

Project Review: Wireless Monitoring for the Union Pacific Reefer Fleet

The managers of the Union Pacific Fruit Express (UPFE) refrigerated railcar fleet were in a bind. In early 2000 UP and CSX introduced Express Lane, a guaranteed perishable-goods service between major US cities. The program was helping to grow perishable shipments for the two railroads, but it also increased the demands on their older reefer cars.

To support Express Lane UP made a commitment to purchase a minimum of 500 new state-of-the-art reefers, and further decided to refurbish over a thousand of their older UPFE reefer cars. Even after these projects were completed, however, UP's fleet would still have contain 3,000 un-refurbished reefer cars that had been built in the late 1960's and 1970's.

Claims Were Rising

Claims due to mechanical failures were growing for this older segment of the fleet, at just the time when UP needed them most. Making the situation even more difficult was the fact that Express Lane schedules minimized the ability to get physical inspections on this equipment.

For Don Nelson of the UP's Damage Prevention Group the issue was clear.

The UP needed a way to improve the monitoring of the existing UPFE reefer fleet for the 4 to 8 year period it would take to refurbish or replace the older cars. The obvious choice was a wireless monitoring system that would provide his team real-time information about the condition of the cars.

Easy Wireless Addition

With wireless communication, UP would be able to monitor fleet temperatures from

a centralized location, and provide more timely enroute servicing. "Express Lane is about more than just fast delivery of perishables," stated Don Nelson, "it is also about a commitment to the quality of the products at destination, and reliable performance. We needed to make sure our entire reefer fleet was operating correctly, not just the newest cars".

Starting in 1999, Don tried a number of existing wireless systems and found them lacking. One system, based on a digital cellular platform, didn't have the coverage needed on rural UP rail corridors. A second satellite solution was simply too expensive.

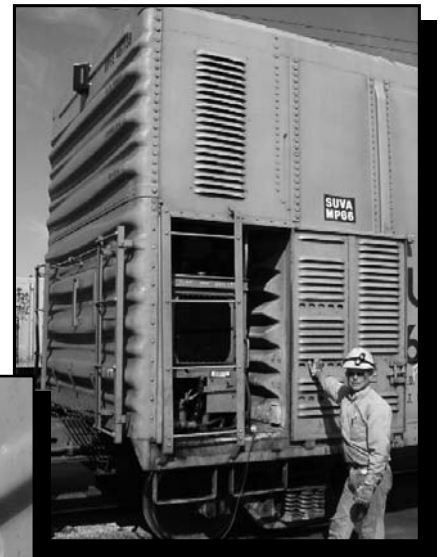
In the meantime, claims continued to grow. He needed a simple, cost effective monitoring solution that offered the cost benefits of cellular, but the coverage of satellite.

Don had some contact with Lat-Lon, LLC, a company out of Denver, CO that provided mobile wireless systems to the railroad industry. For a number of years Don had used Lat-Lon's RailRider wireless monitoring units to track railcars for cou-

pling events. RailRider's utilize the AMPS control channels, a low-cost solution that met the budgetary requirements of the project. And from his own experience,

IT IS ABOUT A COMMITMENT TO THE QUALITY OF THE PRODUCTS AT DESTINATION, AND RELIABLE PERFORMANCE. WE NEED TO MAKE SURE OUR ENTIRE REEFER FLEET WAS OPERATING CORRECTLY, NOT JUST THE NEWEST CARS.

—Don Nelson, Union Pacific's damage prevention group.



Old cars get new abilities. A mobile wireless system manufactured by Denver, CO-based Lat-Lon LLC is enabling Union Pacific to monitor conditions even on its older reefer rail cars.

Don knew that Lat-Lon's solution provided far better coverage than digital cellular. On a hunch, he decided to ask Lat-Lon to develop a reefer monitoring system. It would have to be a bare-bones system that would meet his budget, but also offer high transmission and hardware reliability.

Value Came from Monitoring

"I applied the 80/20 rule" said Don Nelson, "I asked them to come up with a wireless monitoring system that offered 80% of the value of existing solutions, at 20% of the cost. We spent a lot of time working on what that 80% should be". In the end, the real value of the system came from monitoring the temperature of the return air and the generator set status, with immediate alarms provided in case of gen-set malfunction. While other capabilities were available and considered, such as fuel level monitoring, they were dropped to reduce hardware costs. After a successful half-year field evaluation of the system, Union Pacific placed an order for 2,400 RailRider units in June of 2002.

The system operation is as follows: The RailRider units collect temperature and

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John Capers: Covering Transport



This is the first in a series of spotlights of IRTA members.

Information is one of the glues that helps keep the transport industry together.

Effective reporting by informed writers about the trends and developments in the world of transportation help shippers and carriers shape policies, make decisions and do business more efficiently.

Because of this, a good trade publication doesn't just report on the industry it covers. It is an active part of that industry, shaping fundamental business behaviors by providing detailed information that can be found nowhere else.

John G. Capers III, vice president & group publisher at Commonwealth Business Media, understands this intuitively. Capers, 59, has spent the better part of a generation involved in covering the transportation industry. Though his resume includes work with Life and Look magazines, Capers has spent the better part of his career dealing with the business of moving things.

A 30 Year Connection

"My connection with the transportation industry goes back to 1972," Capers says. That's when he began working with Chilton Company's Distribution Magazine. Eventually, he made his way up to the position of publisher. Then, after 23 years, he joined Pacific Shipper, a part of Primedia that was sold to Commonwealth Business Media.

Publishers play a key role in the magazine business. They are responsible for the business side of a publication's operations. This often means that they have a more intimate relationship with members of the community a publication is covering than some reporters do, since executives will often say more to someone who isn't going to put their words in print.

Though most publishers usually avoid getting involved when it comes to specific

articles, good publishers usually help set a publication's agenda. They also let editors know about general trends and developments in the industry. One reason that Capers joined IRTA was so that he could keep a better ear on what's happening with the industry.

"IRTA is playing an important role in informing and educating a critical segment of the transportation business," Capers says. He joined the organization's board to help increase its effectiveness as a group, he says. "I wanted to get on the board to see if there was anything else I could do to help with the program," he says.

A Vital Industry

"Few citizens realize how vital the transportation industry is to their well being," Capers says. "There's an incredible amount of imports that the average person purchases that they have no idea they're buying," he says. Part of his job is to let people know that.

In addition, it's important to keep watch on the vital issues that are shaping the industry. Two issues top Capers' list: "over-capacity and unrealistically low rates," he says. Both sides of the business equation are making serious mistakes, Capers says.

"The shipper can't continue to expect everything for nothing," Capers says. At the same time, "The entire industry is in an ever-increasing speedy spiral of building more equipment and flooding the market with capacity," he says. "The media's role is to educate the shipper to the fact that if they continue to drive rates down they cannot expect better service, equipment and transit times."

"Working with its members, the IRTA can help the industry as a whole deal with key issues and operate more effectively," Capers says. "The IRTA has to find a way to appeal to more shippers and get across to them the innovations that their carrier members are trying to create for better shipment of perishables," he says.

Capers is committed to helping make that happen with all the tools at his command. □

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gen-set status information from the rail-car, then transmit that data via the cellular control channels to Lat-Lon's fleet management system. The data is then decoded and immediately passed on to Union Pacific's IT department.

Mismatch Spurs Alarm

UP's IT department then combines this information with waybill and location information from UP's in-house inventory system. If the temperature or engine status does not match the waybill requirements, then software automatically provides an "alarm" report. Reports are automatically screened so that standard events like engine stops at destination or embarkation points are not flagged for service.

"Marrying the wireless information with our in house system was the key breakthrough to the projects utility and success" stated Don, "Lat-Lon worked closely with us to make sure we had a seamless exchange. It's a robust system that has worked well at catching problem cars without making us search through a mountain of data."

Self-Contained

Installation has been proceeding smoothly. "Because the RailRider unit is largely self-contained, we're able to carryout the installation quickly and in a number of different locations", said Don. Union Pacific has already installed about 1,100 units of the 2,400 delivered.

According to Russ Casebolt, Director of UPFE, the system is already providing a good payback. "We've caught a number of problems, including incorrect temperatures, incorrect waybill information, and also engine malfunctions. We've even used the data to catch an unjustified damage claim", stated Russ.

Express Lane continues to be a top performer for UP. Third quarter 2002 shipments were up 13 percent compared with the same period in 2001. With the help of wireless monitoring, UP is expecting that customer satisfaction will improve even more dramatically. □