump kits.

Locations and Dates
Did You Know...
Fiber Optics Have Come A Long Way!

The world’s first commercial installation of optical fiber took place in September 1975 for the Dorsett Police Department in Bournemouth, England, to replace a copper system that was struck by lightning.

In April 1977, the first North American optical telephone communication system — installed and operated by GTE between Long Beach, California, to Artesia, California — began to carry traffic.

In 2014, the world total for optical cable installations was 295 million fiber-km, up 12% from 262 million fiber-km in 2013.

Light Brigade News
Light Brigade Instructor Recognized by ETA® International

Cameron Karch, fiber optic senior instructor with Light Brigade, is the recipient of ETA’s Norris R. Browne Memorial Technician of the Year Award. The annual award is presented to an individual for outstanding service to electronic technicians as a certification administrator, board of director’s office, state representative or subject matter expert on the ETA advisory board for the past year.

Karch has been a part of the communications industry since 1983, specializing in voice and data protocols. His experience includes project management, quality control, splicing, testing, emergency restoration, and fiber characterization for broadband, telco, end users and the government. Karch holds a variety of certifications from the White House and the Optical Society of America (OSA). Since 1987, he has held a variety of training and education roles at the Light Brigade.

“We appreciate Cameron being recognized by the ETA. Throughout his career, Cameron’s field experience and continuing technical development has continually demonstrated his expertise in fiber optics to his students and co-workers,” said Larry Johnson, Founder and Director of Light Brigade.

ETA International has issued over 150,000 professional certifications with all certifications accredited through the International Certification Accreditation Council (ICAC).

ETA Certifications Available Through the Light Brigade

<table>
<thead>
<tr>
<th>Certificate: ETA Fiber Optic Installer</th>
<th>ETA Fiber Optic Technician—Outside Plant</th>
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<td>Courses:</td>
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<td>Fiber Optics for Oil and Gas</td>
<td>FTTx for Installers and Technicians</td>
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Standards Update
40 Gigabit-capable Passive Optical Networks

Those keeping a watch on bandwidth consumption and FTTx implementation may be interested in a new standard recently released by the International Telecommunications Union: ITU-T G.989 “40 Gigabit-capable Passive Optical Networks (NG-PON2): General Requirements.”

Legacy FTTx PON standards such as B-PON, G-PON and EPON are based on data rates up to 2.5 Gb/s, and the NGPON1 method defined in the ITU-T G.987 standard increased this up to 10 Gb/s. The new G.989 standard addresses how the same installed fiber optic distribution network can handle data rates up to 40 Gb/s by assigning wavelengths to each subscriber rather than with the shared PON of legacy systems.

To ensure that the new system can coexist with legacy systems, new dense wavelength division multiplexing (DWDM) wavelength assignments have been defined for both upstream and downstream transmission. The new system can overlay existing splitter-based PONs with optical filtering that takes place at the optical network terminal (ONT) or the splitters can be replaced with optical filters in the outside plant.

Industry Focus
Pro A/V and Broadcasting

The Audio/Visual and Broadcast industries continue to embrace fiber optics as their preferred signal transport method. The transition from analog signals to high definition (HD) and 4K video affects the fiber and equipment infrastructure choices. As the demand for bandwidth continues to increase, it is critical to understand the impact this has on selecting a fiber type. Choosing multimode or single-mode fiber will impact the transmission distance options as the bandwidth requirements increase. Because of this, it’s imperative that the bandwidth and dispersion characteristics of different types of fiber are taken into account when calculating maximum transmission distance.
Upcoming Classes
Click on Location to Register

Fiber Optics 1-2-3
- Savannah, GA: April 7-10
- Dallas, TX: April 7-10
- New York, NY: April 14-17
- Edmonton, AB: April 14-17
- Baltimore, MD: April 21-24
- San Juan, PR: April 21-24
- Toronto, ON: April 28-May 1
- Bismarck, ND: April 28-May 1
- Virginia Beach, VA: May 5-8
- Nashville, TN: May 5-8
- Orlando, FL: May 12-15
- Ottawa, ON: May 12-15
- Lowell, MA: May 12-15
- Lansing, MI: May 12-15
- San Bruno, CA: May 5-8
- Minneapolis, MN: May 19-22
- Harrisburg, PA: May 19-22
- Spartanburg, SC: June 2-5
- Boise, ID: June 2-5
- Milwaukee, WI: June 9-12
- Houston, TX: June 9-12
- Washington, DC: June 16-19
- Tulsa, OK: June 16-19
- Seattle, WA: June 23-26
- Cincinnati, OH: June 23-26

Advanced Hands-on Training
- Anaheim, CA: April 28-May 1
- Omaha, NE: May 5-8
- Orlando, FL: June 23-26

Emergency Restoration
- Dallas, TX: April 7-8
- Orlando, FL: May 12-13
- Washington, DC: June 16-17

FTTx for Installers and Technicians
- San Jose, CA: April 28-May 1
- Orlando, FL: May 19-22
- Austin, TX: June 23-26

FTTx OSP Design
- Orlando, FL: April 28-30
- Austin, TX: May 19-21

Certified Fiber to the Home Professional
- Austin, TX: April 13-14
- Atlanta, GA: May 27-28
- Portland, OR: June 2-3
- Charlotte, NC: June 30-July 1

Fiber Characterization
- Dallas, TX: May 27-29
- Seattle, WA: June 29-July 1

Fiber Optics for Mining
- Charleston, WV: May 27-29
- Las Vegas, NV: June 29-July 1

Fiber Optics for ITS, Traffic, Fire Alarm, and Communication Systems

Technician Level I
- Seattle, WA: April 6-7
- Boston, MA: May 4-5
- New York, NY: June 8-9

Field Technician Level II
- Seattle, WA: April 8-9
- Boston, MA: May 6-7
- New York, NY: June 10-11

Design Technician Level II
- Seattle, WA: April 10
- Boston, MA: May 8
- New York, NY: June 12

Fiber Optics for Utilities

Level 1 Technician
- Spartanburg, SC: April 14-16
- Kansas City, KS: June 2-4

Level 2 Designer
- Spartanburg, SC: April 17
- Kansas City, KS: June 5

Fiber Optics for Pro A/V and Broadcast
- Atlanta, GA: April 21-24

Fiber Optics for Oil/Gas
- Houston, TX: April 21-24

2015 Training Catalog
Take a look at the catalog featuring a complete schedule of 2015 training dates and locations throughout the United States and Canada for each of Light Brigade’s 18 training courses.

Download a Copy

Custom Fiber Optic Training
Light Brigade Training can develop and deliver a custom onsite course specific to your needs and application.

Learn More
Product Application

**Visual Fault Locator: An Invaluable Fiber Optic Tool**

The visual fault locator (VFL) is one of the “must have” tools for any fiber optic technician. This low cost item is invaluable when verifying and troubleshooting fiber optic installations. The VFL is a red laser that can be connected to one end of a fiber link and provides a visible spot of light at any point in the fiber that has some type of defect. This allows technicians to find loss points due to things like excessive bends or kinks in the fiber, poor splices or any other damage. VFLs are also handy for tracing fibers to assure proper routing and for a quick check when field installed connectors are used.

VFLs provide a red, visible light in the 650-685nm range and are available with Class II (1 mW) or Class III (5 mW) safety designations.

The VFL provides a visible spot of light at any point in the exposed fiber that has some type of defect.

For more information on this product or any other product, call us at 206.575.0404

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**Upcoming Events**

*Click on Any Event for More Information*

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<td>March 16-20</td>
<td>Las Vegas, NV</td>
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<td>• Training Course:</td>
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<td>Fiber Optics 1-2-3</td>
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<td><strong>OFC Conference</strong></td>
<td>March 22-26</td>
<td>Los Angeles, CA</td>
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<td>• FTTx Center:</td>
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<td>Booth #2556</td>
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<td>• Short Course:</td>
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<td>Safety in Fiber Optics: From Components to Systems</td>
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<td>• Short Course:</td>
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<td>Hands-on Polishing, Inspecting, and Testing of Connectors</td>
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<td><strong>BBC Summit</strong></td>
<td>April 13-16</td>
<td>Austin, TX</td>
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<td>• Training Course:</td>
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<td>April 22-23</td>
<td>Singapore</td>
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<td>• Workshop:</td>
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<td></td>
<td>Understanding Emerging Technologies in 100G Fiber Optic Systems</td>
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<td><strong>OTC 2015</strong></td>
<td>May 4-7</td>
<td>Houston</td>
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<td><strong>UTC Telecom</strong></td>
<td>May 4-8</td>
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<td>Fiber Optics for Utilities - Designer Level II, Advanced Designer Level III</td>
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