



UP's rights of way play host to 34,000 miles of fiber optic systems.



SAFT:

Protecting Our Lines – and Yours – for 30 Years

For more than 30 years, fiber optic lines along UP's rights of way have carried the world's bank transactions, emails, telephone calls, video chats, websites and more — and our Safety, Asset Utilization and Fiber Optic Technology (SAFT, pronounced "safety") group has played a critical part in the installation and protection of this communication network.

About 34,000 miles of fiber optic systems occupy UP's railroad rights of way today. The installation, operation and maintenance of these fiber systems, in accordance with our employee-developed principles, is what makes our customers' facilities compatible with the continuing growth, change and operational flexibility necessary to secure our rail transportation business opportunities now and in the future.

Since our inception, we have pursued other beneficial initiatives. We have marketed our wireless infrastructure or telecommunica-

tion assets, such as towers, necessary to provide communication services to third-party commercial telecom providers. We also developed and marketed the Precision Measurement Vehicle, which now plays a role in collecting track data for UP's Positive Train Control implementation efforts.

Moving forward, we are finding success in repurposing decommissioned facilities to make them useful to our company and our customers; and we have continued to market our towers for commercial use in metropolitan areas since the mid-1990s. We continue to develop our wireless infrastructure to enhance telecommunications services to rural areas in which Union Pacific operates.

Finally, I thank all of you for your hard work and dedication in collaborating with our SAFT group, and encourage you to stay focused and work safely.

— Craig Johnston, director-fiber optics and asset utilization

How Has SAFT Contributed to Your Company's Success?

Continued on page 3

"The SAFT team has been instrumental in the review, approval and coordination of the build-out and upgrades of Sprint's nationwide network. Thanks to the communication that flows through this team, Union Pacific and Sprint have established a great relationship that allows the two companies to coordinate projects in a manner that meets each party's schedule and minimizes the impacts to business operations."

— Brian Jordan, Sprint Real Estate director

SAFT:

Connecting Com for Three Decad

1984: UP signs its first contracts with four major telecommunication companies to permit installation of fiber optic cable in its right of way.

1988: UP acquires the Missouri-Kansas-Texas Railroad.

1989: Dispatch first for techno Nation

1998: SAFT markets its wireless capabilities and constructs towers on UP's right of way.

This newsletter appears under direction of the IT Department. For news coverage, contact the newsletter office by phone at 402-475-6397, fax 402-475-6398, mail information to 2201 Winthrop Rd, Lincoln, NE 68502-4158, or email newslink@newslink.com. This material is intended to be an overview of the news of the department. If there are any discrepancies between this newsletter and any collective bargaining process, insurance contracts or other official documents, those documents will govern. UP continues to maintain and reserves the right, at any time, to alter, suspend, discontinue or terminate all plans and programs described in this newsletter. This newsletter is not an employment contract or any type of employment guarantee. Any photo submitted may be used. Anyone who submits a photo retains all rights to the image. However, by submission you give the newsletter permission to use your photo(s) in all related media. Thanks to everyone who contributed to this newsletter.

Communities

es

The opening of the Harriman Switching Center marks the department's formal integration of fiber optic technology, which also applied to the initial Customer Service Center (1986).

1990s: Fiber optic companies begin to use Precision Measurement Vehicle-generated maps to help design and document fiber cable locations within UP right of way.

1995: UP/C&NW merger adds 4,000 miles of fiber optic cable to the network, increasing its total to 12,000 miles.

1995: The Fiber Group forms a Quality Improvement Team (QIT) and publishes its first Standards Manual for fiber optic cable installations.

1996: A telecommunications contract starts the railroad's second era of fiber optic construction. The SAFT group reacts to customer demand by adding supplemental employees and overseeing 10,000 miles of construction.

1996: UP/SP merger adds another 8,000 miles of cable, bringing its total to 20,000 miles.

1996: The Fiber Group renames itself the Safety, Asset Utilization Fiber Optic Technology (SAFT) group.

2000s: An increase in UP capital projects requires more close coordination with fiber companies.

2014: Union Pacific's SAFT group celebrates its 30th anniversary and relaunches its "Call Before You Dig" system. Currently, the group is responsible for 34,000 miles of customers' fiber optic cable.

How Has SAFT Contributed to Your Company's Success?

"Following an unprecedented flood in January 2005, Union Pacific contacted Lincoln County Telephone System about its plan to install fiber optic cable within the Rainbow Canyon, a scenic stretch of highway between Caliente and Las Vegas, Nevada. We gladly accepted the proposal as the SAFT project enabled us to offer service to Rainbow Canyon's residents who previously did not have land line or wireless service. Prior to that, these individuals had to drive to another town to make a phone call. We greatly appreciate Union Pacific for extending this service to us – and our new customers are equally as grateful."

– John Christian, Lincoln County Telephone System general manager

"SAFT has contributed to Verizon's success as a leader in the telecom and technology industries. Verizon has been able to deliver a superior network to its customers in part due to an outstanding partnership with Union Pacific throughout the past 30 years. The SAFT group has been integral to establishing streamlined procedures that have allowed Verizon to build, maintain, access, and repair its network as needed with minimal disruptions to Verizon customers. Union Pacific has always valued the partnership with Verizon and done an excellent job allowing Verizon to operate its network without impacting Union Pacific's normal business operations."

– Lisa Kahn, Verizon manager-Network Contract Management

"In a successful business relationship spanning more than 16 years, Union Pacific and SBA each contribute resources and expertise, working synergistically to grow revenue on UP telecom towers and rights of way. Although the two companies are in different industries – transportation and wireless telecom – SAFT and SBA teams have together, grown alternative income for SAFT, using railroad operational assets, while simultaneously benefiting SBA wireless infrastructure growth. Characterized by great personal interactions, effective communication and trust, the SAFT and SBA working relationship facilitates efficient resolution of typical business issues, thereby creating quicker, competitive solutions for wireless industry customers. SBA congratulates SAFT on 30 years of success in its mission critical role for Union Pacific."

– Don Mueller, SBA Communications vice president

"It is hard to believe that the washouts in Colorado were just last year. Many Coloradans felt the effects of the floods along with CenturyLink and Union Pacific. The courage and resilience of the SAFT team working to allow repairs of the fiber optic systems was truly inspiring. The floods wreaked havoc on the state, the railroad and the fiber network high in the Rocky Mountains, allowing limited access. The SAFT team worked quickly to ensure the safety of our team, then the common goal of providing a protected alternative for the massive construction effort of rebuilding. Reflecting on this incredible project, I am humbled by the SAFT team's commitment to coordinate, plan, organize and manage the extended operation. I am extremely proud of the CenturyLink-UP teams that maintained carrier services during this natural disaster."

– George McElvain, CenturyLink Communications LLC senior engineer



BUILDING AMERICASM

*Union Pacific Railroad
1400 Douglas St.
Omaha, NE 68179*

PRSR STD
U.S. POSTAGE
PAID
MAIL U.S.A.



Protecting Fiber From Disruption

One of the SAFT group’s primary functions is to coordinate the railroad’s capital projects with the fiber customers on our right of way. This equates to hundreds of projects every year, from new bridges and grade separations to new sidings and terminals. One of the most monumental projects undertaken by any railroad in the past 18 years has been the Sunset Route double-tracking.

Stretching 760 miles from Los Angeles to El Paso, this route had about 174 miles of double track in 1996, the year of the UP/SP merger. This route was recognized as vital to meeting the country’s economic growth and a plan was formulated to work toward double-tracking most of the route. Currently more than 400 miles of additional double track have been completed. Thirteen more miles are being built this year and 32 miles are slated for 2015.

Six fiber carriers and a pipeline have been impacted in many locations along this route. Mike Heald, Tim Neumaier, Phil Stevenson and Bill Wright have worked hand in hand with numerous construction managers and designers to get the work done on time while minimizing impact to fiber or UP operations. The project is currently scheduled to be complete by 2023.

The process begins with a notification letter and plans sent to fiber carriers that may be impacted by a given project. We like to have as much notice as possible, but fast-moving or rapidly changing projects can make advanced notification a challenge. In areas where the fiber carriers determine there will be conflicts with grading, pile driving, trenching,

etc., they develop mitigation plans ranging from adding protective cover to the conduit, or entire relocations of a system to another part of the right of way. In an ideal world, notifications are well in advance of construction and impacts are nonexistent or minor. In the real world, many projects have issues, but the SAFT team works relentlessly to solve the issues as quickly as possible.

“Call Before You Dig:” The Cornerstone of Cable Protection

The very early days of fiber optic construction on UP rights of way required a new system to help protect the new fiber lines. Union Pacific, and other railroads, developed their own processes for employees, contractors and the public to call in advance of a construction project to ascertain the existence of fiber at any particular location on the railroad. UP’s “Call Before You Dig,” or CBUD, began as a one-person call center. Eventually it evolved into a part of the UP’s Response Management Call Center, where it is currently housed. Recently the SAFT group converted from its own custom-written software for inventorying and locating fiber cables to a new custom-written, web-based program, nicknamed FAMS (Fiber Optics and Asset Utilization Agreement Management System).

UP always has been committed to protecting the fiber systems on its right of way. These systems carry railroad communications as well as every type of voice, data and video transmission imaginable. The new FAMS is an example of UP’s efforts to always be a leader in underground cable protection.