

USING TV FOR TRAFFIC REPORTS

In addition to using radio for transmitting traffic information to moving vehicles, California is also using RF to broadcast reports to fixed sites. In February, the agency began a six month, \$325,000 demonstration of "Commuter Television," or COM-TV.

Based on hardware and software from Teletext Communications in Hayward, Calif., COM-TV delivers up-to-date reports on freeway conditions to TV monitors in the lobbies of ten downtown Los Angeles office buildings. COM-TV is an attempt to cultivate "smart commuters" to go with the "smart highways" and "smart cars" that could be part of the future in Los Angeles. The test is not part of the Pathfinder venture (see main article).

Information for COM-TV is gathered by an operator working on a PC at the Caltrans Traffic Operations Center in Los Angeles. The operator obtains updates from the center's giant map display, showing conditions on all freeways in the Los Angeles metropolitan area, says Cheryl McConnell, general manager for California at Farradyne Systems. Farradyne is the traffic engineering and consulting firm overseeing the COM-TV project for Caltrans.

The operator gets additional information from California Highway Patrol and Caltrans dispatchers also stationed in the operations center, McConnell says. COM-TV is available from 6:00 a.m. to 7:00 p.m. on weekdays.

For each of ten freeways serving downtown Los Angeles, the operator continually updates a page of text. The software used to create the pages is "like a very simple word processor" which also permits basic graphics for emphasis, says Bob Evans, vice president at Teletext Communications.

Graphic enhancements include colored and flashing text and icons such as orange cones. The pages are sent via telephone lines to KHSC-TV, Channel 46, in the Los Angeles suburb of Ontario. There, they are incorporated in a "magazine" — or cycle of teletext pages — constituting Teletext Communications' Random Access Network consumer service.

The pages are transmitted over the TV station's vertical blanking interval using the World Systems Teletext format. Decoders in the Caltrans monitors are configured to receive only the traffic information pages.

The COM-TV display uses text, rather than maps showing traffic conditions, mainly because it is hard to update complex graphics quickly using the teletext data, McConnell says. While some traffic managers say drivers cannot make effective use of electronic maps in their vehicles, a map showing only the ten major freeways feeding downtown L.A. would be simple enough for the COM-TV application, she says.

The monitors in the lobbies scroll continuously through the ten teletext pages. In a later phase of the pilot, some of them will have remote control units that commuters can use to select pages for particular freeways, McConnell says. Evans does not think this second method will go over well with most people old enough to work in an office building. "They really don't want to walk up and start interacting with things in public that they don't understand," he says.

Radio and TV stations that purchase decoder devices also can receive the traffic information feed, Evans says. Consumers who have Zenith Digital System 3 TVs can access the information at home along with the rest of the Random Access Network service.

involved in "Prometheus," which stands for Program for European Traffic with Highest Efficiency and Unprecedented Safety (see *Mobile Data Report*, November 15, 1988).

In Japan, tests of "Amtics" (Advanced Mobile Traffic Information and Communications System) started in 1988.

Dixie Marine Uses SMR Data Device On Gulf Vessels

From Corpus Christi, Texas to Pensacola, Fla., the "pushboats" of Dixie Marine have begun using their specialized mobile ra-

dios (SMR) to transmit facsimiles. Although SMR customers transmitting data are few and far between, Dixie Marine expects faxes to help improve its cash flow, provide better customer service and remove some burdens from the crews.

The company's vessels are using the TDI1000 ("trunking data

interface”), a device that connects an SMR radio to a fax machine. The interface is the brainchild of Phil Burks, president at The Genesis Group, an SMR consulting firm in Tyler, Texas.

Dixie Marine’s main cargo is petroleum, which it transports across the Gulf of Mexico, says Robert Goolsby, assistant operations manager at the Houston-based firm. It owns 15 pushboats (as opposed to tugboats that “pull” or “tug”) and 36 barges. The company also leases another seven or eight pushboats and 16 barges. Each vessel has two Motorola VHF radios operating on marine channels for voice communications, primarily ship-to-ship.

For four or five months, Dixie Marine has been working with Motorola and Burks to transmit faxes between the vessels and the company’s headquarters. Every day, between 12:00 a.m. and 6:00 a.m., the vessels send their master’s logs to Houston, using Motorola Privacy Plus SMRs spread across 15 sites along the Gulf Coast. The logs include information about the vessel’s position, fuel supply, maintenance work, time out of service and the ships pushed.

Previously, Dixie Marine obtained this information only when it talked to the vessel’s crew over the voice radio. The company still contacts its ships at least twice a day, but the logs are now faxed.

Most customers using Dixie Marine refuse to pay invoices until they can scrutinize the detailed hard-copy logs, even though most of the information has been written down by Dixie’s dispatchers by talking to the crews via radio. These hard-copy logs are brought to headquarters

HOW TO INSTALL THE TDI1000

Installing the data interface is basically the same for connecting a computer, facsimile or other peripheral with an RS-232 port. According to the Genesis Group:

“The TDI1000 has two adjustments. One is for the transmit level and the other is for the receive level. We’ve included the adjustments to compensate for minor manufacturing variances from mobile to mobile. Also, individual mobiles can have their transmit and receive audio levels to the earpiece changed to a customer’s personal taste. The TDI1000 can compensate for those changes.

“Set up of the TDI1000 is extremely simple. A standard single line phone is plugged into the RJ-11 jack of the TDI1000. A call is placed to a landline phone. This does not have to be a fax because the audio levels at this stage are independent of the fax machine. The technician then initiates a touch tone from a single line phone plugged in the TDI1000 and measures the audio level arriving at the landline phone.

“At the same time, he is monitoring the RF channel to be sure he is not going into clipping. After adjustment is made for -22 dBm, a touch tone is sent in the other direction and the receive level on the TDI1000 is adjusted to -22 dBm.... We have found with a properly adjusted TDI, a properly adjusted trunk[ed] system and [a] properly adjusted PP1000 [i.e., Privacy Plus radio], throughputs of 4,800 bits per second can be accomplished....”

when the crew changes, ranging from once a week to once a month.

Now, customers can see the logs that have been transmitted every day via fax. With this paper-trail, Dixie Marine is generating invoices about three times as fast, says Goolsby. In the near future, the extra revenues from quicker payments could more than justify the use of fax, he says.

In addition to speeding up its revenue collection, the Houston firm also wants to speed up service to its customers. The company is developing a computer system that will allow customers to access the computer and obtain information about their cargoes. This will be followed by a system for electronic bill paying, which should further improve

the Houston’s firm’s cash flow.

The fax system is used not only to improve the flow of cash at headquarters but also to improve the flow of groceries and supplies to Dixie Marine’s crew. Instead of using the vessel’s voice radio to relay orders for the crew, the shopping list is faxed. It takes a lot less time and there’s less of a chance of mistakes occurring. “That’s a big plus,” says Goolsby.

Most of the crews like the system, though there are a few who “don’t like the hassle of the fax machines,” he says. Some of the “hassle” is just the result of using an unfamiliar piece of equipment. But installation of the system has not been completely without difficulties. There are still “a few bugs, but it’s working,” says Goolsby.

Some of the problems have been caused by improper installation, says Burks. Also, two of the Sharp fax machines used on the vessels don't seem able to maintain a strong enough signal, resulting in a disconnection, says Goolsby. Although the concept of transmitting faxes over radio networks is not new, actually doing it in a commercial environment is new. So, its been a series of trials-and-errors for Genesis and Motorola as they find and eliminate all the problems.

Burks, formerly vice president, general manager and part owner of Jecca Towers' SMRs, has been working on a data interface for SMRs since the summer of 1988. An oil company wanted to transmit data between the company's trucks and its mainframe computer in Houston. Burks and an engineer developed a product with error correction and compression that could transmit at a maximum of 7,200 bits/second--when the vehicle was not moving.

At least ten units have been developed and are in operation. However, the oil company doesn't want to talk about it because the use of the technology is considered too much of a competitive advantage, says Burks.

At the same time Burks was designing the interface to the oil company's specifications, he began developing a less expensive and less sophisticated version for non-dedicated applications. The product, now called the TDI1000, doesn't contain error correction or compression, says Burks, who is also an electrical engineer.

The first company to use the TDI1000 was Mother Frances Hospital in Tyler, Texas. The hospital outfitted a van, primarily

for coronary care, that would travel within a 200 mile radius in eastern Texas. A local doctor could schedule patients for a coronary examination, including a stress test and an electrocardiogram. Burks worked with Motorola to install a Privacy Plus 1000 radio with the TDI1000 connected to an EKG machine manufactured by Marquette Corp.

The TDI1000 operates at a maximum of 4,800 bits/second. Although the product can be used for connecting a variety of

computer peripherals, Burks is promoting it primarily for fax machines. It's primarily a marketing decision rather than a technological one, he says. Fax machines are easy to use and more easily understood by Motorola salespeople and their prospective customers. And, faxes have standard transmission protocols and many include error correction.

However, connecting computers and dealing with different communications packages and transmission protocols would

WHAT'S THE MARKET FOR HANDHELD TERMINALS IN EUROPE?

The fastest growing segment of the handheld data recorder market in Western Europe will be the integration of radio frequency technology, says a research report by Frost & Sullivan, Ltd. in London. By 1994, RF-configured units will comprise 18 percent of the total market, says *The Portable Data Recorders Market in Western Europe*.

In 1988, U.S. vendors shipped 286,100 units to Europe. By 1994, a total of 1.3 million units worth \$1.1 billion will have been shipped, says the study.

The report (E1277) is available for \$3,400.

Portable Data Recorders by Application

	1988	1994
Field-based	\$62.5 million	\$360.6 million
Retail/Wholesale	\$55.2 million	\$339.4 million
Personal/Professional	\$17.1 million	\$69.8 million
Other Site-Based	\$55.6 million	\$338.8 million
Total	\$190.4 million	\$1.1 billion

Portable Data Recorders by Country

	1988	1994
Great Britain	\$58.0 million	\$280.1 million
West Germany	\$33.9 million	\$208.0 million
France	\$28.8 million	\$176.4 million
Italy	\$27.1 million	\$178.8 million

Italy will grow faster than average because of the rapid increase in the number of large retail and wholesale stores.

prove too difficult for many SMR salespeople.

Also, Motorola's Privacy Plus system periodically tests the radio link, in essence breaking transmission for about 50 milliseconds, Burks estimates. As with cellular radio's handoff, this doesn't affect voice conversations, but could cause a modem to disconnect when it detects the loss of the carrier. Communications software for SMR data—as with cellular—could be configured to wait until the carrier is re-established and error correcting protocols could be used.

The device retails for \$395, with quantities of ten or more selling for \$295. Motorola salespeople have been doing most of the selling, and Burks has to decide whether to maintain and expand that arrangement or to invest his company's resources for an in-house sales effort. He probably would prefer to OEM the product to Motorola.

For the future, Burks wants to develop a smart interface that automatically answers and hangs up; the current version is manual. But those modifications require obtaining additional information from Motorola about its transmission algorithm.

Rockwell Seeks FCC Okay to Start Data, AVL Service

Rockwell International Corp.'s Avionics Group in Cedar Rapids, Iowa is developing a satellite-based vehicle location and two-way data communications system. The company has applied to the Federal Communications Commission for a license allowing it to lease L-band capacity

from the American Mobile Satellite Corp. (AMSC) in Washington, D.C. Although AMSC will not launch its own satellite until 1993, it expects to provide service over Inmarsat by the end of 1990.

Rockwell will provide the onboard terminals and communications hardware for the satellite service, as well as interfaces to fleet dispatching systems. The firm is establishing a new control center for switching data between customers' headquarters and their vehicles.

Vehicle positions will be tracked using either Loran-C or the Global Positioning System. Interfaces allowing customers to monitor trailer identification numbers and the temperature on refrigerated trailers will be among the available options.

In addition, customers using Rockwell's Tripmaster, a vehicular trip recording computer, will be able to transmit data from those devices to their host computers. More than 80,000 Tripmasters, sold by the Automotive Operations division, are in use, Rockwell says.

Future plans for the system include mobile printers, fax machines and two-way voice communications. AMSC will offer voice service beginning in 1993.

With its features designed for the transportation industry, Rockwell will compete directly with satellite services from Geostar Corp. in Washington, D.C. and Qualcomm, Inc. in San Diego. Those two firms have spent large sums of money trying to develop a high profile in the trucking industry.

Though neither Geostar nor Qualcomm has announced an interface to a trip recording computer, both provide optional in-

terfaces to onboard measuring devices for monitoring conditions such as temperature and the presence or absence of a trailer. Rockwell brings to the competition an established customer base of trucking firms, as well as experience developing mobile satellite communications systems and navigation equipment.

FCC Releases NPRM on Generic Satellite Service

The Federal Communications Commission's eight-page Notice of Proposed Rulemaking (NPRM) to establish a generic mobile satellite service contains little additional information about its plans and no surprises beyond what was published in the initial press release issued last month (see *Mobile Data Report*, February 12, 1990).

However, the notice pleases Geostar Corp. because it encourages competition and appears to refute American Mobile Satellite Corp.'s (AMSC) claim that it's "anointed" to provide mobile satellite services, says Dr. Stephen Cheston, executive vice president of regulatory affairs at Geostar in Washington, D.C. AMSC has been acting as if it alone were designated to provide land mobile satellite services, he says.

However, the NPRM says "any new spectrum that becomes available domestically may be used to offer satellite service providers the opportunity to offer the public new and unique services." Cheston stresses the

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