Fiber Optic Sensing Association
Connect and Protect

February 14, 2018

Hon. Jeff Denham
Chairman
Subcommittee on Railroads, Pipelines, and Hazardous Materials;
Committee on Transportation and Infrastructure
Washington, DC 20515

Hon. Michael Capuano
Ranking Member
Subcommittee on Railroads, Pipelines and Hazardous Materials;
Committee on Transportation and Infrastructure
Washington, DC 20515

Dear Chairman Denham and Ranking Member Capuano,

On behalf of the members of the Fiber Optic Sensing Association (FOSA), I am writing to express our views regarding the Subcommittee on Railroads, Pipelines, and Hazardous Materials hearing on "Oversight of Positive Train Control Implementation in the United States."

FOSA commends the subcommittee for holding this important hearing, especially as it underscores the significant contributions that advanced technologies can make and are making to improve transportation safety.

FOSA is a non-profit organization created in 2017 with the mission of educating industry, government and the public on the benefits of fiber optic sensing. FOSA members include Adelos, AFL, AP Sensing, Asymmetric Technologies, Corning, Ditch Witch, Dura-Line, Fotech Solutions, Frauscher Sensor Technology USA Inc., LIOS Technology, OFS, Omnisens, OptaSense, OZ Optics, and Prysmian.[1] Through webinars, videos, white papers, public presentations and public policy advocacy, the organization provides information on the use of fiber optic sensing to secure critical facilities, enhance public safety and protect the environment.

FOSA strongly supports the collaborative public-private partnership of Federal Railroad Administration's Transportation Technology Center and the Transportation Technology Center, Inc. (TTCI). Such federally-supported collaborative testing facilities, which also includes the National Highway Traffic Safety Administration's Vehicle Research and

[1] For further information, please visit https://www.fiberopticsensing.org/

Testing Center (VRTC), are essential in both validating and accelerating technology adoption.

FOSA recommends that future development and testing activity by the TTCI address:

- optimization of track-side security,
- increasing worker safety,
- reducing the number and severity of derailments,
- development of optimal installation techniques,
- leveraging of existing fiber networks near railways (including addressing barriers to using non-rail road owned fiber optic cable along rail right-a-ways.)
- cost benefit analysis to evaluate alternative safety technologies.

These initiatives can be expedited with increased federal funding for the Federal Railroad Administration for purposes of TTCI's testing the use of distributed fiber optic sensing in various terrains and geographic settings for both freight and passenger rail. Coordination and funding from other interested agencies, such as the Department of Homeland Security, can additionally advance the use of technologies to protect the security of critical infrastructure.

Fiber optic sensing is currently supporting railroads around the world by reducing delays, cutting costs and improving safety. Often utilizing previously installed, track-side fiber optic communications cables, distributed fiber optic sensing systems can be connected, transforming single optical fibers within these cables into thousands of sensing points per mile. As a result, rail operators are optimizing operations, preventing railway cable theft, detecting landslides and identifying faulty trains and tracks.

A fiber optic sensing system is comprised of optical fiber cable, a detection system and software. The glass fiber is the sensor, sensitive over its entire length. A laser pulse interrogates the fiber and a detector measures reflections from every pulse. Based on the unique properties inherent to the fiber and the scattering of light, software determines whether an incident (acoustic, temperature or strain) is occurring and alerts operators to the problem, the severity of the problem, and the exact location.

Fiber optic sensing is not constrained by line of sight or remote power access and, depending on system configuration, can be deployed in continuous lengths exceeding 30 miles with detection at every point along its path from a single interrogator unit, and interrogator units can be networked together to extend coverage hundreds of miles. Cost per sensing point over great distances cannot be matched by competing technologies and often existing deployed fibers can be utilized.

Additionally, and more broadly for infrastructure spending across transportation modes, Congress can "future proof" public investments with "Dig Once" requirements. FOSA recommends that for federally supported infrastructure spending, Congress should include appropriate funding for "Smart Transportation" advanced technologies, including

fiber optic sensing.[2] This policy would require that covered construction projects on new or existing federal roads include the installation of plastic pipes for fiber optic cables, eliminating the need to dig up roads to deploy broadband infrastructure. By installing the fiber conduits during construction, sensing and broadband providers can easily install fiber optic cables at a low cost whether installed immediately or in the future.

Thank you for this opportunity to comment on this critical topic. FOSA stands ready to work with Congress to advance the common goal of rail safety. For more information, I am available at 202-423-5344.

Sincerely,

/s/

Mark Uncapher
Director

[2] The Broadband Conduit Deployment Act of 2018, H.R. 4800 (Eshoo, McKinley), commonly referred to as the “Dig Once” bill.