

\*\*\*\*\*AUTO\*3-DIGIT 857  
 5117298 D08 0306  
 TOM MILLER 748  
 ASST CHIEF ENGINEER  
 KTZR  
 2033 S AUGUSTA PL  
 TUCSON AZ 85710 7905

**Your Letters**

Cleo Reed, affordable portables and saving AM.

Page 46

**Honey, It's for You**

Codecs and telco gear just keep getting better. *Buyer's Guide* has the latest.

Page 31

# Radio World



\$2.50

The Newspaper for Radio Managers and Engineers

August 1, 2003

**INSIDE**

**NEWS & ENGINEERING**

▼ David Sproul started at WMAL the day he got his college diploma. That was 30 years ago.



Page 3

▼ Charlie Morgan says the NRSC does not operate in secrecy.

Page 4

▼ The battle over ownership rules spreads.

Page 5

▼ Why Wi-Fi may rock radio's world.

Page 12

**GM JOURNAL**

▼ Who's got the next hot format?

Page 18



▼ New rules open doors for acquisitions.

Page 20

**DIGITAL DELIGHT**

▼ An engineer in Minnesota wins the prize from BSW and Radio World.

Page 4



Sign Up For NewsBytes Weekly Digest at [www.rwonline.com](http://www.rwonline.com)

## Group Sees No Major EAS Overhaul

by Randy J. Stine

**WASHINGTON** The FCC could begin discussions this summer on recommendations from the Media Security and Reliability Council on ways to ensure the delivery of emergency information via public warning systems in this country. Yet warning experts expect the process to be "measured and deliberate" and that

any immediate overhaul of the Emergency Alert System is unlikely.

The federal advisory committee has received initial recommendations from working groups on public communications and infrastructure, urging better coordination among media and local emergency jurisdictions and recommending that a single federal entity take responsibility for public warning. A final

version of the guidelines is expected in December.

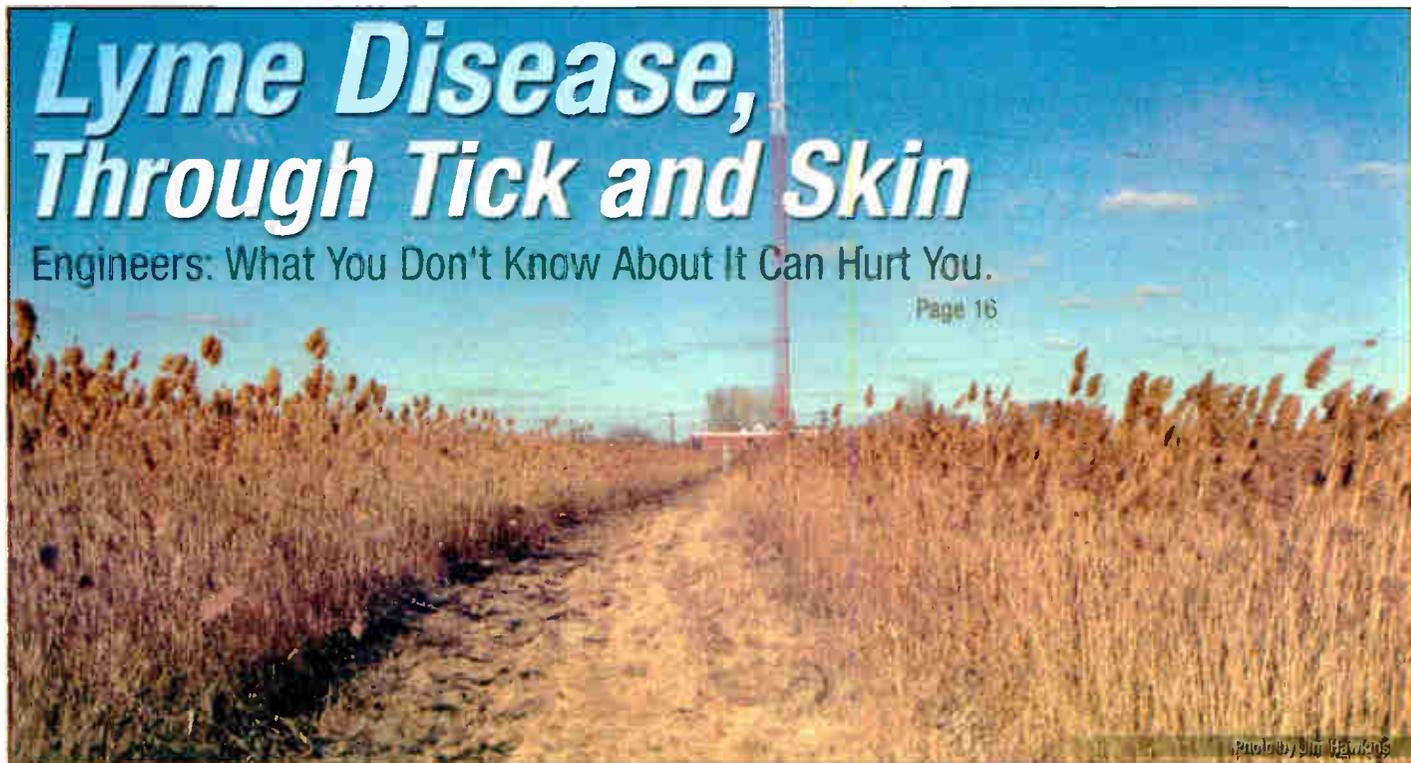
FCC Chairman Michael Powell established the MSRC following the events of Sept. 11, 2001, to ensure the reliability and security of broadcast and multichannel video programming during times of crisis. The group is patterned after a similar group for the wired and unwired

See MSRC, page 6 ▶

## Lyme Disease, Through Tick and Skin

Engineers: What You Don't Know About It Can Hurt You.

Page 16



**The Closer You Look**  
**The Better We Look**

The entire staff at Continental understands how critical each and every part of your equipment is. We take pride in every wire crimp, solder joint, component mounting, service call, part delivery, and part finish.

**EDI Continental Electronics**  
 INTEGRATED PRECISION

800.733.5011 [www.contelec.com](http://www.contelec.com)

# ◆ NEWS WATCH ◆

## Ibiquity Lays Off Walden, Two Others

**COLUMBIA, Md.** Ibiquity Digital Corp. let go three of its top managers in July, including two leaders of its technical teams, sources say.

Laid off are E. Glynn Walden, vice president of broadcast engineering; Rick Martinson, vice president of program management; and Gerald Marcovsky, senior legal advisor. The changes, reportedly for cost-cutting reasons, were effective at the end of the month.

Ibiquity had no immediate comment other than to say it continues to work on the PAC codec problem.

All three had been involved with IBOC development for several years. Walden has been the "face" of digital radio for many in the U.S. radio industry; he has been involved in the technical development of the technology since 1989 and was the main liaison between Ibiquity and broadcasters, sources said.



Glynn Walden

Walden had been vice president of broadcast engineering since 1996, according to the company Web site. He directed broadcast industry-related activities associated with technology development and regulatory approval.

He was a founder of USA Digital Radio, now Ibiquity Digital, and was responsible for coordinating and leading the industry's implementation. He represented Ibiquity on the National Radio Standards Committee and managed other testing and evaluation efforts.

Prior to his current role, Martinson had been appointed director of digital radio broadcast development in 1996. Marcovsky joined the company in 1998.

# Audioarts R-90



**The Perfect Console  
for Multi-Studio Buildouts!**

tel 252-638-7000/fax 252-635-4857  
sales@wheatstone.com  
copyright © 2003 by Wheatstone Corporation

**AUDIOARTS ENGINEERING**  
www.audioarts.net

## Stewart Upped At HBC

**DALLAS** Hispanic Broadcasting Corp. promoted David Stewart to vice president of engineering. He is responsible for technical operations and equipment at existing stations, locating upgrade paths and improving signals of current stations and proposed acquisitions, and for training and supervising the technical staffs of the stations.

Jeff Hinson, senior vice president and chief financial officer of HBC, stated, "Over the last five years, David Stewart and our team of dedicated engineers around the country have guided us through approximately \$1 billion of acquisitions, the building or renovation of broadcast studios in virtually every one of our markets, and the signal upgrade of several radio stations. David has been instrumental in our efforts to evaluate, acquire and upgrade radio stations around the country."

## Fall Show in Arizona Expands

**PHOENIX** October will bring a regional broadcast event to Phoenix, under a new name.

The Southwest Communications Expo, presented by SBE Chapter 9 and the Arizona Broadcasters Association, is Tuesday Oct. 14 at the Phoenix Civic Plaza Convention Center. (The former event name: The Annual Society of Broadcast Engineers and Arizona Broadcasters Association Conference.)

Robert Reymont, seminar chairman, said the SBE will concentrate on strengthening the technical sessions. Session topics will include Arizona's homeland security issues, a Web portal pilot program for the state AMBER Alert System, the Alternative Broadcast Inspection program, a job fair and the ABA Hall of Fame reception and dinner. Reymont also is seeking additional presentation papers.

For information e-mail [cscomm@earthlink.net](mailto:cscomm@earthlink.net).

### NEWS

Group Sees No Major EAS Overhaul	1
NewsWatch	2
Sproul: One Station, 30 Years	3
A Different Take on Radio Standards	4
Ownership Appeals Anticipated	5
ABC: 'We Can Try No More'	7

### FEATURES

Workbench: An Efficient Tower Lighting Feed	8
People News	10
Wi-Fi May Rock Radio's World	12
Haskey: A Gentle, Dedicated Engineer	14
Lyme Disease Is Unrecognized Threat	16

### GM JOURNAL

What's New? Formats to Watch	18
Rules Open Doors for Acquisitions	20
New Rules: The Freeze Is On	23
Radio@AOL Success Good for All	27

### BUYER'S GUIDE

AEO Codecs Assist	
International Operation	31
KSL News Depends on Comrex	31
Telos Xport Is Fast on Its Feet	33
Musicam USA Nets a 'Star'	34
AA Roadwatch Uses Sonifex Codecs	35
Innkeeper PBX Has a Simple Spirit	39
Tieline Serves 'Open House Party'	39
WorldNet Milano	
Has Enhanced apt-X	41
Tele-Link Puts Internet to Work	41

OPINION	46
---------	----

# Sproul: One Station, 30 Years

by Randy J. Stine

*One in a series of occasional articles about radio engineers.*

**WASHINGTON** David Sproul proudly sports the company ID badge that bears his start date in 1973 at the engineering department of WMAL(AM) in Washington.

His 30 years of dedication were rewarded in June when Sproul was named chief engineer for ABC Radio Group's Washington cluster of WMAL, WJZW(FM) and WRQX(FM).

"I started at WMAL the day after I received my college diploma, so it's the only job I've known as a grownup," he said. "I attribute my success here as much to not making enemies as to making friends. I think that is an important part of advancement ... not making people angry."

Beginning as a board operator, Sproul worked his way into an engineering maintenance position by 1980 and was named chief engineer for WRQX and WJZW in 1999.

"The appointment as chief for the entire cluster was more or less an effort to tidy up the chain of command. What started out as just a job 30 years ago has turned into much more," Sproul said.

Sproul reports to Clay Steely, vice president of engineering for ABC's owned and operated radio stations.

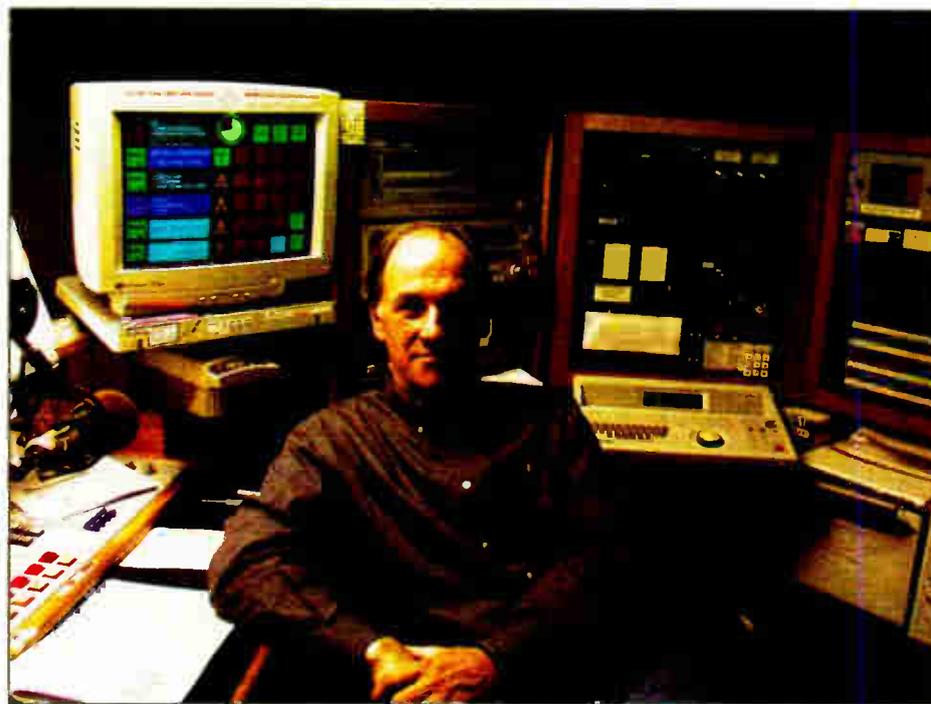
## From dump truck to radio

The 53-year-old Sproul was born and raised in Staunton, Va., not far off the Appalachian Trail. He can recall receiving a dump truck for his fifth birthday and immediately telling his parents he was going to convert it into a radio.

"I thought I could figure out how to do it. The headlights were going to be the knobs and the grill was going to be a

speaker. I guess I had an early interest in radio," he said.

His first radio job was on air at WTON(AM) in Staunton.



David Sproul in the WJZW(FM) control room.

"I hosted a Saturday night Top 40 show throughout high school. It was a full-service AM station with only a small box of records they kept around for my show," Sproul said. "I was paid \$7 a show."

He used that money to buy half-hours of flight instruction at the local airport and received his multi-engine rating before he graduated from high school. He occasionally still flies a rented Cessna 182 "just for the fun of it."

It was at WTON that his interest turned from being on the air to working on equipment, he said, spending much of his board op duties actually reading owners' manuals and "wondering why things were as they were."

"The former chief engineer at the station was so jealous of his turf that he wouldn't let us touch a thing, which only peeked my curiosity. Just to flummox the guy, we would occasionally remove things from the rack and crawl through, and then put it back in. Then we would surprise him when he unlocked the door."

## Medical school or radio?

After graduating from Staunton Military Academy in 1968, Sproul enrolled at Randolph-Macon College near Richmond, Va., with the intention of following in the footsteps of his father by becoming a medical doctor. However, the first rejection letter from medical school immediately convinced him to view radio as an option.

"My degree is in biology, so I was on the medical school track. But I had invested so much into broadcasting by that time that it seemed a natural alternative," he said.

Sproul recalls wearing wearing a seersucker suit and bow tie when he interviewed with longtime WMAL Chief Engineer J.B. McPherson at the station's transmission facility, in nearby Bethesda, Md.

"J.B. wanted to know if I had an aptitude with tools, so he asked that I fix a fluorescent light fixture in his office. I put a new ballast in the fixture, and ya know,

that light is still working," Sproul said.

Sproul now supervises a staff of four engineers, three of whom are National Association of Broadcast Engineers and

tenance guy for WMAL. He's been here nearly as long as I have. We are able to outsource some repairs to manufacturers and outsource some other help to consultants."

Sproul said the higher level of studio competence provided by the NABET studio engineers is necessary because WMAL uses Prime Image's Cash machine during national programming such as Dr. Laura and Rush Limbaugh. Cash allows a station to add advertising inventory by squeezing in additional minutes of commercial availability without affecting the pitch of the audio.

"Cash can be a bit disruptive. Some people object to the jolt of sorts you get going back into the national shows. It's noticeable when you're trying to gain a couple of minutes per hour. In the end, it's important to realize that it's financially justified and an important source of revenue for the station," Sproul said. "However, from an engineer's standpoint, we regret the downside."

Sproul said he still has some reservations about the broadcasting industry's conversion to HD Radio, even though he'll oversee ABC's plans to convert the two Washington FMs to in-band, on-channel digital audio broadcasting next year.

"On fairly short notice, we have put money in the 2004 budget to do IBOC. It's wait and see for WMAL with the Ibiqumity PAC compression algorithm doubts," he said. "(WMAL) could be

See SPROUL, page 5

## Sproul's Peers Say:

"As a guy, Dave is a gentleman and a scholar, a loving father and husband. As an engineer, he is brilliant and demanding of excellence from himself first and then of others. Best of all is knowing if a light is out on the tower during a storm at night, Dave will notice it and stop to climb the tower to fix it. He'll only let you know about it if he thinks he has to explain why his shoes are wet."

— Jim Robinson  
President/General Manager  
WJZW/WRQX

"I have tremendous respect for Dave and know that I can always count on him to fix something or improvise to make our on-air jobs easier. One word to Dave about a piece of equipment being broken and he is on the case."

— Marilyn Thompson  
Air Personality/Traffic Reporter  
ABC Radio

**HD-Ready Radio Antennas**

**IBOC Hybrid Combiners**

**Television Antennas**

EL Series UHF

**UHF Panel**

**New possibilities with ERI**

**Structural Reinforcement**

**Electronics Research, Inc.**  
7777 Gardner Rd.  
Chandler, IN 47610  
ph: 812.925.6000 www.eriinc.com

# A Different Take on Radio Standards

When an engineer as respected as Charlie Morgan takes exception to something I write in print, I pay attention.

Morgan was responding to my June 18 comments here about the National Radio Systems Committee standards process. I wrote that the process is far too secretive and not well-defined. I also commented about how the NRSC has handled the question of HD Radio to date; and I called for the group to open its doors to journalists.

## Misleading?

For the uninitiated: The NRSC is sponsored jointly by the National Association of Broadcasters and the Consumer Electronics Association; thus it brings together the people who transmit broadcast signals and the people who make it possible for us to hear those signals, i.e. the receiver manufacturers. Its purpose is to study and make recommendations for technical standards that relate to radio broadcasting and the reception of radio broadcast signals.

Charles Morgan is the chairman of the NRSC and vice president of Susquehanna Radio Corp. I share his response with you in detail.

"Paul, I just read your June 18 editorial.

You make some very good points, but some of your comments could be misleading to readers who are not familiar with the workings of the NRSC," Morgan wrote.

"First, we do not operate in secrecy or behind closed doors. Membership to the NRSC and its meetings are open to anyone with an interest in the radio transmission industry. Application for membership and meeting notices are available on our Web site at [www.nrscstandards.org](http://www.nrscstandards.org). All NRSC, subcommittee and working group meetings are an open forum, and all interested parties are welcome. Unfortunately, the press and only the press are excluded from attending these meetings.

"My second point concerns your comments on changing algorithms without retesting," he continued.

"What really occurred is that when USADR and Lucent merged into Ibiqity, they informed the NRSC and the industry that they intended to change their algorithm from AAC to PAC. Since they were not ready to make this change and no one wanted to delay the testing, the NRSC agreed with the Ibiqity proposal to move forward with the testing using AAC and at a later date perform

additional audio quality testing using the PAC algorithm for both their AM and FM systems.

"The need for future testing in the event of an algorithm change is well-documented in both the AM and FM evaluation reports in Section 1.2 Future Work."

## 'Great expectations'

"This is exactly what happened," Morgan continued.

"The NRSC recommendation for both the AM and FM systems were based on testing using AAC. In mid-2002, similar testing of the audio quality were performed on the FM system using the PAC algorithm at 96 kb, and a report stating that these results were consistent with our earlier evaluation and recommendations was submitted to the FCC.

"The AM system was another matter. Similar audio quality tests were performed using the PAC algorithm on the AM system. At a Feb. 6, 2003 meeting, the results of the PAC testing were presented to the evaluation working group, and it was quickly determined that the results obtained with the new PAC algorithm were not satisfactory.

"Ibiqity recognized the problem and decided to withdraw their submission rather than risk having it rejected. Ibiqity stated that they were making improvements to the PAC algorithm and would submit it again at a later date," Morgan wrote.

"Paul, as you can see, we did not allow Ibiqity to change algorithms without retesting. The problem is that PAC did not provide the same quality as previously observed using AAC for the lower bit rates required for the AM system.

"Ibiqity's contention that the same algorithm must be used for both the AM and FM system and the concern that they were moving forward with chip production utilizing PAC were the main reasons for the pause in NRSC standard-setting activity.

"It is important to note that the NRSC, and I personally, have great expectations for the Ibiqity system and fully expect them to resolve this algorithm problem."

I'm pleased to stand corrected on the details of the standards process. I continue to

## From the Editor



## Paul J. McLane

disagree with my friends and colleagues on the NRSC over the question of media access; and I think the confusion about what exactly happens in those meetings reinforces my point.

## Access for all

To say that the group is open to all *but* the press ignores the fundamental role that responsible media play in this situation.

The truth is that most people in our industry do not have the time nor the means to participate in the NRSC. Thousands of interested parties would like to know about the NRSC and its important work. They should be able to learn about it not just from a rare press release or thick report, but from disinterested third parties — not just Radio World, but any responsible journalistic publication.

As Thomas Jefferson wrote in 1787, "I am persuaded that the good sense of the people will always be found to be the best army. They may be led astray for a moment, but will soon correct themselves.

"The people are the only censors of their governors," Jefferson continued, "and even their errors will tend to keep these to the true principles of their institution. To punish these errors too severely would be to suppress the only safeguard of the public liberty.

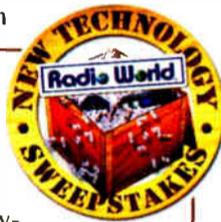
"The way to prevent these irregular interpositions of the people is to give them full information of their affairs through the channel of the public papers, and to contrive that those papers should penetrate the whole mass of the people."

He was talking about governance, but I believe his argument holds in the case of our industry's standards body as well. 🌐

Engineer Hal Schardin of Minnesota State Services for the Blind in St. Paul, Minn., wins a Tascam CD-RW700 CD recorder from BSW and Radio World. You can sign up for our New Technology Sweepstakes at [www.rwonline.com](http://www.rwonline.com).

The super-nice folks at BSW have been supplying virtually everything you need in professional-quality audio and broadcast gear for three decades. They back up their products with a best-price guarantee, same-day shipping in most cases and extended telephone hours.

The Tascam CD-RW700 offers unbalanced RCA I/O and S/PDIF digital I/O in coax and optical formats; it uses standard CD-R and CD-RW media. It also has a RAM buffer, 24-bit A/D-D/A converters for premium sound quality, digital gain adjustment and digital processing of fade in and fade outs from 3 to 30 seconds. Value: \$499.



**Lynx**  
Advanced software for the GSC3000 and VRC2500 transmitter remote control systems.

**Did you get your free transmitter control software?**

- ▶ Real-time event logging
- ▶ Customized report writing
- ▶ Expanded connectivity options
- ▶ Easy transition from previous versions



ALL NEW VERSION 4

tel 800-255-8090 / fax 978-486-0081 / sales@burk.com / www.burk.com

**BURK**  
TECHNOLOGY

# Ownership Appeals Anticipated

by Leslie Stimson

Organizations that oppose the FCC's new media ownership rules will have roughly until the end of this month to ask the agency to reconsider them. Some groups, including Consumers Union, have said they would ask the agency to redo its ownership rules. The petitions would join congressional efforts to overturn some or all of the new rules.

The FCC released the fine points of its rules in July, a month after commissioners passed the changes by a vote of 3-2. The rules were to be published in the Federal Register by the end of July; parties would have 30 days after that to file Petitions for Reconsideration.

As the commission revealed its rationale behind the changes in July, Chairman Michael Powell and the other two Republican commissioners defended the rules. In a statement, Powell said: "Keeping the rules exactly as they are, as some so stridently suggest, was not a viable option. ... As the only member of the commission here during the last biennial review, I watched first-hand as the commission bent to political pressure and left many rules unchanged. Nearly all were rejected by the court because of our failure to apply the statute faithfully."

The FCC chairman disputed arguments by some who say a few companies dominate the media marketplace. "We have heard much about five media companies controlling virtually everything we watch, hear and read," he said. "If this were true, I too would be alarmed. This statistic, however, has been purposely misstated to create hysteria around this proceeding."

Part of the debate over ownership involves content. Some citizens groups, members of Congress and other critics including FCC Commissioner Michael Copps have criticized big media companies for some of the content they produce, which some find indecent. The commission will not regulate content, Powell reiterated.

## Public concern

The two Democratic commissioners opposed the new media ownership rules. In July, Commissioner Jonathan Adelstein issued a 39-page dissent.

"We've now heard from nearly 2 million people, almost all opposed to the decision, an unprecedented outpouring of public concern. Yet we march ahead with our new rules," he stated.

In a document explaining the new rules, the commission argued that the contour

overlap methodology for determining which radio stations are in a market is ineffective and leads to inconsistent results. The commission prefers to switch to Arbitron Radio Metros because those are geography-based.

Although this approach would be less accurate in measuring signal reach, the commission stated, "Radio stations serve people, not land; and while radio signals may overlap over uninhabited land or even water, people in the United States tend to be clustered around specific population centers."

The NAB and others have argued that Arbitron Metros are not sufficiently reliable to define radio markets. The commission disagreed. "Although Arbitron Metro boundaries do occasionally change, we are not convinced that such changes occur with such frequency, or that they are so drastic, that we must reject reliance on these boundaries in defining relevant radio markets."

The FCC will not count "below-the-line" stations as in a market. To include such stations, which are frequently distant from a market, would produce distortions in a market picture, it felt.

The commission has begun a rulemaking to craft a market definition for those areas not in Arbitron-rated markets. Comments are due 30 days after publication in the Federal Register.

The FCC now will count joint sales agreements toward a group's station count in a market and will no longer flag transaction applications that would result in a combo over a certain market share.

In order to prevent groups from trying to manipulate the changes in radio market definitions to their benefit, the FCC has developed a safeguard.

"We will not allow a party to receive the benefit of a change in Arbitron Metro boundaries unless that change has been in place for at least two years," states the commission in its ownership order. The FCC said this safeguard includes both enlarging a Metro and shrinking a Metro, to split a owner's non-compliant station holdings into separate markets.

Also, a station combo that no longer complies with the rules cannot rely on a changed market definition to come into compliance.

NAB and the ranking Democrats of both Commerce Committees were at odds over the TV audience cap at presstime. Initially, NAB supported restoring the cap from the new 45 percent to 35 percent. But NAB withdrew support for measures to do that, citing numerous amendments the association said are detrimental to broadcasters. Some of those amendments would affect radio.

Rep. John Dingell and Sen. Fritz Hollings said they would press forward with legislation to restore the 35 percent cap. Both were disappointed by NAB's action.

NAB President/CEO Eddie Fritts told reporters that given the current political climate, NAB realized it couldn't expect a "clean" bill to move forward and that's why it stopped lobbying for the cap restoration. Fritts said this was always the position of NAB members, and the organization felt it needed to make its position clear before the measures potentially moved to the floors of both legislative bodies. ●

## Sproul

► Continued from page 1  
problematic because it's a four-tower directional AM."

"I'm excited about the program-associated data capabilities that are projected, although I think overall and in every other way, (IBOC) is a big technological bite to swallow. With the necessity of blending analog and digital back and forth, the opportunity to clean up the audio demonstrably seems impossible."

The Northwest Washington facility of the three stations is on the fourth floor of the Jennifer Mall office building near the Mazza Gallerie shopping complex. He describes the facility as "humble" but with a lot of heritage.

"Thirty years in the same place means a lot of abandoned wire in the ceiling. There's a bit of a gag of unmarked Beldfoil up there," Sproul admitted, "and only an engineer could enjoy lifting a tile out or ripping up carpet and seeing signs of where an office wall used to be and how the rooms were divided up in the old days. It's a bit of radio anthropology ... we've been here long enough it seems that way."

As part of his responsibilities for the physical plant, Sproul makes sure paint codes for offices are observed and repairs

are done with the correct materials.

"I also supervise the tenant improvement money that will be spent as part of our lease renewal. I enjoy doing it so they let me," he said.

The three stations use Scott Studios audio management systems, Sproul said, and there is a "flock" of auxiliary studios for WMAL.

"There are eight studios of one kind or another of different vintages. They're geared with everything from 25-year-old McCurdy consoles to brand-new Wheatstone mixers," he said. "The McCurdys were wonderful consoles when they were new, but they have gone way beyond their depreciation cycle. I'm often left wondering what will happen to them next!"

## New this summer

Sproul is overseeing a WRQX project this summer that will have the station feeding a new Dielectric Communications panel antenna at a transmission site about a half-mile from the studios.

"We are joining the Clear Channel stations on the antenna. It has been complicated politically, but it will give WRQX a tremendous boost in coverage into northern Virginia."

Sproul said he has worked for five general managers and seen numerous programmers come and go over 30 years. He has developed a tremendous amount of loyalty to the most unassuming of employees.

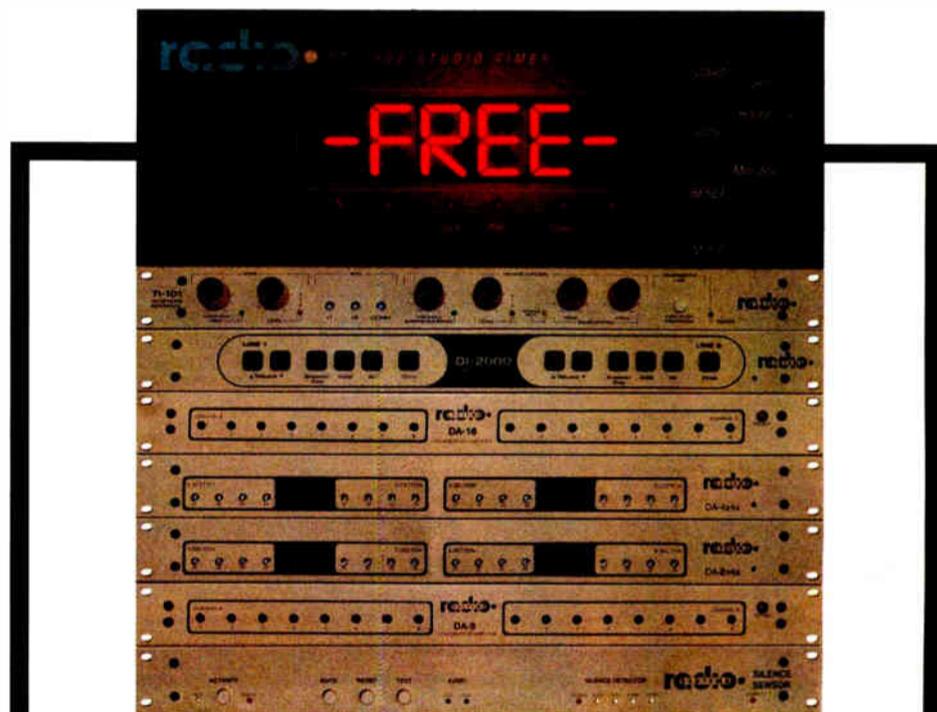
"I have respect for the people who clean this place and take so much pride in their work. The people who run our traffic department are as conscientious as anyone I've ever met. I've learned the job description does not imply the quality of the person doing the job. I'm grateful to people who can take an ordinary job description and turn it into something more and do it day in and day out."

Sproul lives with his wife Robin, who is Washington News Bureau chief for ABC TV, in Bethesda, Md. The couple has two daughters, Cathryn, who is attending Harvard, and Anna, who starts this fall at Columbia University. ●

## Correction

A story in the July 2 issue incorrectly reported that the original CCA was founded by a group of former RCA engineers.

In 1957, Bernard Wise left RCA and formed ITA Electronics, which supplied RCA International and Collins Radio Co. with FM transmitters for five years. Wise sold this company to Triangle Publications in 1962 and formed CCA Electronics that year. He sold his majority shares in 1974. Wise later founded Energy-Onix, in 1986.



Buy one of our  
DA's, Phone Hybrids or Silence Sensors  
any time this year  
and get a  
**CT-2002 Clock - up/down Timer FREE!**  
(a \$135.00 value)

radio  
SYSTEMS

601 Heron Drive, Logan Township, NJ 08085  
(856) 467-8000 • (856) 467-3044 FAX  
www.radiosystems.com

CALL ONE OF THESE PARTICIPATING DEALERS

BROADCASTERS  
GENERAL STORE

BSW

Crouse-Kimzey

SCMS INC

Tech 101 Systems Group

(352) 622-7700 (800) 426-8434 (800) 433-2105 (800) 438-6040 (888) 832-4638

# MSRC

► Continued from page 1  
telephone industries.

The working groups' list of 26 recommended "best practices" also called on the government to create a Media Common Alert Protocol to deliver emergency messages via digital networks and asks the FCC to urge local and state governments to update their emergency procedures.

"We think the recommendations are very good and we are looking forward to beginning discussions within the FCC, with our federal partners and others from the industry," said Jim Dailey, director of the FCC's new Office of Homeland Security. The office is part of the commission's Enforcement Bureau, and now has responsibility for broadcast EAS enforcement.

Warning experts say they expect the U.S. Department of Homeland Security, which is responsible for issuing the five-color terror alert system, to step forward and take control of public warning systems. Department secretary Tom Ridge attended MSRC's meeting in May.

Dailey does not expect the FCC to give up enforcement of the national level requirements of EAS.

The FCC, Federal Emergency Management Agency and National Weather Service currently oversee the alert system.

Meanwhile, broadcasters and MSRC officials said this is at least a starting point to enhance the public image of an EAS system that has been ridiculed by some broadcasters and lawmakers as ineffective.

"It seems that while the FCC has done an excellent job making sure broadcasters maintained their EAS equipment and their commitment, there has been no one single federal entity to make sure that federal, state and local governments draw up adequate plans for utilizing all of the equipment broadcasters have in place," said Ann Arnold, executive director of the Texas Association of Broadcasters and chair of MSRC's Government to Media subcommittee.

"Making it clear what federal agency is in charge will allow them to advocate on the system's behalf. I think the U.S. Department of Homeland Security is a logical choice to carry the EAS torch."

Broadcasters are prepared, she said, to engage with local and state EAS planning committees to develop emergency warning plans that actually work.

"The broadcasters are offering the most timely, easiest form of communicating with the public during times of emergency anywhere. They have invested money and have had this system in place since 1996. The missing link has been someone at the government level responsible for the system and advocating on its behalf," Arnold said.

Tribune Broadcasting Vice President

Shaun Sheehan said it's time the federal government "gets its arms around" the public warning issue.

## No big overhaul seen

"This will not be a complete overhaul of EAS. These are simple, forward-looking recommendations that can be easily implemented. Now it's up to the FCC to craft the rules and regulations and petition for the changes," said Sheehan, who serves as MSRC's liaison coordinator.

"The media has been treated as an outsider when states and cities have been putting together their EAS plans. It's time to bring us into the tent."

Sheehan said radio is one of the most crucial components in delivering emergency information to the public. "It could theoretically come down to having portable radios as the only means of communication," he said.

that, "Research into development of alternative, redundant and/or supplemental means of communicating emergency information to the public be accelerated."

Fitzpatrick predicted the U.S. Department of Homeland Security would take the public warning lead by the end of 2003. "Leadership is going to be very important to get things done. Secretary Ridge can get it done."

Along with public warning concerns, several MSRC subcommittees have examined ways to ensure broadcasters prevent loss of service and accelerate recovery during times of crisis.

## Backups for the backups

"Redundancy," said Gary Kline, corporate director of engineering for Cumulus Broadcasting, "is the most important consideration."

"Restoring signal faster to at least

## The media has been treated as an outsider when states and cities have been putting together their EAS plans.

— Shaun Sheehan

Several MSRC officials pointed to a "disconnect" between broadcasters and local public disaster officials as a cause for concern.

"We have to look at fixing EAS from the bottom up, instead of from the top down. That starts with making sure state plans are updated and revised," said Tom Fitzpatrick, chair of MSRC's government to public messaging subcommittee.

"We think the EAS system that is in place can be improved. The infrastructure is there. That's why this set of recommendations makes no far sweeping changes. We'll have to include XM and Sirius satellite radio at some point ... the Internet and other wireless means, too," said Fitzpatrick, an executive with Giuliani Partners, a management consulting firm founded by former New York City Mayor Rudy Giuliani.

Even though MSRC's initial recommendations do not address incorporating specific new technologies into EAS, Dailey said, "The FCC is certainly interested in any proposals that come along that can enhance EAS. It's certainly in the country's best interests to pursue those kinds of things."

The working groups did recommend

some stations in a market to allow them to get information to the general public in a particular locale was our main focus," said Kline, a member of the MSRC Restoration subcommittee. "We looked at all different size markets and different regions. Some regions may have more restraints than others."

Kline said the group assessed ways clusters of stations in a market could restore signal faster. "When we looked at clusters, we asked, 'Do they have multiple transmission sites or multiple studio sites to allow for a sister station to return to the air?' That sort of thing. Aux transmission sites are another important consideration."

"It's important that all media outlets conduct vulnerability assessments and have disaster recovery plans. Cooperative agreements between broadcasters in the same market are another option."

Kline said the working group surveyed U.S. radio and TV stations to determine their ability to continue operations during a major disaster.

The MSRC changes might necessitate another revision of event codes in the commission's Part 11 EAS Rules, Dailey said. The FCC most recently revised the EAS event codes in February of 2002.

## BROADCAST TOOLS® *new* "Rack-Ables"



The upgraded SS 2.1/TERM III & BNC III switcher/routers are improved with new front panel switches. They may be used as a desktop device, and are equipped with mounting holes for wall mount installation or may be installed on the new RA-1 "Rack-Able" 1RU mounting shelf.

The new "Rack-Able" SS 4.1 III switcher replaces the popular SS 3.1 while adding a fourth stereo input channel and front panel control. We've kept the best of the SS 3.1 features and added a few more.

The new Silence Monitor III improves on the features of the original SSM, with front-panel control, removable screw terminals, "Plug & Play" installation, built-in program switcher, restore timing delay, aural alarm and relays for most remote functions. Now rackable!

The new SS 8.1 II switcher replaces the popular 6x1 with the addition of two more stereo input channels and GPI, while keeping the price the same! The SS 8.1 II may be desktop, wall mounted or installed on the new "Rack-Able" mounting shelf.

The new RA-1 (1-RU rack shelf) provides mounting for three tri-rack or two half-rack "Rack-Able" configured products. The RA-1 is pre-drilled for flush and recessed product mounting. The RA-1 is furnished with filler panels and mounting hardware.

Look for additional  
"Rack-Able" products soon.

639 Sunset Park Drive • Suite 101  
Sedro-Woolley, WA 98284 USA  
(360) 854-9559 • FAX: (360) 854-9479

BROADCAST  
tools

www.broadcasttools.com

## WE GIVE YOU ALEXANDER

Name: Cris Alexander

Column: Feed Line

Experience: 27 years in radio, television, land mobile and computer industries, Director of Engineering for Crawford Broadcasting Company since 1984

Certifications and industry honors: SBE Certified Senior Radio Engineer, member SBE, AFCCE, selected by Radio Ink Magazine in 2003 as one of "The 30 Most Admired Engineers in Radio"

Mentors/heroes: Charlie Gallagher, Ed Lorentz, John Furr, and my late father, Maurice Alexander

Quote to live by: "One crisis at a time, please."



Radio World's pages are home to the finest writers and columnists in the industry. Like Cris Alexander. Just one more reason we're the newspaper for radio managers and engineers.

## ABC: 'We Can Try No More'

Walt Disney's ABC withdrew from NAB membership over the TV audience cap issue this summer. Although the circumstances surrounding the cap changed at presstime, NAB said it was not in discussions with any of the networks about returning to the trade group. ABC had no comment on the matter.

The following is a letter to NAB President/CEO Eddie Fritts from ABC's Vice President of Government Relations Preston Padden, dated June 17, explaining the reasons for the withdrawal. It is reprinted with permission.

Dear Eddie:

Almost two years ago, the other major broadcast networks resigned from the NAB. The issue was the patently hypocritical NAB position favoring Deregulation of newspaper cross-ownership and duopoly while simultaneously advocating continued regulation of the national station "cap."

The other networks believed that large vertically integrated newspaper/broadcast media companies had hijacked the NAB and were using the association's public policy lobbying might as a weapon in their business disputes with the networks. The other networks believed that it was inappropriate for one group of broadcasters to misuse the NAB in an effort to limit competition from other broadcasters.

Disney/ABC stayed with NAB. For two years, we have endured (and helped to pay for) a non-stop stream of network bashing letters, lobbying and legal filings. For example, despite the universally recognized and industry leading excellence of the local news operations of the ABC-owned stations, we have tolerated our own trade association's patently false claims that our stations lagged behind affiliate stations in terms of local public service.

It was wrong for the NAB to malign the men and women of the ABC-owned stations who in fact represent the finest in local broadcasting. We stayed in the NAB in the (perhaps naive) hope that we could return to the days when the NAB represented the best interest of ALL broadcasters.

We have now abandoned that hope. (In June) at the NAB Board meeting, Disney/ABC spent two days trying to argue for the proposition that the NAB should not take sides in competition among broadcasters. We argued that it was a misuse of the public policy process in Washington for big vertically integrated affiliate groups, including those owned by monopoly newspapers, to use the association's lobbying to advance their own private business interests.

And we argued that the credibility and effectiveness of the NAB was being damaged — damage that would come back to haunt ALL broadcasters on critical issues including DTV. In response to our arguments, we heard only the same cynical incantation of phrases like localism to obscure the true anticompetitive motives of the large affiliate groups.

Of course, we could play the same game. It would serve our private business and negotiating interests to limit the number of our affiliates that could be owned by any one company. But, the FCC's national reach "cap" does not address the tremendous concentration and growth in the size of group affiliate owners who can amass huge station groups (one affiliate company now owns 63 stations) and still stay under the "cap" because they are not in the largest markets.

In the name of the same localism principle invoked against us by the NAB and these large affiliate groups, we could ask, "How many stations can one owner really manage in a truly local fashion?" Does adherence to

localism require a return to the days when the FCC limited the absolute number of stations that any one company could own?

**'We stayed in the NAB in the (perhaps naive) hope that we could return to the days when the NAB represented the best interest of ALL broadcasters.'**

Can the president of a major station group really be "local" in 63, or even 34 different cities? Another broadcaster, Jim Goodmon, president of Capital Broadcasting, doesn't think so.

In testimony before the Senate Commerce Committee, Mr. Goodmon said, "I am not

just picking on the networks. The groups do it too. A group will buy a program. It will call all of its stations and say, 'You are going to run this.' They buy everything for the group, they program the group nationally,

there is no local input."

Of course, it would be as wrong for us to use the NAB to try to limit the size of affiliate groups as it is for the large affiliate groups to use the NAB as a weapon in their jihad against the networks.

It exceeds even Washington's liberal

allowance for cynicism for the owner of a group of 63 or 34 stations to claim that they are "local" in each of their markets while ABC cannot be considered truly "local" in the mere 10 markets where we operate stations! The NAB and the public policy process in Washington should not be abused to advance the business interests of one broadcaster over another.

Disney/ABC has gone the extra mile (and then some) to try to salvage the unity previously represented by the NAB. We can try no more. With genuine sorrow, we hereby resign all of our stations and networks from membership in the NAB.

In closing, I want to emphasize the tremendous personal and professional admiration that all of us at Disney/ABC have for you and for the outstanding professional staff of the NAB. You are the true victims in this fight. ●

# Last-minute remotes?

## No stress for John Kennedy of Entercom Boston.

The Patriots win the Superbowl! A major cause for celebration in Boston. And potentially major stress for John Kennedy, Engineering Director for Entercom Boston. With no advance warning, John had less than 24 hours to orchestrate coverage of the festivities on numerous stations — including live remotes along the Patriots' parade route. Fortunately, John knew he could count on Comrex Matrix to deliver — even last-minute. With Comrex in your toolbox, last-minute remotes are successful, not stressful.

*"We delivered multiple high-quality live remotes over ordinary phone lines and we didn't lose a minute."*

**John Kennedy,**  
Engineering Director,  
Entercom Boston



Let us help with your last-minute remotes. And we'll give you the shirt off our back.

Now you'll not only sound great, you'll look great, too. Mail us the warranty card from the purchase of your next BlueBox, Matrix, Vector or Nexus. We'll send you a handsome Comrex shirt like the one John is wearing (retail value \$65) FREE. Plus, we'll extend your warranty to two years. How's that for coverage?

For a dealer call: 800-237-1776  
Or visit [www.comrex.com](http://www.comrex.com)



BLUEBOX



MATRIX



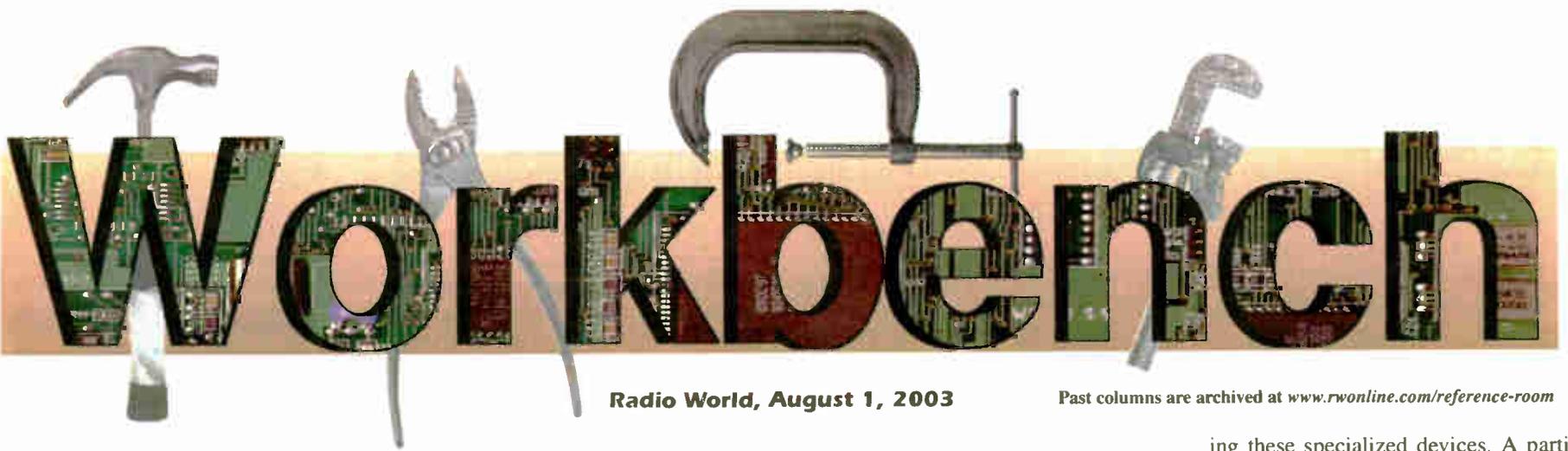
VECTOR



NEXUS

**COMREX**

19 Pine Road, Devens, MA 01432 USA  
978-784-1776 • Fax: 978-784-1717 • Email: [info@comrex.com](mailto:info@comrex.com)



Radio World, August 1, 2003

Past columns are archived at [www.rwonline.com/reference-room](http://www.rwonline.com/reference-room)

# An Efficient Tower Lighting Feed

by John Bisset

Looking to redo the tower lighting feed to your AM tower? Consider the neat, efficient method that Mike Gilbert of Multicultural Broadcasting in Seattle

used in Fig. 1.

Using a standard bowl feed-through, Mike mated a copper pipe "T" fitting on the end of the hollow feed-through bolt. Copper tubing soldered to a right-angle fitting and connected to the upper end of

the "T" provides the RF feed. The AC wiring off the lighting choke feeds through the open bottom end of the "T," and out to the tower.

Yes, that's cedar planking used for the ACU building. They don't fool around in Washington State.

ing these specialized devices. A participant complained about the high cost of cans of pressurized air for "dusting" transmitters, computers and other gear. A similar discussion showed up on Dave Biondi's [radio-tech@broadcast.net](mailto:radio-tech@broadcast.net) list-serv with some interesting comments.

Brian Force of Metro Networks points out that MCM Electronics offers a small "electric duster" for around \$50. It's a half-horsepower blower with a 12-foot cord that weighs about 2 pounds. The air

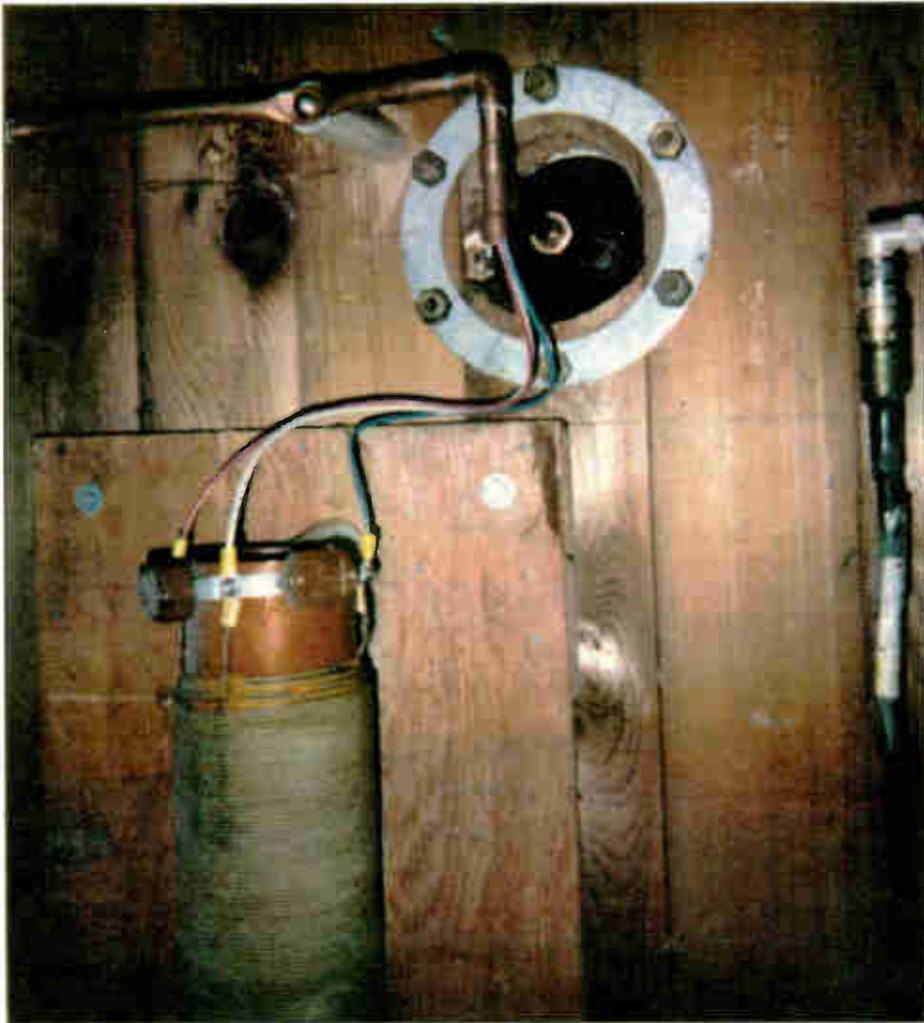


Fig 1: Mike Gilbert's tower lighting feed.



Fig 2: The external feed line is shown.

Fig. 2 shows the "outside" of the feed line. Notice the "lightning loop." The copper tubing contains the AC wiring we saw being fed in Fig. 1. It's traveling on its way to the tower and the beacon and sidelights.

★ ★ ★

A discussion developed at one of my NAB transmitter workshops about clean-

stream is not as precise as canned air but works well. Reach the company at (800) 543-4330.

Sid Schweiger, MIS Manager for Entercom Boston, recommends a soft, bristled brush and a vacuum cleaner with the edge attachment. The advantage is that dust is sucked away, not blown all over.

Care must be used when blowing dust  
See WORKBENCH, page 10 ►

## Top-Value FM Monitor Model 531 - \$2700

**THIS EASY-TO-USE FM MOD-MONITOR GIVES ACCURATE OFF-AIR MEASUREMENTS.**



A wealth of features makes Inovonics' second-generation 531 the undisputed value leader in FM monitoring. In addition to the high-resolution total-mod display, the 531 also shows stereo audio levels, SCA and RDS subcarrier injection, plus a relative indication of incidental AM noise. A digitally-tuned preselector with programmable presets lets you quickly compare your station's parameters with those of market companions.

Signal strength and multipath readouts simplify antenna alignment and help validate all measurements. Rear-panel appointments include balanced audio out, composite in/out, and both antenna and high-level RF inputs. Alarm tallies are provided for overmod, audio loss, carrier loss and excessive multipath.

**Inovonics**  
1305 Fair Ave. • Santa Cruz, CA 95060  
TEL: (831) 458-0552 • FAX: (831) 458-0554  
[www.inovon.com](http://www.inovon.com) • e-mail: [info@inovon.com](mailto:info@inovon.com)

Visit [www.inovon.com](http://www.inovon.com) for full technical details.

# Trade In...and Trade Up.

You've been secretly lusting after the smooth, silky sound of an Omnia-6 audio processor. Now, the object of those affections can easily be yours. For a limited time, upgrade to the sound top broadcasters choose more than any other and get a Spring cleaning bonus from Omnia.

Here's our offer: Purchase an Omnia-6fm – or the new Omnia-6hdfm audio processor for HD Radio and DAB – and we'll give you an Omnia-3fm FREE (with the trade-in of your previous FM audio processor\*). Just call us when your new Omnia-6 arrives, and we'll tell you how to receive your award-winning Omnia-3fm.

You can't lose with this deal. Not only will you blow your competition away with the fantastic presence and punch of your new Omnia-6, you'll have a FREE Omnia-3fm to use as backup, or to upgrade main processing on another station – or to make your home stereo sound really cool.

There's no better time to trade up to Omnia, but hurry... unlike the great sound you'll get from your Omnias, this offer won't last forever.

Participating Dealers: Bradley Broadcast Sales - (301) 682-8700  
Broadcasters General Store - (352) 622-7700  
Broadcast Supply Worldwide - (800) 426-8434  
Crouse-Kimsey Company - (800) 433-2105  
Harris Corporation - (800) 622-0022  
Lightner Electronics, Inc. - (866) 239-3888  
SCMS - (800)438-6040



[omniaaudio.com](http://omniaaudio.com)

\* Fine Print: Free Omnia-3 Offer expires August 31, 2003. Trade-in processor must be removed from main or current backup use, and be in serviceable condition – inoperable systems will not qualify. Trade-in must be authorized by Omnia Support or Sales Return Authorization number, shipment pre-paid. Offer cannot be combined with any previous or existing Omnia offer. For complete set of rules, conditions and qualifying processors see [omniaaudio.com/upgrade](http://omniaaudio.com/upgrade) or call (216) 241-7225

## Workbench

► Continued from page 8

and dirt inside a transmitter. I've seen engineers successfully couple compressed air and a vacuum to catch what the compressed air dislodged.

If you use the compressed air, be sure to wear safety goggles and a mask; there's no telling what kind of crud you'll be stirring up.

Reggie Sadler of WGGC(FM) in Glasgow, Ky., uses a small pancake air compressor. You can purchase these at TSC, Lowes and other hardware-type stores.

However, Mike Patton of Michael Patton and Associates warns that if you use any kind of compressor, keep in mind that they tend to generate wet air due to compression and the nature of water vapor in the air. This is an issue particularly in the humid deep South.

Oily air is another potential problem. Mike's solution is to install a water/oil separator in the airline, close to where the air leaves the tank. Remember to purge the water occasionally. Adding this kind of device gets the moisture in the compressed air down to less than a condensing level.

Several engineers eliminate the problem of wet air by using a scuba tank. It's dry air; if you are a diver, it's easy to come by.

★ ★ ★

Joe Stack always has a good engineering nugget to contribute. His suggestion about filament voltage is no exception.

Most tube transmitters have a calibration pot or rheostat for adjusting the filament meter reading. This is true particularly if the filaments are read on a multimeter select switch.

When measuring and adjusting the tube filament voltage, remember to make this measurement at the tube socket (with the tube inserted, the transmitter filaments "on," but with no high voltage). In all but a few cases, the filament voltage "meter" is an arbitrary reading; it can be adjusted. So unless the transmitter is equipped with a true RMS meter at the tube socket, check the value yourself.

Be sure to use a true RMS voltmeter meter and that it is accurate. An inaccuracy of even 0.1V will make a difference in tube life. You don't want to guess.

Measure the voltage at the tube socket, adjust it to the manufacturer's recommendation and calibrate the transmitter filament voltmeter to this value. Many transmitters use an internal or external filament voltage regulator to compensate for AC voltage fluctuations. If your AC wanders a lot, consider investing in this kind of regulator to keep the filament voltage constant.

Joe has another tip for verifying exciter output power: Use an in-line wattmeter.

It's true the transmitter input may not be purely resistive, but this measurement is a good benchmark, and will tell you if the exciter front-panel power meter is accurate. Make this measurement into a dummy load, as well as into the transmitter, and keep these measurement results on file. They may help you diagnose a problem one day or keep you from chasing your tail as you troubleshoot.

★ ★ ★

Here's a neat product for the storage of CDs. Go to [www.disk-store.com](http://www.disk-store.com) to find a solution to cracked jewel cases and the space problems they create.

Disk-Store.com offers three-ring hole-punched inserts that can be stored in any three-ring binder. Unlike usual disk insert pages, these are heavy-duty. The inserts are manufactured using 7.5-mil, industrial-strength vinyl, designed with a special embossment to make sure the disks don't stick inside.

The openings even have locking straps to keep disk secure, no matter what position the binder is in. Disk-Store.com also has added plenty of room for any inserts or printed material that might accompany the CDs, and several page choices are available. Imagine being able to store 50 CDs in a 2-inch binder rather than 19 inches of shelving.

Disk-Store sells just the vinyl pages, so you purchase the number of insert pages you need, without paying additional money for a binder.

*John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 627-0233.*

*Submissions for this column are encouraged and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to [jbisset@harris.com](mailto:jbisset@harris.com).*



Tell us about your job change or new hire. We're particularly interested in hearing news about radio engineers and managers. Send news and photos via e-mail to [rudioworld@imaspub.com](mailto:rudioworld@imaspub.com) or mail to Radio World People News, P.O. Box 1214, Falls Church, VA 22041.

**Ralph Justus**, vice president of standards and technology at the Consumer Electronics Association, was elected president of the **Institute of Electrical and Electronics Engineers' Consumer Electronics Society**. Justus was elected to the position by the society's governing 15-member administrative committee. He has served as the president of the IEEE Broadcast Technology Society.



Ralph Justus

**Jones Radio Network** promoted **Amy Bolton** to VP/GM of news/talk and program services from GM of talk. It also hired **Jennifer Barson** as account executive. Barson was executive VP of sales and marketing at ReelWorld Productions.

**Westwood One** has made a few personnel changes. It appointed **Jonathan Spaet**, former COO for MEP Media, to VP/New York sales manager and promoted **Robin Carretta**, who retains her title of VP of advertising sales, mid-west, to VP of mid-west sales/sales for metro networks Chicago.

**Susan Binford** was named senior VP of communications for **ABC Broadcast Group** and **ABC Television Network**. Binford will be responsible for internal and external communications for the ABC Television Network and for ABC Broadcast Group and will also serve as

chief spokesperson for those units. She was EVP of public relations for the CNN News Group's portfolio of networks and businesses.

In an effort to increase client service and capitalize on its performance in the Northeast, **Clear Channel Radio** moved the New Haven, Conn. market into the New York City Trading Area (NYTA) realm. **Paula Messina** will head things up as New Haven Market Manager and regional VP **Manuel Rodriguez** becomes Hartford Market Manager. Messina will retain her role as regional VP of sales for NYTA.

**Arbitron** named **Richard Tunkel** as manager of national radio sales. Tunkel, who will work out of New York with broadcast groups, will focus on Hispanic broadcast customers. He joined Arbitron in 1995.

**InnovaSon**, a France-based supplier of digital mixing consoles acquired by Digigram in 2002, appointed **Nick Cook** as sales and marketing director. Cook was a commercial director for Insonify, a development and licensing company supplying streaming media to mobile telecoms, and an his career as a pro recording engineer.

Phonix-based **Omnimount Systems** has made several changes in its roster. **Dan Wiebe** is now the marketing manager of commercial projects. The new sales/marketing services manager, responsible for overseeing product training, Web site development, public relations and advertising, is **Scott Ashbaugh**, a former Ultimate employee.

**BSI** has added **Vince Gamboa** to its tech support team.

**Harris Corp.** promoted **John Miller** to transportation and logistics manager and **Dave Blickhan** to production manager of the company's Broadcast Communications Division.

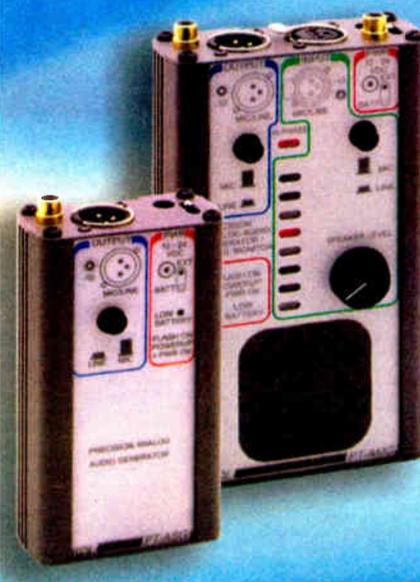
Miller will be based at the division's headquarters in Mason, Ohio. Blickhan is responsible for managing the fabrication department at its Quincy, Ill., transmitter plant.

American Urban Radio Networks' **Dawn Hill**, senior director of corporate marketing, was elected Vice President of the **American Women In Radio & Television** Board of Directors, New York Chapter. Hill was elected to the organization's board of directors last June.



Dawn Hill

## Simple level setup . . . for a switch.



- Switchable fixed Mic and Line level outputs and inputs make module or audio system gain setting simple
- Combination precision oscillator, visual meter with monitor speaker: PT-AMG2
- Precision oscillator: PT-ASG1
- Benchtop performance, 9V portability
- Rugged construction with test leads and bench stands included, carrying case optional

USA 800 281-2683  
INTL 805 684-5415  
EUR 31 20-6238-983  
<http://rdlnet.com>

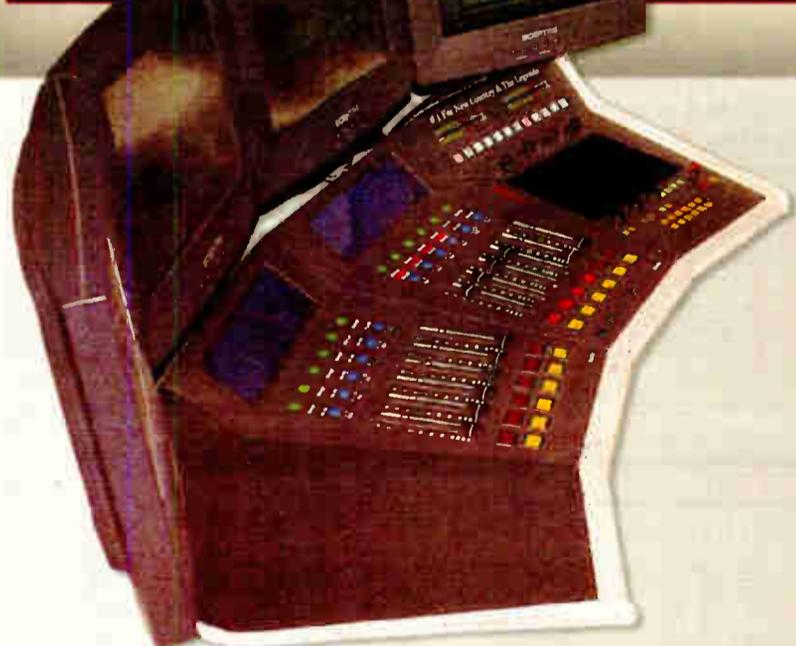


# RDL<sup>®</sup>

Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

# "If you can think it, Logitek can do it."



## WKDF / WGFX Studio Console Configurations

Two Logitek Audio Engines, with a total of eight IO24A cards (up to 96 analog inputs and 96 analog outputs), five IO8D cards (up to 40 stereo digital inputs and 40 stereo digital outputs), and network cards providing fibre optic connections between Engines

- 24 mix-minus buses available per studio
- Supervisor software for complete control of fader assignments and router functions
- Custom scripting provided by Logitek to pass audio and control from the Numix to other studios in the facility that have old analog boards
- vRoute "virtual" router controllers

WKDF: 1 Numix-12 Console with 12 fully assignable faders, easy access to 8 stereo buses

WGFX: 1 ROC-5 Console, 1 ROC-10 Console, 1 RTE-3 Router Controller

**"The limitations of average consoles and routers just don't apply."**

—Cameron Adkins, Citadel Broadcasting, Nashville, Tennessee

Take what you know about the average audio router and console and throw out the normal limitations. The Logitek Audio Engine not only can accommodate any input or output standard, analog or digital, but automatically handles all remote machine control functions within the engine and routes those functions to whatever room or control surface at the same time. *This is not your father's router!*

With Logitek at the heart of this facility, I am most proud of what it has allowed me to accomplish here. The Logitek system has taken away the boundaries of the traditional project and allowed me to be a better engineer.

Logitek Electronic Systems, Inc.

5622 Edgemoor • Houston, TX 77081 USA 713.664.4470 1.800.231.5870 [www.logitekaudio.com](http://www.logitekaudio.com)

© 2003 Logitek Electronic Systems, Inc.

# Logitek

# Wi-Fi May Rock Radio's World

*Today's Technology May Be Just the Beginning Of a New Era for Wireless Media*

by Skip Pizzi

To complete our examination of Wi-Fi over the past two months, we'll look at what the future holds.

First we'll consider the somewhat confusing and controversial issue of true 802.11 networking speeds, and where these speeds may be heading. Then we'll examine the larger context what life in a wireless digital fabric may be like.

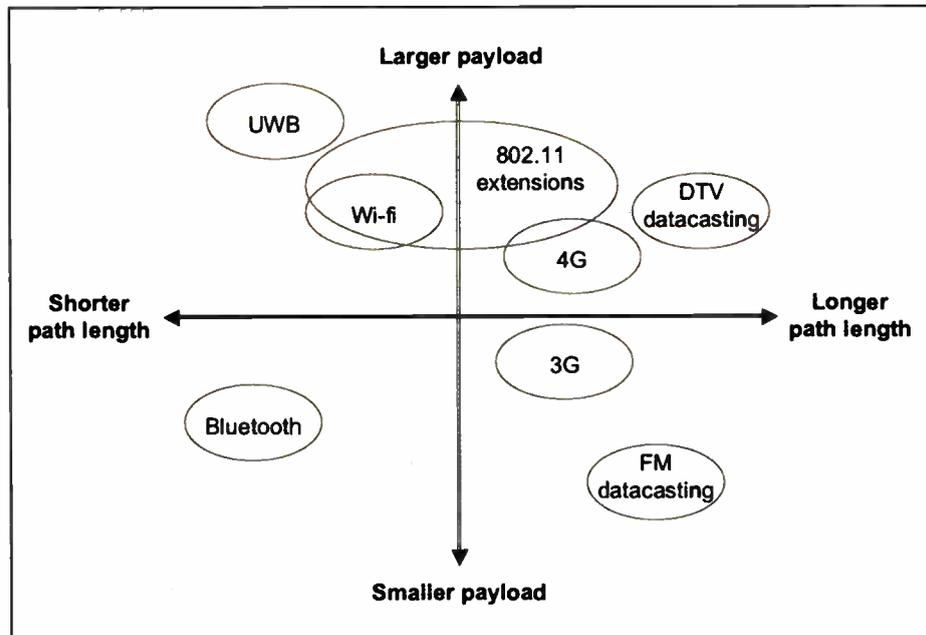
## Your mileage may vary

One of the clever attributes of 802.11 networking is its ability to maintain a networked connection as link distances increase, and therefore signal strengths decrease. Like other adaptive linking systems, this is accomplished by dynamically lowering payload data rates and increasing error correction and other overhead. Wi-Fi performs these downshifts in 6 Mbps increments. This implies that actual speeds delivered to individual clients on the network may be, and usually are, substantially less than the maximum data rates cited by the networking system.

Consider also that even under optimal signal conditions, the speeds cited in 802.11 formats are *burst* speeds, so best-case average throughput over time ranges around 60 percent of these values (similar to peak vs. RMS power ratings). Thus, instead of operating at its quoted 11 Mbps rate, a typical 802.11b link may really be delivering 7 Mbps or less, while on a good day an 802.11g link may be cruising along effectively at around 30 Mbps instead of its full 54 Mbps.

Moreover, in many situations, the device on the network that is furthest from the access point (but still close enough to get a viable signal) typically forces the *entire network* to slow down to its required speed. This means that wire-

less clients right next to the access point, which otherwise could blaze along at maximum speed, will have their network-



The wireless digital world will employ a variety of technologies optimized for various applications.

ing bandwidth slowed down by other devices operating with lower RF signal strengths. (Lesson: Turn off or disable wireless networking on devices at long distances from access points when their connectivity is not required.)

The best solution to this is the installation of additional access point(s) for the network, closer to the location of the most distant users, so that maximum wireless path lengths in the network are reduced.

Of course, *wired* networking also suffers from reduced performance when usage increases, so the symptom is not unique to wireless systems, although the causes are.

Most of the delays in Ethernet systems are from collision detection and avoidance, a feature not enabled in 802.11, where the delays are simply from increased overhead required on noisier paths. In any case, network users are accustomed to variable network performance.

As noted previously in this series, the typical consumer using Wi-Fi to share an Internet connection today may never notice the problem anyway, because the limiting factor is the user's broadband connection from the ISP, which rarely exceeds 1 Mbps. But as broadband Internet access for consumers increases in speed, or as the number of wireless clients on a network increases, or, most important to this discussion, as these networks are used for in-home distribution of media content from *local* servers on the wireless network, this downshifting may become seriously problematic.

Hence the IEEE is not content to rest

## The Big Picture

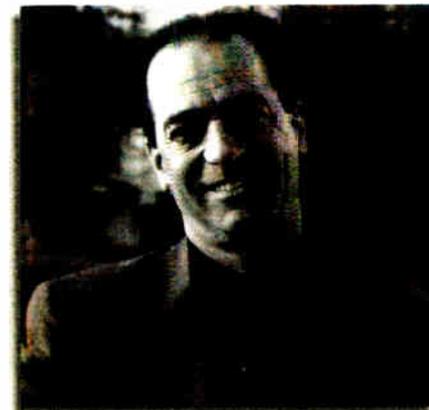


Photo: Curry Hayes, BBC

by Skip Pizzi

at the 54 Mbps maximum provided by 802.11a and the recently finalized 802.11g systems. Work has begun on 802.11n, which is targeting a doubling of these speeds, to 108 Mbps operation at 5 GHz, and possibly reach peak speeds of up to 320 Mbps by the time it comes to market in 2005 or 2006.

Again, the typical throughput may only reach 50 or 60 Mbps, but even this speed will allow plenty of rich media to flow across a wireless network. As before, these future systems are intended to be backward compatible to other flavors of 802.11.

**The wired environment has given online radio substantially less utility than broadcast radio, but this may all be about to change.**

Meanwhile, there are third-party systems that claim to avoid the global downshifting problem, delivering something close to full bandwidth to devices close enough to handle it, even when more-distant devices are operating at reduced rates on the same network. Such systems are not yet deployed, and it remains unclear if they will remain compliant or require proprietary extension of the standard.

Also noted earlier was that as individual Wi-Fi systems grow and intersect, their federation becomes important to avoid interference and thus optimize the efficiency of their deployment. Another future development may therefore be the emergence of an SBE-like coordination service that allows this to happen in a systematic fashion across any given region.

## TV or not TV

The higher data rates mentioned become particularly interesting to wireless video applications, and have thereby gained a lot of attention recently. Yet it seems apparent that wireless networking will have a greater impact on radio services because it makes online radio more like broadcast radio (i.e., portable).

Although installation and placement becomes more convenient for TV platforms in a wireless networking context, the originally wireless nature of TV generally has been reduced in importance to consumers given the rise of cable and satellite distribution in intervening years.

See WI-FI, page 14 ▶

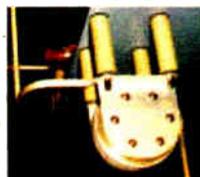


**OFFERING COMPLETE CONCEPT - TO - ON AIR SERVICES FOR DIGITAL AM RADIO**

**WIDEBAND ANTENNA TUNING UNITS, PHASING AND MATCHING SYSTEMS TO MEET CUSTOM REQUIREMENTS**

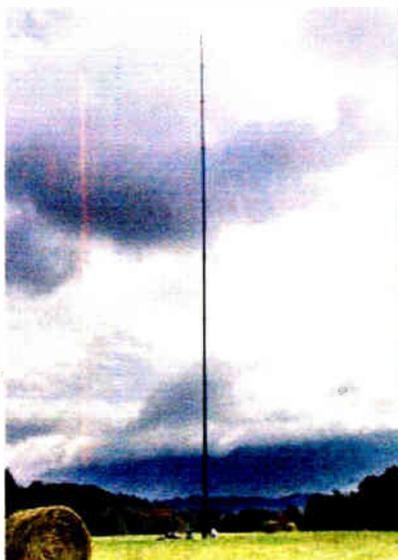


**THREE TOWER AM 50kW NDA-D / DA-N DIRECTIONAL ANTENNA SYSTEM ST PAUL, MINN.**



**COMET CAPACITORS AVAILABLE FOR IMMEDIATE DELIVERY**

**INNOVATIVE ANTENNA SOLUTIONS**



**RAPIDLY DEPLOYABLE ALL BAND ANTENNA SYSTEM**

Phone: (423) 878-3141 Fax: (423) 878-4224 Email: ktl@kintronic.com Web Site: www.kintronic.com



**More reliable** Xport doesn't rely on the off-the-shelf modems found in other POTS codecs. Instead, we developed a custom DSP modem optimized for live audio.

**Easier and lower cost** Xport's ISDN option lets you use it as a universal field codec.

**Better sounding** Xport's aacPlus is the finest low-bitrate codec on Earth – and Xport is the only POTS codec to have it. You'll be stunned at how good an analog line can sound.

## Now, your POTS and ISDN remotes are more reliable, better sounding, easier, and cost less.

**Zephyr Xstream owners, hear the clarity of aacPlus for yourself!**  
To get an instant demonstration of Zephyr Xport, visit [telos-systems.com/xport/](http://telos-systems.com/xport/)

**More reliable** Zephyr Xstream's pure-digital ISDN connection on the studio side eliminates a lot of the analog line problems that can make a modem unstable. An Xport call is converted to digital by the nearest Telco central office, and continues through the network to your studio in digital form. Working as a tightly integrated system, Xport and Xstream extract maximum performance and reliability from real-world Telco lines.

**Easier and lower cost** Your studio Zephyr Xstream is now universal, linking with both POTS and ISDN codecs in the field. You need only one box and one line for everything, so you save money, your operators have only one interface to learn, and you conserve console inputs and outputs.

Today, Zephyr Xport and Xstream are *The Best Way to Hear from Anywhere.*

*Telos*  
AUDIO | NETWORKS



[telos-systems.com](http://telos-systems.com)

Telos, the Telos logo, Zephyr, Zephyr Xstream, Zephyr Xport, The Best Way To Hear From Anywhere are all registered trademarks of TLS Corporation. © 2003, TLS Corporation. All rights reserved. aacPlus (TM) Coding Technologies

World Radio History

# Haskey: A Gentle, Dedicated Engineer

by Ken R.

Richard Haskey, owner and president of Western Wireless Works of Mesa, Ariz., died June 10 after a long illness. He was 64.

His company closed after his death and letters were sent to clients thanking them for their business and loyalty.

Haskey began his engineering career in the telecommunications and broadcast consulting business in the 1960s in Oxnard, Calif. He bought and sold new and used equipment of all sorts. In his early years, friends said, Haskey did just about everything from building towers to designing studios to serving as a morning disk jockey on KUDU(AM) in Ventura.

## Long on experience

He discovered that he could help his radio clients by developing a turnkey broadcast installation, not a widespread concept at that time. Because he was knowledgeable about construction and installation, Haskey was one of the first to provide this service.

Another area of expertise was precision RF and audio measurement equipment, which Haskey designed, fabricated and installed.

In 1976 he took a job at Harris Broadcast in Quincy, Ill., where he worked with stations in this country and abroad. In 1982 he left the company and moved to Arizona to start his own firm, while continuing to consult for Harris.

His U.S. broadcast and telecommunica-

tions clients included Motorola C&E, Sprint Broadband, Lotus Communications, Clear Channel, Citadel Communications and Hispanic Broadcasting.

**It was never just about the dollars with him.**

— Richard Wiglesworth

Over the span of his long career, Haskey also worked for a variety of companies in some pretty unlikely venues. He built high-powered medium-wave facilities in Third World countries such as Nigeria, Libya and the Island of Zanzibar.

## Friends remember

Chester Coleman, president of American Radio Brokers in San Francisco, served as spokesman for the family after Haskey passed away.

"Richard Haskey was one of the last people to be able to start and finish any construction project from conception to FCC licensing," he said. "There are only about five others like Richard left in the U.S. He was the best."

Peter Costantino, a technician and sole employee of Western Wireless Works at the time of Haskey's death, said that his boss had a big heart and was a gentle person.

Mike Thomas is the former owner/general manager of a cluster of stations in Ventura. He said that if there were a hall of fame for radio-TV engineering, Haskey would have been nomi-

nated and voted in on the first ballot.

"He was the one that got me started in the business," said Richard Wiglesworth, owner of Comcell/Arizona Tower Service of Kingman, Ariz. "I worked for him about seven years ago and he was a really funny man, and devoted to building towers and radio in general."

When Wiglesworth went to work for Haskey, the former had no experience.

"He didn't pay me much to start, but once I showed him what I could do, he gave me a raise and an opportunity that no one else would. I used to watch him and sometimes he would spend too much money on a job just because he liked doing it. It was never just about the dollars with him," said Wiglesworth.

Haskey is survived by his wife Trish, their son Willard and another son Paul from a previous marriage. His family requests that any donations be made to The Nature Conservancy ([www.inc.org](http://www.inc.org)) or charity of the donor's choice. A tribute to Richard Haskey can be found in the history section of [www.westernwirelessworks.com](http://www.westernwirelessworks.com).

## Wi-Fi

► Continued from page 12

Radio has remained an untethered system throughout, however, and thus the constraint of a wired environment has given online radio substantially less utility than broadcast radio. This may all be about to change in short order as the Wi-Fi revolution continues.

So if you think we've spent a lot of ink on one topic in this column recently, it's not without reason. This is one of the most fundamentally important technologies to come along in some time. It will undoubtedly have strong impact on the overall new media environment, and may ultimately have more effect on terrestrial radio's future than IBOC or satellite radio does.

## The cheap gets cheaper

We've also seen earlier how cost effective 802.11 systems are, but consider that this may just be the tip of the iceberg. Future costs likely will be reduced to negligible proportions, such that client devices may become almost "disposable."

Some forecasters believe that this will allow all kinds of new applications, such as wireless ID tags on luggage and freight shipments, airline boarding passes, surgically implanted chips and the like. Don't think Orwellian but rather fractally: such applications could allow intelligent, real-time communication between devices in complex systems with little or no human intervention.

Yet there will remain a wide range of requirements in this wireless world, which can be best expressed on an X-Y graph that plots message size vs. path length (see drawing). Some systems will be optimized for lightweight transmissions such as identifiers or short text messages, while others are targeted for richer data like songs, hi-res images and videos. Meanwhile, some of these containers will be carried on short-haul wireless systems designed for paths of a few to several hundred feet in length (typically unlicensed), while others will travel over longer paths (likely to more tightly regulated) that cover an entire media market or region, or even incorporate global reach.

As an example, Wi-Fi leans to the higher end of the message-size axis, and the lower end of the path-length axis, as the drawing indicates.

Naturally, some applications will link multiple systems across an end-to-end path. The 802.11 family's IP-centric design lends itself nicely to such interfacing. The quality-of-service enhancements of IP's next generation — IPv6 — will also be a welcome addition to such wireless applications.

## Beyond Wi-Fi

Wi-Fi therefore is not for everything. Other slots on this graph will be occupied by different emerging wireless systems such as Bluetooth, Ultrawideband (UWB) and whatever 3G or 4G cellular telephony becomes — i.e., whatever is left for it to occupy after these other cheaper and more quickly deployed systems become established. FM and DTV datacasting may also play a delivery role, albeit in a unidirectional, broadcast mode as opposed to the bi-directional, point-to-point approach of true networking systems.

New regulations certainly will emerge in this environment as well. For example, the FCC has a current NOI on the possibility of assigning more unlicensed spectrum to wireless networking systems, this time on a non-interfering basis at frequencies below 1 GHz. This would allow such systems to have longer path lengths without repeating, and offer greater structural penetration. Advantageous applications of such systems would appear in rural regions and in high-density, inner-city buildings, areas where today's 2.4 and 5 GHz systems exhibit weaknesses, and the cost of installing wired networks is prohibitive.

The commission also is examining the fascinating area of *cognitive radio*, in which smart two-way devices seek out currently available spectrum and establish a dynamic communication path across it, changing frequencies to avoid interference as the environment warrants, and adjusting power and bandwidth as the path length and message size requires. Watch this space for more on these developments. Meanwhile, expect Wi-Fi and its successors to rock radio's world.

Skip Pizzi is contributing editor of *Radio World*.

AUDIO RINGMAIN | MONITOR SELECT | OFFICE MONITORING

## Broadcast Multiple Channels of Live Audio over any LAN or WAN Network

... ANY COMPUTER ON THE NETWORK CAN TUNE IN

### AudioTX

## MULTIPLEX

- Superior replacement for Audio Ringmain or Monitor Select systems for office/station listening.
- Greater capacity and better flexibility than RF modulated coax or multi-pair wired systems.
- Requires no additional cabling - uses your existing computer network.
- Easily and instantly add extra listening points or new channels.
- Broadcast quality, low delay audio - can be transmitted as MP2, MP3 or uncompressed.



**1** The AudioTX Multiplex Server runs on one or more PCs and Broadcasts multiple channels of live audio. Each PC can broadcast up to 30 channels.

**2** Install the AudioTX Multiplex Receiver on all of your office, newsroom and even studio PCs. And they can tune into any channel quickly and simply.

[www.audiotxmultiplex.com](http://www.audiotxmultiplex.com)

(FREE TRIAL VERSION AVAILABLE FOR DOWNLOAD)

Telephone: +44 121 256 0200 email: sales@audiotxmultiplex.com

# INTRODUCING NETSTAR™

Now shipping with  
advanced features



## A new codec with Advanced Audio Coding for use over the Internet, ISDN or DSL

The newest codec from CCS/  
MUSICAM USA does it all! While  
maintaining compatibility with  
existing codecs, NetStar opens a  
new realm of connection capabili-  
ties. NetStar can send and receive  
full fidelity, real-time stereo audio  
not only via ISDN and dedicated  
data lines, but also via IP.

NetStar contains not only standard  
coding algorithms like G.711, G.722,  
MPEG 1 & 2 Layer 2 and MPEG 1 & 2  
Layer 3, but also the latest MPEG 2  
Advanced Audio Coding (AAC) and  
MPEG 4 AAC-Low Delay.

NetStar can even connect bi-  
directionally via IP *with*  
*uncompressed linear audio and*  
*near-zero delay!*

NetStar automatically recognizes the  
calling codec, and even comes with  
its own built-in web server for easy  
remote control from any web  
browser. And, because living within  
your budget is essential, NetStar is  
not only our most capable codec  
ever, it's also our most affordable.

Contact us, or your authorized CCS/  
MUSICAM USA dealer for details



MUSICAM USA  
670 North Beers Street, Bldg #4  
Holmdel, NJ 07733 USA  
732-739-5600  
732-739-1818 fax  
sales@musicamusa.com  
www.musicamusa.com

MUSICAM USA is the d/b/a of Corporate Computer Systems, Inc

# Lyme Disease Is Unrecognized Threat

*Engineers Are Among Those Vulnerable to Bite of a Bloodsucking Parasitic Arachnid*

by Douglas W. Fearn

Unless you work full-time at a downtown studio and never venture outside, you are at risk for contracting Lyme disease. If you work at a transmitter site that is in a vegetated area anywhere in the United States, or much of the world for that matter, you may be at high risk for this potentially devastating disease.

Lyme disease is the most-often-reported vector-borne disease in the United States. The Centers for Disease Control receives about 17,000 reports of new cases each year, from every state. But, the CDC admits, the actual number probably is at least 10 times this. Some areas of the country such as the Northeast and Upper Midwest have much higher rates than others.



Photo by W.C. Alexander

Ticks are common around the edges of fields, at the juncture with woods or underbrush — a description of many transmitter sites.

Lyme is a bacterial infection spread primarily through the bite of a tick. The ticks most likely to carry Lyme are the deer tick in the East, the Lone Star tick in the eastern half of the U.S., and Pacific Black-legged tick. All are very small ticks, typically the size of a poppy seed, and can be difficult to detect.

## Misconceptions

Much of what you may know about Lyme disease is almost certainly wrong. Here are a few myths, and the facts.

**Myth #1: Lyme disease is rare.** Fact:

**Myth #2: It's difficult to catch.** Fact: In many areas, virtually all the ticks carry the disease. Various animal studies concluded that it took 24, 48 or even 72 hours of tick attachment before you become infected. The experience of many doctors and patients shows that infection can occur much more quickly than that.

**Myth #3: Lyme disease is cured easily with a few days of antibiotics.** Fact: A case caught immediately after infection might be cured with four weeks of antibiotics. Lyme bacteria spread through the

body very quickly; it's detectable in spinal fluid within hours after a tick bite. Once disseminated, it can take eight weeks of treatment or more to eradicate the bacteria. Once it becomes a persistent infection, months or years of treatment may be necessary, with no guarantee of a cure.

**Myth #4: Lyme disease always produces a bull's eye rash.** Fact: The characteristic rash is a definite sign of Lyme infection, but fewer than half of the patients with confirmed Lyme disease had the rash.

**Myth #5: A simple blood test can confirm or rule out infection.** Fact: The common tests miss over half of the patients actually infected. The CDC says that

blood parasite), Bartonella, Ehrlichiosis and Rocky Mountain Spotted Fever.

The effects of untreated or undertreated Lyme disease can be devastating, resulting in unrelenting fatigue, serious joint and/or muscle pain, neurological or memory problems, heart rhythm abnormalities, vision or hearing problems and psychological problems. No two cases are alike. Lyme can affect any part of the body, and co-infection with additional tick-borne diseases complicates diagnosis and treatment. Although rarely fatal, deaths do occur occasionally.

Lyme disease often is misdiagnosed as fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, multiple sclerosis, ALS, Lupus or mental disorder. Misdiagnosis often results in more serious disease because of the absence of appropriate treatment.

**The effects of untreated Lyme disease can be devastating — and engineers who spend time at outdoor transmitter sites are at risk.**

tests should only be used to support the diagnosis of Lyme disease and tests should not be relied upon. Diagnosis is based on signs (e.g., the bull's eye rash), symptoms reported by the patient (see list at the end) and a history of exposure to ticks.

**Myth #6: A vaccine can protect you.** Fact: A vaccine of questionable efficacy was available for a couple of years, but it has been withdrawn. Many adverse effects were reported.

**Myth #7: Once you've had Lyme, you're immune.** Fact: You do not develop immunity. Every new tick bite can re-infect you. In addition to Lyme, many ticks also transmit additional infections at the same time, such as Babesiosis (a

Because Lyme disease is surrounded by controversy — mainly as a result of disagreement among academic researchers and the doctors who actually treat Lyme patients — it can be difficult to find a doctor with knowledge and experience to help cure you. The non-profit Lyme Disease Association has a physician referral service. Call 800-366-6611 or visit [www.lymediseaseassociation.org](http://www.lymediseaseassociation.org).

## Prevention

Ticks most commonly are found around the edges of fields, at the juncture with woods or underbrush. That describes many transmitter sites. Other areas to avoid include rock piles, stone

See LYME DISEASE, page 17 ▶

## Studio Solutions

### Model CAS-1 Con/Air Switcher

- eliminates delay from studio headphone monitor
- immediate warning on air signal failure
- adjustable EQ and compression of monitor audio
- air signal is not altered in any way
- balanced audio inputs and output
- optional rack mount panel available



### Model TAS-1 Telephone Announcement System

- digital message storage—no moving parts
- variable outgoing message format
- inactive or defective telephone line indicator
- resettable incoming call counter
- temperature delivery in Fahrenheit or Celsius
- battery backed AC synchronized clock



Sine Systems, Inc.

615.228.3500  
more information: [www.sinesystems.com](http://www.sinesystems.com)

# Radio World

The Newspaper for Radio Managers and Engineers

**Our readers have something to say**

"Radio World is a 'must read' for me. I especially look forward to the *Workbench* column and the *Opinion* page. Keep up the good work."

Rick Benson, CPBE  
Chief Engineer, Orlando  
Cox Radio Inc.

# Lyme Disease

► Continued from page 16  
walls, and debris piles.

Insect repellents containing DEET (e.g., Off) offer some protection against ticks. Permethrin spray may be better. It is applied to clothing and allowed to dry. It kills ticks and mosquitoes and remains effective for a couple of weeks.

You might keep a set of treated clothes at the transmitter site to wear when you are in tick areas. Ticks can be active any time the temperature is above freezing; but in most parts of the country prime infection season is May through July. So clip this article and save it as a reminder for next spring.

Inspect yourself for ticks while in the field and especially when you come back inside. If you find a tick attached to your skin, remove it carefully with fine-pointed tweezers. Do not use heat, petroleum jelly or any other substance to remove the tick; doing so may increase your risk for infection.

After removal, apply alcohol or disinfectant to the bite. Keep the tick in a plastic bag or vial, and mark the date. Call your doctor for advice. Experienced doctors in Lyme-endemic areas probably will recommend a couple of weeks of antibiotics as a precaution.

## Symptoms

If any type of rash develops, and especially if you experience that "coming down with something" feeling, get to your doctor as quickly as possible. Prompt treatment provides the best chance for a quick cure.

Most common symptoms are a circular rash ("bull's eye"), fatigue, headache, light sensitivity, joint pain or swelling, facial paralysis, burning, tingling or

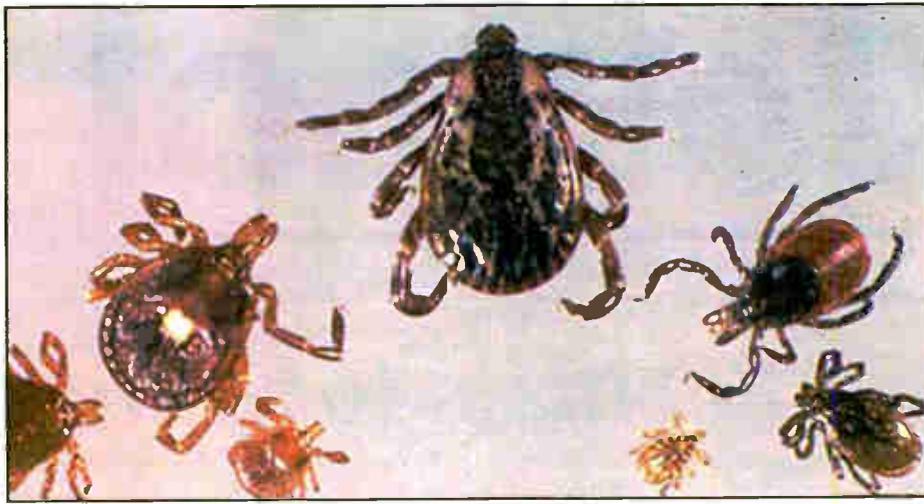
## First-Person Experience

Author Doug Fearn is a former radio engineer who began his career at WPEN(AM) in Philadelphia in 1966 and later was CE and operations manager at WKSZ(FM), Media/Philadelphia. In between, he owned a professional music recording studio. For 10 years, he has operated D.W. Fearn, a manufacturer of professional audio equipment for the recording industry.

He was diagnosed with Lyme disease in 1993 but can trace his symptoms back to the mid-1970s. He speculates that he may have first been infected while making AM field strength measurements in southeastern Pennsylvania. A more recent infection was acquired in 1999 while installing an Amateur Radio Beverage antenna at his home. This tick bite transmitted Ehrlichiosis and Bartonella at the same time as Lyme disease. He has maintained reasonably good health with aggressive and relentless treatment. Through this experience, he says, he has learned more about Lyme disease than he ever really wanted to know.

A 24-page booklet he wrote for a local Lyme disease patients' group has become his "greatest hit," with 50,000 copies distributed nationwide. It is used by many doctors to educate patients.

His book for Lyme patients, "The Lyme Disease Handbook," will be published later this year.



A variety of ticks cause human disease. The largest shown here is the dog tick. Lone Star ticks are on the left and deer ticks on the right.

stabbing pains, numbness, confusion ("brain fog"), panic attack, stiff neck or ringing in the ears.

Symptoms may come and go, sometimes very quickly. A case of "flu" in the summer months is suspect, especially if there is no nasal congestion.

These symptoms are not unique to Lyme disease, but a doctor familiar with the disease will be able to separate Lyme from other diseases or conditions.

Lyme disease has ruined lives. Please be careful.

For more information, try these Web resources: [www.ilads.org](http://www.ilads.org) (a professional medical organization), [www.lymepa.org](http://www.lymepa.org), [www.lymediseaseassociation.org](http://www.lymediseaseassociation.org) and [www.lymenet.org](http://www.lymenet.org).

A free booklet on this topic, written by the author, is available. E-mail to [dwfearn@dwfearn.com](mailto:dwfearn@dwfearn.com) for a copy.

# Media Empire.

## ASI6122

- > Two stereo inputs and outputs
- > Balanced analog I/O
- > AES/EBU or S/PDIF digital I/O
- > 4/6 mono/stereo play streams
- > 2 mono/stereo record streams
- > MPEG layer 2, MP3 compression
- > MRX™ multi-rate mixing
- > TSX™ Time Scaling\*

**NOW YOU CAN RUN TWO COMPLETE RADIO STATIONS OFF A SINGLE AUDIO CARD.**

AudioScience's new ASI6122 PCI card audio adapter provides two stereo analog and digital inputs and outputs, two record streams and up to six play streams. Plug it in, and you're well on your way to being a media mogul.

Our new TSX™ time scaling algorithm\* give you pitchless stretch and squeeze by up to 20%. MRX™ multi-rate mixing is included, so you can record, play and mix multiple audio streams to a 1Hz precision. Windows 98, NT, 2000 and XP drivers are included—even Linux! And we even throw in the XLR breakout cables.

Get a start on creating a media empire by calling us at +1-302-324-5333 or go to [www.audioscience.com](http://www.audioscience.com).

**TSX**  
MULTI-RATE MIXING

**mp3**

**SQUID GUARD**

**AudioSCIENCE**  
Sound Engineering  
Sonic Excellence

\*Contact your AudioScience dealer for this feature

## What's New? Formats to Watch

by Lyssa Graham

Across the country, programmers, consultants and owners are shaking their crystal balls in exasperation. Just what do people want to hear on the radio? What is the magic formula for the next big format that will pull in listeners and fill the advertising coffers?

"There's always something new. Every day there's something new," said Warren Kurtzman. "I don't think it's necessarily some hot new trend that will emerge in the next six months."

Kurtzman, of North Carolina-based research firm Coleman, said one trend he sees continuing is the overall trend toward more narrowly formatted programming.

"Radio is a niche-format animal now, and we're going to continue to see that."

Success in niche formats can come from many factors. A slight up-tick in news/talk/information formats over the past few Arbitron survey periods can be attributed in part to recent events in America.

### Success factors

"Here's the big surprise," Kurtzman said. "When the country was at war, more people were listening to news/talk."

According to Mike McVay of McVay Media, country music formats also benefited from the war with Iraq. McVay said country initially peaked in popularity during Desert Storm in the early 1990s. A recent increase in country numbers, he said, is due to what he calls "resurgence in patriotism."

According to the Arbitron Radio Listening Trends report, country music

formats overall rose from an 8.2 average quarter hour share to an 8.6 average quarter hour share from the Fall 2002 book to the Winter 2003 book for persons 12-plus across the United States.

Kurtzman is encouraged by recent gains in country music.

"I'm feeling more optimistic about country than I did last fall," he said, citing an improved appetite for country music and "a little more passion."

would support it."

Burns said he sees a downward slide in the future for oldies-formatted stations, a genre that includes the relatively young '80s format. Despite initial interest in the format, '80s stations have not been drawing huge shares, and that's okay with Johnny Chaing, program director for KHPT(FM) "The Point" in Houston.

The Point is one of five '80s format stations in the Cox Radio portfolio. Chaing said all of those stations are designed to be "flankers," geared to pull a good advertising demographic and



Mike McVay interviews Jones Radio Networks' night hostess Delilah, center, and recording artist Benny Mardones.

## The Perfect Hybrid

JK Audio's Got A Digital Hybrid With Features Just Right For Your Job - Whatever Your Job Is!

Over the years, we've heard many ideas of what the "perfect hybrid" might be. We've learned that the "perfect hybrid" is actually different things to different people, depending on its use. The good news is that it really comes down to a handful of features, combined in ways that make a lot of sense. We're happy to introduce a series of digital hybrids that hit the nails on the heads, making them perfect for their respective jobs. Check them out and let us know what you think.



**INNKEEPER 4** squeezes four independent digital hybrids in a 1U rack space. The front panel keypad, display, and handset jacks provide easy speed dialing and call setup. Maintain excellent separation between your voice and the caller. XLR output jacks contain only the caller's voice. Available July 2003



**BROADCAST HOST** turns your desktop into a professional broadcast center. Everything you need to get talk show quality phone recordings into your mixer or sound card. Send mic and line level signals into the phone line while maintaining excellent separation between your voice and the caller. Available June 2003.



**INNKEEPER PBX** easily converts your multi-line PBX type telephone system into a professional, affordable talk show console. Simply connect between your telephone handset and the phone base. So simple, anyone can do it. Winner of Radio World's 2003 Cool Stuff Award. Available June 2003.



**JK Audio**  
REMOTE AUDIO & BROADCAST GEAR

Toll Free (USA & Canada): 800-552-8346  
Tel: 815-786-2929 • Fax: 815-786-8502  
www.jkaudio.com • info@jkaudio.com

Still, Kurtzman said ratings are "still far from the levels five to six years ago."

Alan Burns of Alan Burns and Associates is upbeat about the future of country music.

"I think that country will grow," he said, "because of the national mood of and hunger for patriotism, family, comfort, etc."

Other formats have sparked interest. McVay is preaching religious programming.

"One of the fastest-growing formats that needs to be taken much more seriously is Christian adult contemporary. If you look at the strength of that format, the music is palatable. It's not overly preachy; much of the music crosses over. It's family-friendly."

### Wish list

McVay said Christian contemporary is the "greatest upside right now. I think there ought to be one in every market."

Hispanic radio is a favorite for Burns. "That population cell is growing faster than any other," he said. Burns also sees a brighter future for top 40 radio, "if, and this is a big if, stations begin serving teens, which are a fast-growing population segment."

On Burns' wish list is a format geared toward 50-and-over baby boomers. It could happen, he said, "if advertisers

shave some listeners from other stations in the market.

"You only listen to The Point if you love '80s music," Chaing said. "It seems like we've had the most impact on adult contemporary."

McVay agreed. He said he sees '80s formats as a good choice for station clusters.

"If you own six radio stations and can afford to have one run in the middle of the pack," he said, "then go '80s. If you only own one station, don't go '80s."

Chaing said his strategy for success at the Point is a matter of "evolution, not revolution. Every two or three years we need to take a look at the music and advance it a few years into the '90s. Move the music with the listeners."

That tactic works for Kurtzman. The few '80s stations he sees as successful have followed similar plans. Success stories have "built a broader perceptual position," he said, by including music from outside of the original '80s format.

"Those who didn't," Kurtzman said, "found themselves boxed in pretty quickly."

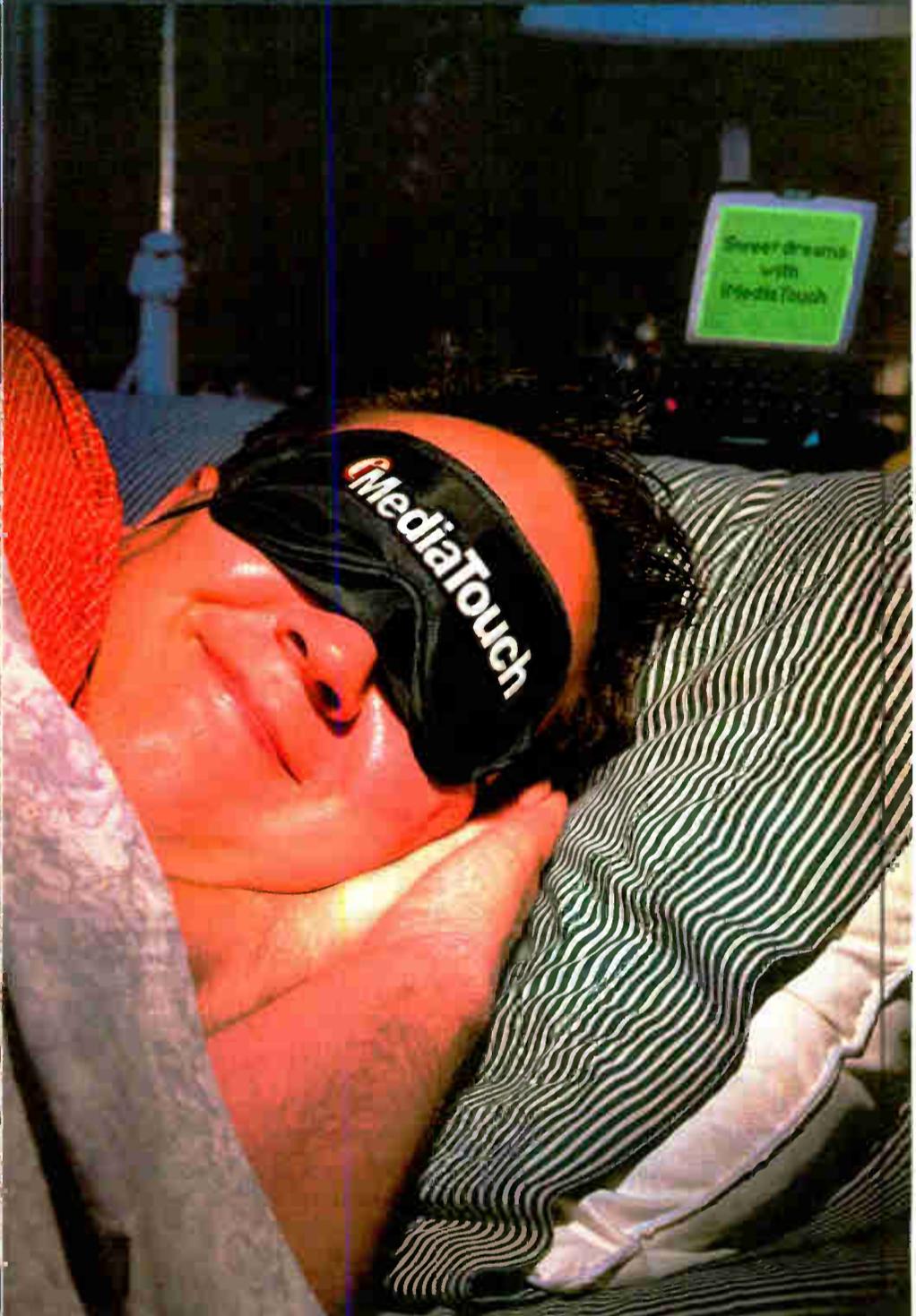
While he doesn't expect to see many new launches of '80s formats, he does see more stations playing '80s music, "but doing it in a package that makes more sense."

And what about satellite radio?

See FORMATS, page 29 ▶

# Another late night at the station?

# You need iMediaTouch.



## Is your digital audio delivery system keeping you up at night?

Since 1984, over 500 radio stations around the world have trusted iMediaTouch broadcast automation software. With a host of award winning features designed to save both time and resources without breaking the bank, the iMediaTouch digital audio delivery system is easy to use and dependable time after time.

**iMediaTouch broadcast automation software.**  
Connecting radio groups through superior technology.



To find out more call us  
Toll Free 888 665 0501 or visit [www.amt.net](http://www.amt.net)

THE NAB  
RADIO  
SHOW

See us at the NAB Radio Show 2003 - Philadelphia, PA Booth #423

amt  
technologies

# Rules Open Doors for Acquisitions

by Steve Sullivan

"These are exciting times to be in the media business," opined William S. Morris IV, president of August, Ga.-based Morris Communications. Morris was referring to the outcome of the June 2 FCC vote to adopt new broadcast ownership rules.

Despite efforts in the House and Senate to roll back the vote, many analysts felt the new rules were likely to stand. This has many jubilant media companies queuing up to shop for new broadcast properties. And many of the broadcast properties that will be snatched up in the ensuing flurry of acquisitions will be radio stations.

The new rules are great news for companies like Morris Communications, which until now had been prohibited from buying stations in many markets where it owned newspapers.

But some companies that have dominated the industry recently find themselves in a position where they may be forced to sell stations if they exceed reduced caps in certain markets.

## Defining radio

That potential sell-off may result from a new way of defining markets, replacing signal-contour models with Arbitron standards. The net effect of these newly defined markets may, in some cases, cut back on the number of stations a single company can own under the existing cap.

Immediately after the vote, Clear Channel President and Chief Operating Officer Mark Mays issued a statement

saying his company "is deeply disappointed with today's FCC vote to re-regulate the radio industry. While the FCC is supposed to act in the public interest, today they missed the mark by a mile."

While the ruling puts Clear Channel on the station-buying bench for many markets, it allows other companies to play a more active role, and lets others get into the game for the first time.

Mark Fratrick, vice president of BIAfn, said the biggest action among the radio owners might come from the mid-sized groups. "I suspect the groups in the 20-to-30-station range will either be bought or will buy other stations. I think they need to be on a larger scale to realize greater efficiencies."

Fratrick expects to see increased transactions from a number of groups that have been acquiring stations over the past two years, among them Cumulus, Backyard Broadcasting, Univision, Radio One and Entercom.

Entercom Chief Executive David Field has made no secret that his company is poised for a multibillion-dollar buy if it made sense. The company reportedly put out feelers to the Walt Disney Company about its 44 AM and 18 FM stations recently.

George R. Reed, managing director for Media Services Group, a station brokerage company, said his company received several inquiries from publishing companies about how to buy into the broadcast marketplace.

"The vote opens a whole new category of prospective buyers that didn't exist

before June 2. What you will see are newspaper companies looking to acquire broadcast stations in their markets."

Except in markets where cross-ownership was permitted through grandfathered waivers, daily newspaper publishers have not been allowed to own television or radio stations in their print markets. If the FCC vote stands, a daily newspaper publisher can own a broadcast station in markets with at least four television stations; one television station and as many as half the radio stations in markets with at least



George R. Reed



William S. Morris IV



Mark Fratrick

four television stations; all the total number of radio stations permitted to one owner, but no television stations in a market with at least four television stations.

"It doesn't take brain surgery to say that Tribune and Gannett and Media General, which all have grandfathered newspaper and TV ownership operations, will get involved either where they own newspapers or where they own TV," Fratrick said.

"But do we really expect some of these other newspaper companies to go out and spend hundreds of millions of dollars to buy television stations? I suspect not. I think there's a real possibility there for newspapers to get into radio. If I were any of them, I'd look at the areas where they have local radio stations that are all-news and look at how they're performing. If they're not performing well, go in and buy them

and improve their performance. It's a very credible and intuitive play for a newspaper."

Reed agrees. "My sense is that the larger-market newspapers and the companies that own them are going to have a TV focus, if they're going to have a broadcast focus at all. I think what you'll see in the secondary markets and the smaller markets are publishers seeking to acquire radio properties. You can almost draw a line — if it is a top-50-market newspaper, they're asking about TV, and if it is below that, they are inquiring about radio."

Atlanta's Cox Communications, with a strong publishing division and sizable radio holdings, might be a natural to take advantage of the relaxed cross-ownership regulations. With hefty liabilities, however, and a succession of quarterly losses, the company may be unwilling to assume more debt.

But other companies are ready to get out their checkbooks. MediaNews Group, a Denver company that publishes 47 daily newspapers and owns four radio stations in Texas, has said that in the aftermath of the vote it will begin exploring local radio options in its newspaper markets, particularly in Colorado, where it owns the Denver Post.

Reed says it should not be a surprise to see Morris Communications take advantage of the new rules.

"Morris is a perfect example of a primarily print company that's looking to expand their broadcast side. They are an aggressive company, they are well-heeled with a lot of money, and they have already got a radio group."

Morris publishes 36 newspapers — 27 dailies and nine non-dailies — in 14 states. The company also owns 27 radio stations and three radio networks. The company has regional clusters of

See RULES, page 21 ▶

## STATION/STUDIO SERVICES

BACK-TO-SCHOOL SAFETY DON'T DRINK & DRIVE SALUTE TO THE AMERICAN FARMER SHOP HOMETOWN MERCHANTS MORE!

**WE PROVIDE THE MESSAGES.**

**YOU PRESENT THEM TO CLIENTS....**

...AND BUSINESS GETS BETTER!

Something New to Sell Every Month!

HOLIDAYS SEASONAL EVENTS FRESH IDEAS!

RETAIL SALES BOOSTERS SAFETY CAMPAIGNS

:30- and :60-second features

**GRACE BROADCAST SALES**  
Toll-free 1-888-472-2388  
*Sound Ideas for Building Business™*

**FREE DEMOS & SALES TIPS!**  
[www.gracebroadcast.com](http://www.gracebroadcast.com)

### SPACE AVAILABLE

Call Simone For Details  
1-703-998-7600 ext. 154

Reserve Yours Now!

Fully Produced  
**THIRTY (30) :30-sec.**  
**BACK-TO-SCHOOL SAFETY MESSAGES!**  
Free Demos & Info at  
[www.gracebroadcast.com](http://www.gracebroadcast.com)  
1-888-472-2388

### ATTENTION PROVIDERS!

Promote your services to **Radio World's** readers. Reach Radio Station and Recording Studio owners/managers and engineers with your message.  
For information on affordable advertising call **Simone** at **1-703-998-7600, ext. 154.**

## HIGH VOLTAGE RECTIFIERS

### Nobody Knows Them Better Than We Do

Don't pay ridiculous prices to OEMs for replacement rectifiers when we can provide an economical retrofit package that will more than do the job. The Model 51014 shown is a single-phase, full wave bridge to retrofit all AM and FM transmitters to greater than 15 kilowatts. This rectifier assembly is conservatively rated at 6 amps continuous current output with plate voltages up to 12kV. Additionally, both an MOV and a resistor protect each diode.

Quick, Cost-Effective & Expert Solutions

www.rectifiers.com

800-649-6370

**BUSINESS NEWS**

## Clear Channel/KUSC Pact Called 'Precedent-Setting'

Should commercial broadcasters be involved in raising money for public radio stations? It's about to happen in California.

Clear Channel Radio and KUSC(FM) have worked together to support music education to students in Southern California schools. Now, the broadcast group says it will use its sales staff to help raise underwriting for KUSC.

The organizations called the deal a "precedent-setting" alliance.

Clear Channel Radio Senior Vice President for the West Coast Charlie Rahilly and University of Southern California Radio President Brenda Barnes stated that the relationship applies the skills Clear Channel has developed in marketing radio air-time to public broadcasting.

Rahilly stated: "KUSC is the leading

classical music radio station in the country. Its content and quality are recognized throughout the radio industry, both commercial and public. We are pleased to help the station and the university extend underwriting opportunities to a greater number of parties using our strong client network."

Clear Channel will contract with KUSC to market underwriting opportunities. Programming, underwriting decisions and length of sponsor announcements remain the responsibility of KUSC, which said it will continue to limit local underwriting to no more than 90 seconds in any hour.

Barnes, who serves as general manager of KUSC, says the move helps to free up staff time to focus more directly on content, engage in greater community service and continue outreach programs, such as supporting music education in the schools.

According to KUSC, listener support will

continue to be the major source of funding. Currently, that support accounts for 75 percent of KUSC's operating budget. Clear Channel will assist with the other 25 percent.

## Move Aside for The Ambulance

Field testing is scheduled this month on a product that emergency authorities would use to broadcast localized messages on the FM dial.

The FCC Office of Engineering and Technology has received an application for special temporary authority for an experimental license to test an emergency alert system that would transmit in 88.1 to 107.9 MHz.

The applicant, Safety Cast, stated its technology uses "an extremely low-power, non-

commercial, mobile transmitter that will broadcast 'All Hazard' alerts, AMBER Alerts, and/or emergency 'alert' messages from authorized public entity vehicles (Police, Fire/Rescue, etc.)."

Safety Cast said its signals are designed to be received within a distance of less than 1,050 feet from the transmitter. According to the manufacturer, the product is expected to be in production by early fall. The company signed its first distribution contract with a Miami-based police supplier earlier this year.

The firm makes radio transmitters targeted for use in emergency vehicles, railroad locomotives and school buses. The devices transmit an alert tone and a verbal message warning motorists that an emergency vehicle is nearby.

The firm projects \$70 million in annual revenues in five years, according to a story in The Business Journal publication. 

## Rules

► Continued from page 20  
properties — newspapers and radio stations — in Kansas, Alaska and Texas.

Until the vote, the company was unable to commingle any of its clustered cross-media operations. "Our newspapers and radio stations have not been working together because we have been under a waiver," said William S. Morris IV. "If the restrictions don't get rolled back, I would hope that we can figure out a way to have these operations work together."

**I suspect the groups in the 20-to-30-station range will either be bought or will buy other stations. I think they need to be on a larger scale to realize greater efficiencies.**

— Mark Fratrik

Morris said that if the vote is not rolled back, his company will indeed be looking to move into markets where it already owns newspapers. While he declined to mention specific markets, one might expect the company to be eyeing acquisitions in its home state of Georgia, where the company owns three dailies and two weeklies, or in neighboring Florida, where it owns three dailies.

"I think all markets are being scrutinized and reviewed at this point in time. A lot of times you have to wait for the right asset to become available, so it depends on what's for sale. Sometimes, things are never for sale. But we're willing to wait patiently."

Steve Sullivan is the executive news editor for multimedia at The Baltimore Sun (a Tribune Company newspaper). He is co-founder of the Advanced Interactive Media Group. 

# Tieline POTS Codec upstages ISDN at Grammys!

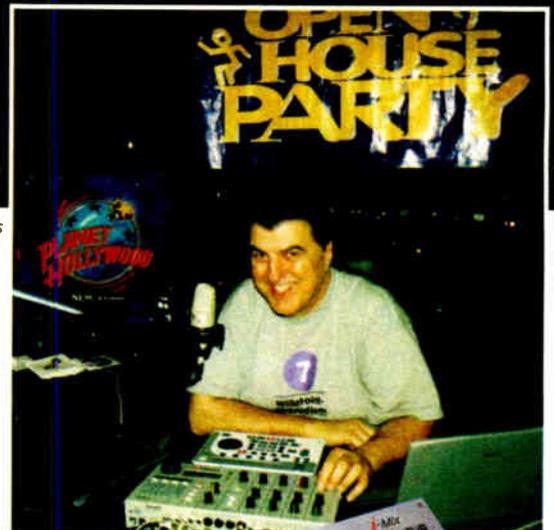
John Garabedian uses i-Mix at the Grammys

**The Open House Party entrusted Tieline POTS Codec Technology to deliver the Grammys LIVE to 160 stations across the USA.**

Reed Lewis, VP of Technology for "The Open House Party" had this to say about Tieline: *"The Tieline connected over an analog line for seven hours straight over notoriously bad New York phone lines with a rock-solid connection. Audio was definitely broadcast quality, and 'blew us all away'. We didn't have to use an ISDN line! Tieline delivered studio-quality audio over a plain telephone line".*

### A small selection of satisfied Network and Radio Group Tieline Owners

- Clear Channel
- Entercom
- Disney/ABC
- CBS/Infinity
- Sandusky
- Jefferson-Pilot Broadcasting
- Westwood One
- Tribune Broadcasting
- University of N. Alabama Sports Network
- Simmons Media
- Tennessee Titans Radio Network



Use Tieline 15kHz POTS audio codecs for:

- Unrivalled Stability
- Superior Sound
- Unique Remote Controllability

**Tieline**   
TECHNOLOGY

www.tieline.com

5555 N. Tacoma Ave., #101, Indianapolis, IN 46220-3547 Toll Free (888) 211-5989 Fax (317) 259-8040 Email: sales@tieline.com

Smooth.

Fast.

Easy.

That is what people are saying about the new phone gear from Telos.

Smooth audio, thanks to hybrid enhancements for clear, consistent calls — even cellular phones sound better. ISDN option for pure digital connection to the Telco network.

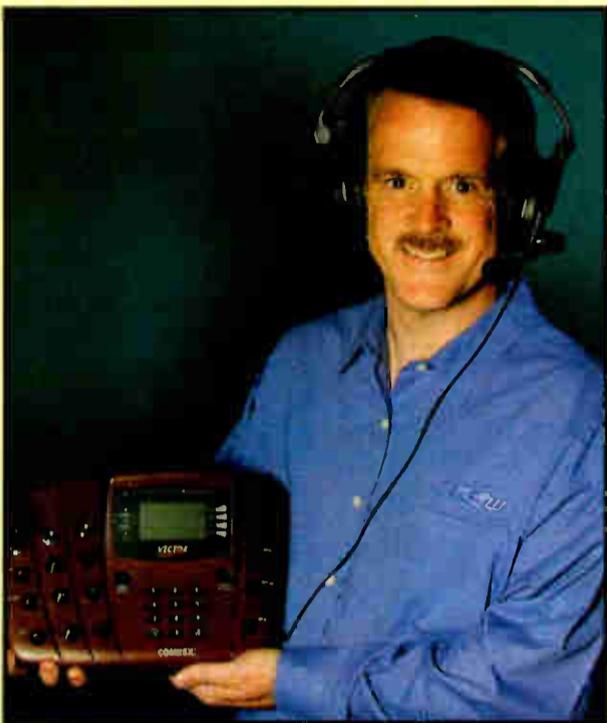
Fast operation and fewer errors due to the intuitive Status Symbol icons and LCD displays on the new Desktop Directors.

Easy show production, with the Assistant Producer PC software giving you flexible screening and control capabilities over any IP network via the standard Ethernet port.

*Telos*  
www.telos-systems.com



# BSW is Stocked with Remo



BSW Senior Sales Rep John Lynch models the Sennheiser HMD 280 headset and the popular Comrex Vector. In his spare time, John is the "voice" of the Unlimited Light Hydroplane Racing Association. Check out their web site at [www.ulhra.org](http://www.ulhra.org).

When the big game is on the line... don't take chances with any other supplier. For over 30 years, BSW has supplied remote gear to radio stations all over the planet. Our seasoned professional sales representatives are experts in outfitting you with the right equipment for use in or on the field.

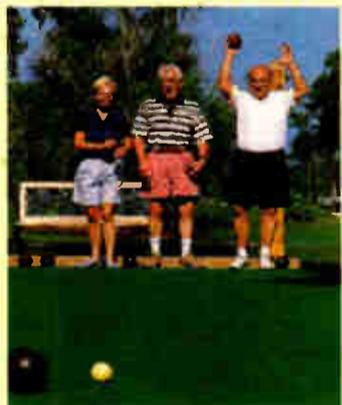
Take a moment *right now* and inventory

your remote gear, *before* the night before the game.

Replace worn out codecs, mixers, headsets, microphones, couplers and cables.

Order as early as possible to avoid delivery conflicts. We've brought in extra inventory for this sale, but the demand for new equipment is always huge. Sale ends September 30th.

No one stocks and sells more remote gear than BSW – we have all the right equipment, all with our best price guarantee!



It's a grim reality of the industry that not all remote broadcast events can be as exciting and action-packed as this...but no matter where you're broadcasting from, BSW has your remotes covered. Lawn bowling supplies, though, you're on your own...



## JK Audio

### Rugged road tools for quality telephone audio

The advanced RemoteMixSport is a combination audio mixer, headphone amplifier and telephone hybrid all in one. This is the one tool you need for sports broadcasts. The RemoteMixSport offers three XLR microphone inputs; three headphone jacks; 1/4" headphone cue input; XLR clean mix or phone mix output; speaker and talkback microphone and a VU meter. It works with conventional phone lines as well as PBX, ISDN and cell phones.

The ComPack gets audio in and out of analog phone lines, PBX systems and even cell phones, and is perfect for remote broadcasts, IFB feeds, or interviews over any phone connection. ComPack also functions as a simple telecom interface for your belt-pack intercom system, providing a full duplex, always-on connection to any telephone network.

REMOTEMIXSPORT	List 995 <sup>00</sup>	<b>879<sup>00</sup></b>
COMPACT	List 545 <sup>00</sup>	<b>479<sup>00</sup></b>



**We've special-ordered these headsets with factory-wired XLR and 1/4" connectors!**

### SENNHEISER

The HMD 280 (right) is perfect for broadcasting in high-noise environments, with sealed earpads and a noise-rejecting supercardioid mic. Features left or right side mic wear.

The HMD25X-Q (not shown) combines a lightweight, split padded headband and dynamic, closed headphones with a quality supercardioid close-contact dynamic mic – it can't be beat in noisy environments.

HMD280	List 299 <sup>96</sup>	<b>189<sup>00</sup></b>
HMD25XQ	List 509 <sup>00</sup>	<b>349<sup>00</sup></b>



### beyerdynamic))))

The DT190 combines Beyer-Dynamic's best sounding hypercardioid mic and studio-quality headphone elements. For more details go to [www.bswusa.com](http://www.bswusa.com).

The affordable DT290 (not shown) is comfortable for even marathon use, and its quality dynamic mic offers excellent isolation from noise.

DT190	List 389 <sup>00</sup>	<b>299<sup>00</sup></b>
DT290	List 289 <sup>00</sup>	<b>229<sup>00</sup></b>



## Professional handheld interview mics at great prices!

BSW carries the best mics from all the leading manufacturers. These quality handheld dynamic interview mics deliver outstanding performance at prices that will leave you smiling.

The Shure VP64A is a sleek, high-output omnidirectional mic; the Electro-Voice 635A is a popular omnidirectional mic with metal construction; the Audio-Technica AT804 is a favorite rugged omnidirectional mic; and the Sennheiser MD46 is a cardioid interview mic that combines ultra-low handling and wind noise with extended frequency response, for a mic that delivers great results even in noisy environments, such as sports arenas. Stock up now!

<b>SHURE</b>		<b>EV</b>			
VP64A	List 125 <sup>00</sup>	<b>75<sup>00</sup></b>	635A	List 172 <sup>00</sup>	<b>99<sup>00</sup></b>
<b>SENNHEISER</b>		<b>audio-technica.</b>			
MD46	List 199 <sup>96</sup>	<b>169<sup>95</sup></b>	AT804	List 110 <sup>00</sup>	<b>75<sup>00</sup></b>



## Telephone line mixer

This portable, battery-powered mini-console can turn any modular telephone into a remote broadcast studio link or telephone interview control center. Simply plug the telephone handset cord into the TLM500 along with a studio quality microphone and headphones. **Features:** mic and line inputs; low battery indicator; peak reading LED and headphone amplifier. Includes AC adaptor.

TLM500 **269<sup>00</sup>**



Watch for our 24-page August Remote Gear S

# Best Gear at the Best Prices!



## Only BSW upgrades your Xport POTS codec to ISDN for FREE!

The amazing Telos Zephyr Xport POTS codec allows you to send high-quality audio to a Zephyr Xstream ISDN codec back in the studio. With the Xport in your tool kit, you can do full-fidelity remotes to ISDN over standard phone lines, fast and easy. It utilizes a custom DSP-based modem architecture that extracts maximum bit rate from standard phone lines and prevents audio loss from retraining; groundbreaking CT-acePlus coding which improves efficiency 30% over standard MPEG AA; a built-in web server for convenient remote and local control; an Ethernet port; DB-9 computer interface connections; upgradable to ISDN operation.

The Zephyr Xstream is a rackmount ISDN codec that offers two-channel flexibility over a single ISDN circuit or two synchronous links to transmit and receive 20 kHz stereo audio to and from a single location or two mono channels to and from separate locations.

With BSW's exclusive remote sale offer, purchase both and your XPORT POTS-based field unit is automatically upgraded to the XPORT-PI with ISDN capability, a \$500.00 value. Call today to learn more about this limited time offer!

XPORT	List 2,495 <sup>00</sup>	<b>Call for Price</b>
XSTREAM	List 4,355 <sup>00</sup>	<b>Call for Price</b>



MXB1002



1202VLZPRO

## Quality, affordable portable mixers by Behringer and Mackie

The Behringer MXB1002 is a portable 10-channel mixer that runs on AC or battery power! It's packed with 5 mono, 4 stereo, and one tape return channels, with 3-band EQ on all, and XLR and 1/4" inputs. It even comes with rack ears!

The Mackie 1202VLZPro 12-channel mixer is excellent for broadcast remotes. Superior microphone preamps deliver low noise and high headroom. It includes 4 XLR inputs with preamps and phantom power, 12 high-headroom line inputs (4 mono and 4 stereo pairs), advanced DC pulse transformer RF rejection, 3-band EQ and more.

MXB1002	List 159 <sup>99</sup>	<b>129<sup>99</sup></b>
1202VLZPRO	List 489 <sup>00</sup>	<b>399<sup>00</sup></b>



**MACKIE**

XPORT

**Buy Both and get a FREE Upgrade to ISDN**  
(A BSW Exclusive \$500<sup>00</sup> value)



XSTREAM

*Telos*



## BSW Exclusive - FREE Comrex Remote Bag!

Industry-leading codec delivers 15 kHz over dial-up phone lines

The Comrex BlueBox combines a high speed modem with a digital audio codec to produce 15 kHz audio from a standard dial line. For a super economical price you also get a cellular hands-free interface to send high-quality audio over wireless services. And at just 1.5 lbs., it won't weigh you down. The BlueBox offers one mic/line switchable input, one headphone output and one line level output on XLR, providing direct connection to mics and headphones or a mixer. A -10 dbu tape input allows connection to a MiniDisc or DAT player. **Features:** internal peak limiter; data Port allows connection to GSM phones cellphone jack which allows connection to the hands free port on most mobile phones.

BLUEBOX List 2,800<sup>00</sup> **Call for Price**

## Complete Sony Wireless Systems

The Sony UWPS1 and UWPS2 are complete UHF diversity-reception wireless systems. The UWPS1 comes with a unidirectional condenser lav mic and bodypack transmitter, and the UWPS2 comes with a unidirectional dynamic handheld mic with an internal antenna; both offer level controls and 5/30 mW switchable RF power. The half-rack-size tuner is equipped with both balanced XLR and unbalanced 1/4" output. Two frequency ranges available - specify when ordering.

UWPS1	Lavalier/bodypack system	List 640 <sup>00</sup>	<b>569<sup>00</sup></b>
UWPS2	Handheld system	List 640 <sup>00</sup>	<b>569<sup>00</sup></b>



## Exclusive Fender Passport portable 4-channel PA package

The Passport P-250 is a self-contained portable PA complete with a 4-channel, 8-input mixer, 2 full-range speakers, 2 dynamic mics and cables. It puts out 250 watts of stereo at 8 ohms and has 2 stereo channels, one-touch EQ; digital reverb; eight 6.5" drivers in two cabinets; storage for mics and cables; aux/amplifier send/return jacks; and weighs only 53 lbs. BSW's complete PA package adds Fender speaker stands/mic boom stands with a carrying bag, two floor mic stands, two P51 Fender microphone/cable kits, and foam windscreens for all your mics.

P250PACKAGE List 1,405<sup>00</sup> **799<sup>00</sup>**

## Microphone mute switch

Quick, hit the cough button! The Cough Drop from ProCo is a simple mic mute offering clean, reliable performance with nearly any balanced or floating low impedance signal source.



COUGHDROP **35<sup>00</sup>** **ProCo**

## AM/FM tuner

The TU78 by Rolls is a tiny and affordable AM/FM tuner. It features AM/FM antenna inputs, stereo RCA outputs, a tuning control and an AM/FM Stereo/FM Mono band select switch. An LED indicates when a station is locked and another when a stereo output signal is present.



TU78 **79<sup>00</sup>** **ROLLS**

BSW offers package pricing • Let us save you money on your next quote  
**800 • 426 • 8434 or online @ [www.bswusa.com](http://www.bswusa.com)**

Broadcast Supply Worldwide.  
Your Best Source for Professional Audio Products.



Sale Flyer coming to your station in the mail

# Freeze

► Continued from page 23

rules terminated the interim policy concerning competition and local radio market concentration, the FCC has stated that, as of June 2 it will no longer "flag" radio sales applications under that policy. And pending petitions to deny and informal objections which challenge transfer or assignment applications solely on grounds of competition and market concentration pursuant to the interim policy will be dismissed as moot. (Pending petitions and objections that raise issues unrelated to competition will be addressed at the time the FCC acts on such applications.)

## Dilemma

For many deals in progress, these processing guidelines create a dilemma.

Hundreds of station deals that have been signed up are now indefinitely stalled because of the FCC's freeze on processing assignment and transfer applications. It was reported that the FCC would not have the new assignment and transfer application forms printed up until the end of July. Thereafter, the new forms will have to be approved by OMB and the approval published in the Federal Register. By some estimates, the freeze could last all summer or beyond.

There is an added wrinkle to this unprecedented freeze on assignments and transfers. Many radio stations in the southeastern United States will be filing their FCC license renewal applications in the summer and autumn. This is critical

because the FCC will not grant the assignment or transfer of a station while that station's license renewal application is pending.

The potential one-two punch of that policy combined with the freeze cannot be ignored by parties currently negotiating purchase or sale agreements. Because of the freeze on ownership-related applications, it is possible, if not nearly certain, that buyers and sellers won't be able to file such applications until some time in the autumn.

But if the station's renewal application is then filed while the assignment or transfer application is pending, the sale of that station could be further delayed by the three to four months (or longer) it takes the FCC to process the renewal.

In short, if you plan to buy or sell a commercial radio station in a state whose radio renewals are due this year (that would include the Carolinas, Florida, Puerto Rico, the Virgin Islands, Georgia and Alabama), depending on the date the freeze is lifted and the station's renewal date, it is highly likely that you will not be able to close on the transaction until 2004 — and possibly several months into 2004 — after the license renewal is granted. You should be sure to factor this into your plans and negotiating strategy.

*Frank Montero is a communications attorney with the law firm of Fletcher, Heald & Hildreth, P.L.C. (www.fhhlaw.com). He was director of the FCC Office of Communications Business Opportunities and co-chair of the Federal Communications Bar Association's Transactional Practice Committee. Contact him at (703) 812-0480 or via e-mail to montero@fhhlaw.com.*

## BUSINESS NEWS

### 'Accelerated Activity' Seen for Radio

The Radio Advertising Bureau predicted "accelerated activity on the horizon" for the third quarter of this year.

"Radio has managed to tread the waters of a challenged economy that was further muddled by world events," stated Gary Fries, president and CEO of the RAB. "We see a strong, consistent recovery in radio starting in the third quarter. Business activity has stabilized and is accelerating as we move forward throughout the year."

Through the end of May, radio showed positive growth thanks to pre-war ad spending. Local sales numbers for the first five months of the year were up 1 percent over the same period from 2002. National dollars rose 5 percent.

### Arbitron Enhances PPM System

Arbitron said its Personal People Meter has been upgraded so it can distinguish between in-home and out-of-home media exposure.

The system uses radio frequency codes transmitted at very low levels by the PPM household collector to determine where consumers are while listening to radio or watching broadcast and cable TV.

The company also announced a pair of features slated for the technology. A wireless Global System for Mobile (GSM) modem will help with the increasing penetration of homes that only have a wireless phone. Arbitron also will offer a portable recharger, allowing the PPM to store multiple days of media exposure data. According to the company, these features are important for the requirements of audience measurement in international markets.

### Emmis Touts 'Best' Performance In Industry

Emmis Communications said net revenues were up 4.1 percent in its first fiscal quarter. Jeff Smulyan trumpeted the news, saying the company's performance "continues to be the best in the industry in both radio and television."

Station operating income was \$52.7 million, compared to \$50.5 million for the same quarter last year, and increase of 4.3 percent. Operating income was \$28.5 million compared to \$29.2 million for the same quarter of the prior year. Net revenue for the quarter was \$142.4 million.

At mid-summer the company also completed its acquisition of 50.1 percent of a six-station cluster in Austin, Texas, for \$105 million, including KLBJ(AM-FM).

### New York Gets All-Russian Station

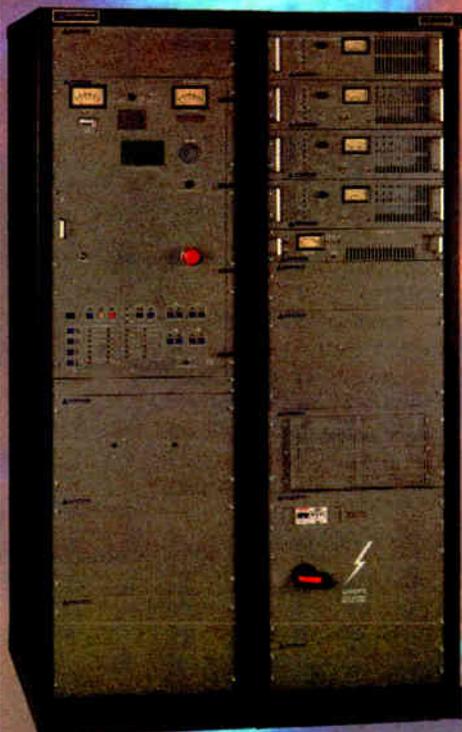
"People's Wave Radio," also known as "Narodnaya Volna," said it launched 24/7 Russian-language programming on WKDM(AM) at 1380 kHz in New York, offering news/talk and entertainment to Russian-speaking listeners in the tri-state area.

"Ever since we launched the first Russian-language radio broadcast over the airwaves in New York back in 1997 with eight to 10 hours of our own programming five days a week, our listeners have been clamoring for us to give them more," said Larry Weinberg, the station founder and president.

He said there are some 800,000 Russian-speaking households in the metro area. The organization had been broadcasting on WPAT(AM).

The station is a subsidiary of Novoye Russkoye Slovo, believed to be the oldest Russian-language newspaper in the world and the only daily in North America.

## Experience Exceptional Quality, Reliability and Service! Experience Armstrong Transmitter!



FM 30000 TX

Our single tube high power FM transmitters offer you exceptional quality at affordable prices.

Built for the "real world" environment, these RF workhorses offer long term reliability and features not found in any other single tube transmitter available.

#### Features Include:

1/4 Wave Grounded Grid Tetrode PA

Fiber Optic PA Arc Detection

PA Temperature Protection

Advanced Control System with remote computer interface

More internal status sensors than any other transmitter

CD Quality Audio (AES/EBU optional)

Available from 20 to 35 kW.  
Combined systems to 60 kW

Armstrong Transmitter.. the best RF products, the best around the clock support and the best prices

....because you deserve nothing less!

**ARMSTRONG**  
TRANSMITTER CORPORATION

4835 North Street, Marcellus, NY 13108 (315) 673-1269 Fax 315 673-9972 www.armstrongtx.com



You can measure...

with the best monitor and the most accurate test set.

The FMM-2/FMS-2 series monitors provide an even greater degree of precision measurement than ever before... You can measure S/N below 90 dB, You can measure crosstalk below 85 dB, You can measure separations of better than 70 dB, You can measure frequency response to better than 0.25 dB, You can measure distortions to lower than 0.01%, and much more... Our uncluttered panels and autoranging voltmeters make these measurements a dream.

**BELAR** www.belar.com (610) 687-5550  
ELECTRONICS LABORATORY, INC.  
LANCASTER AVENUE AT DORSET, DEVON, PENNSYLVANIA 18333  
Call or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.

# Radio@AOL Success Good for All

by Craig Johnston

With apologies to Web Watcher's friends at AOL, the 800-pound gorilla has arrived in Internet radio. In its debut in the Arbitron ratings in late May, 13 of AOL's Radio@Network channels captured top 25 positions.

Top top-40 channel? AOL.

Top smooth jazz? AOL.

Top country, '80s and lite rock? AOL, AOL, AOL. Same for hip-hop, love songs and classic rock.

As a network, AOL outdistanced second-place Live365.com by more than double, scoring a total time spent listening of 4.3 million hours. This is no flash in the pan; those numbers continued to climb in the next month.

Interestingly, AOL had not captured the No. 1 individual channel spot. At press time, that position continued to be held by MusicMatch's Artist Match channel, still outdistancing AOL's second-place offering by nearly double.

\*\*\*

So does AOL's performance signal the death knell of the rest of Internet radio? Web Watcher thinks not.

their listeners into a sufficiently enough audience to allow advertisers to make a meaningful buy.

AOL already has a group of channels with high listenership, and if ad buyers find they are rewarded for buying AOL's channels, it may be just the success story the Internet radio needs to allow others to duplicate the effort elsewhere.

Web Watcher's opinion: whether or not AOL is a friendly gorilla, it may be a helpful one.

\*\*\*

"This can't be right" was Web Watcher's first thought when reading

about a summary decision handed down by the Eastern District Court of Virginia.

WhenU.com, a software maker, apparently figured out how to make Company B's popup ads appear automatically over Company A's Web site. Company A, in this case U-Haul International, charged trademark infringement, unfair competition and copyright infringement.

A single judge on the court ruled that the trickery is perfectly legal. The judge's decision turned on the fact that the computer user who was viewing the site had given permission for such popups to be substituted. The enabling software was Trojan-horsed into the user's computer, hidden in another application.



So if that's OK, Web Watcher wonders if similar technology might allow an outsider to substitute different ads in an Internet radio station's streams?

\*\*\*

A survey by one Internet radio network caught our eye recently, because it suggests Webcast listeners don't know where the off button is.

Polling more than 1,000 listeners to See WEB WATCH, page 29 ▶

## Does AOL's performance signal the death knell of the rest of Internet radio?

First, AOL's "instant" success does not seem to have come at the listener expense of other Internet radio operators. A quick check of non-AOL channels within Arbitron's top 25 before and after AOL joined the rankings doesn't show any more listenership ups and downs than were occurring prior to the end of May.

In fact, AOL's success may not be all that "instant." Jodie Kahn at Arbitron told us that although AOL's channels weren't measured prior to subscribing to the ratings service, they were streaming music to listeners.

A second reason AOL's success may be good for all of Internet radio has to do with the demography of AOL's subscriber base.

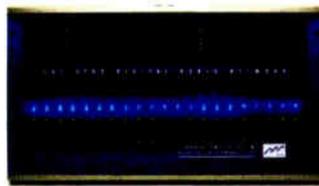
If Web Watcher's small survey of AOL users (his parents, his ex-wife) is any indication, the company may be introducing Internet radio to less technically sophisticated listeners. In the same way AOL brought these new users to the Internet itself, it could well do the same for Internet radio.

A third reason that AOL's presence in the Internet radio space may be good for Webcasters in general is that the company will be selling ad inventory for its free streams aggressively.

In a mid-July series on his online Radio And Internet Newsletter, publisher Kurt Hanson points to the need for Internet radio operators to conglomerate

and the savings are yours to keep

SAS has a well-deserved reputation for designing broadcast studio equipment that's both innovative and robust, as well as delivering client support and service unparalleled within the industry. And now, by selling direct to you and eliminating the middleman, the route to our **Connected Digital Network™** is easier than ever before.



The hub of the SAS Connected Digital Network is the **32KD™**, by far the finest and most versatile digital audio and data router, intercom/IFB, and mix-minus system in the industry. And now, with our new direct sales program, we're able to repackage the price of entry, making the 32KD much more affordable.



With just one CAT5 or fiber cable, **RIOLink™** minimizes wiring runs by connecting audio, data and GPIO from any location in your facility to the 32KD in the terminal room.

The hands-down new product winner at this year's NAB is the exciting SAS **Rubicon™** console control surface. Rubicon sets new standards for innovation and versatility. It features a clean layout, easy-to-understand controls and an

extensively customizable modular design. Rubicon can be configured for the most complex on-air studio, the simplest news booth, or any point in between. And, it looks really great too.



To kick off the new sales program, our **4th of July Summer Special** makes now the perfect time to get the coolest deals on the hottest SAS products.

For example, for every 32KD input or output card you buy with the system, get a free intercom station. SAS intercoms are designed expressly for radio—easy to operate, yet extremely flexible.



Or if RIOLink is what you need, the more cards you buy with your 32KD system, the more you save on a RIOLink.

Now's the time to get the industry's best at the best price. Don't delay. The SAS 4th of July Summer Special ends August 31st.

For more details, please call SAS at **1.818.840.6749** or drop us an email via [sales@sasaudio.com](mailto:sales@sasaudio.com).

SAS — Engineering great radio.™



1.818.840.6749  
sales@sasaudio.com  
www.sasaudio.com

**NOW THERE'S NOTHING TO COME BETWEEN YOU AND THE INDUSTRY'S BEST**

4th of July Special  
SUMMER 2003

32KD RIOLINK → YOU!!  
SAS RUBICON → YOU!!

**4th of July SUMMER SPECIAL**

# Products & Services SHOWCASE

## Control Solutions by CircuitWerkes



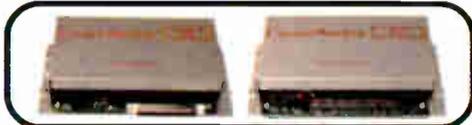
### The SEN-6 Subaudible Tone Encoder

The *SEN-6* is a single channel Subaudible tone encoder with integral audio filtering that can produce 25Hz, 35Hz and combination tones from external closures.



### The SUB-03 Subaudible Tone decoder

The *SUB-03* is a single channel subaudible tone decoder that can detect 25Hz, 35Hz and combination tones on audio channels. Each tone gives a distinct relay closure. Integrated filters strip each tone from the *SUB-03's* audio output so no one hears it.



### Control your world with CircuitWerkes DTMF Tone decoders and controls

The *DTMF-16* and *DS-8* DTMF tone decoders provide economical remote control over audio lines. The *DTMF-16* decodes single or dual codes while the programmable *DS-8* accepts up to 8 four-digit sequences. Silencer option removes DTMF tones from audio.



### The DR-10

### Perfect for Studio & Automation Control

**Dial-up** remote control with audio interface lets you control anything over regular phone lines. Interfaces with most studio automation systems. Control it from a dial-up line or external audio path. The *DR-10's* active, balanced, telco audio output lets you do live remotes, remote announcement recording and...much, much more!

More Features  
Better Price!

CircuitWerkes - (352) 335-6555 / Fax 380-0230 <http://www.circuitwerkes.com> 2805 NW 6th Street, Gainesville, FL 32609

## VoxPro PC

# \$999

### Fast, Simple, Voice-phone Editing Network Included

Instantly share files room to room, user to user and more!



## MP3

Import-Edit

[www.audionlabs.com](http://www.audionlabs.com)  
206.842.5202 x204

## Mini Mix 8A

Proven...Affordable...

Reliable



Autogram

800.327.6901

[www.autogramcorp.com](http://www.autogramcorp.com)

## AM Antenna Solutions



LBA Tunipole™  
Folded Unipole Systems



RF Components



Vacuum Capacitors



Diplexer, Triplexer and  
Phasor Systems

COMET  
Sold Here!

LBA Technology, Inc. is your proven supplier of innovative, digital-ready AM antenna systems.

Our products include tuning units, phasing systems multiplexers, AM/wireless isolation systems and components for every power level. We help hundreds of broadcasters in the USA and worldwide to --

Reach further –  
sound better!

LBA Technology, Inc.



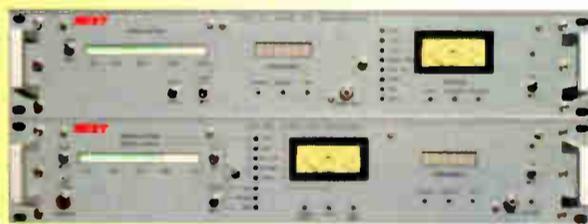
3400 Tupper Drive, Greenville, NC 27834

800-522-4464 / 252-757-0279 / Fax 252-752-9155 / Email [Lbotech@Lbagroup.com](mailto:Lbotech@Lbagroup.com) / [www.Lbagroup.com](http://www.Lbagroup.com)

LBA  
Since 1963

# BEXT

- ✓ Frequency Agile
- ✓ Outstanding Audio
- ✓ 2 year Warranty



10W STL SYSTEM \$3,850

## Dedicated to Quality Equipment

Customer Talk

"Working with Bext is a Broadcasters dream"

"Bext is top-drawer in their assistance & support"

1 888 239 8462  
Outside the US call 619 239 8462

[www.bext.com](http://www.bext.com)

## Ready for lightning?



### TS-1 Transient Voltage Surge Suppressor

Telephone lines give lightning a direct path to your broadcast equipment. Protect your investment with the TS-1 surge suppressor. Built for broadcast.

BURK  
TECHNOLOGY

800-255-8090 / [sales@burk.com](mailto:sales@burk.com) / [www.burk.com](http://www.burk.com)

# Web Watch

► Continued from page 27  
 their online stations, RRadio Network found nearly 90 percent of listeners make their Internet radio listening sessions at least an hour at a time. Further, more than 47 percent stayed with Internet radio for more than three hours at a whack.

When do these long-listening sessions take place? Another part of the survey reiterated what has long been known: nearly 60 percent of Internet radio listening takes place during the daytime.

RRadio Network is home to some 30 Internet radio stations, including Beethoven.com.

★ ★ ★

After writing about the Internet radio listening possibilities that Lufthansa and British Airways will be offering their customers by installing the Connexion by Boeing broadband Internet access system on their planes, Web Watcher was interested when United Airlines announced it will upgrade its JetConnect system to allow passengers email access while in-flight.

Would this system allow Internet radio listening? In a word, no.

As the system was explained to Web Watcher, it is simply an upgrade to the in-flight telephone system, and is intended only for e-mail access.

Besides, the cost of listening could be pretty steep. Use of the JetConnect system costs \$15.98 per flight plus 10 cents per kilobyte (for data packets over 2 kB). At that rate, even low-bandwidth listening would quickly break the bank.

# Formats

► Continued from page 18  
 "That's a very big question mark," Kurtzman said. Although he said he believes that satellite radio will likely be a successful medium, it's too soon to tell if it will have a significant impact on terrestrial radio.

McVay is seeing some impact from satellite. An unrepentant XM user, he said, "I love it. I think it's fabulous." Still, McVay said it will be years before radio sees the true impact of satellite radio. Which doesn't mean it can be ignored.

"Fewer people are using radio," he said. "My challenge isn't just competing with the other guy. It's competing with other providers."

Burns says satellite radio in general is a viable media. "It's a good business model that should make money in the long run," he said. However, he's not as concerned with competition from space.

"I do think that satellite radio will have only a minimal significant impact on terrestrial radio; they may take some national advertising off the table, but more from national radio networks than local stations."

The bottom line comes down to programming, McVay said.

"Radio has lots of competition out there from lots of different places, and it still comes down to having the best programming. If you put up crap programming, you're just not going to be successful."

Lyssa Graham is a free-lance writer based in Galveston, Texas. Reach her at lyssagraham@msn.com.

## PROGRAMMING

### New Study Profiles Hispanic Radio Audience

Arbitron is out with an update about Hispanic listeners in the United States and their preferred formats. Radio's reach is clear.

The latest version of "Hispanic Radio Today: How America Listens to Radio" combines Scarborough Research consumer data with Arbitron audience data in an effort to create a comprehensive profile of this consumer market.

The national study found that more people than ever are listening to Spanish-language radio, and the number of Spanish-language radio stations

increased by more than 100 in the past four years.

According to Arbitron, the number of Hispanics living in the United States accounts for more than 13 percent of the population in Arbitron metros.

#### Mexican regional

Statistics show the Mexican regional format is the favorite Spanish-language format of Hispanics in this country. Spanish contemporary comes in at No. 2, followed by Spanish tropical. Contemporary hit radio ranks as the favorite English-language format among Hispanic audiences.

Other study findings:

•Forty-four percent of the Hispanic AC audience has stocks, bonds, money-market accounts, mutual funds

and/or other investments;

•Hispanics who listen to Mexican regional are 39 percent more likely than the average Hispanic consumer to buy a new pickup truck in the next year and 32 percent more likely to purchase a used truck;

•Hispanic CHR listeners — whose makeup includes teens and young adults — enjoy extreme sports, in-line skating, bowling, and going to the movies; and

•Spanish variety listeners are 14 percent more likely than the norm to use online banking services at home.

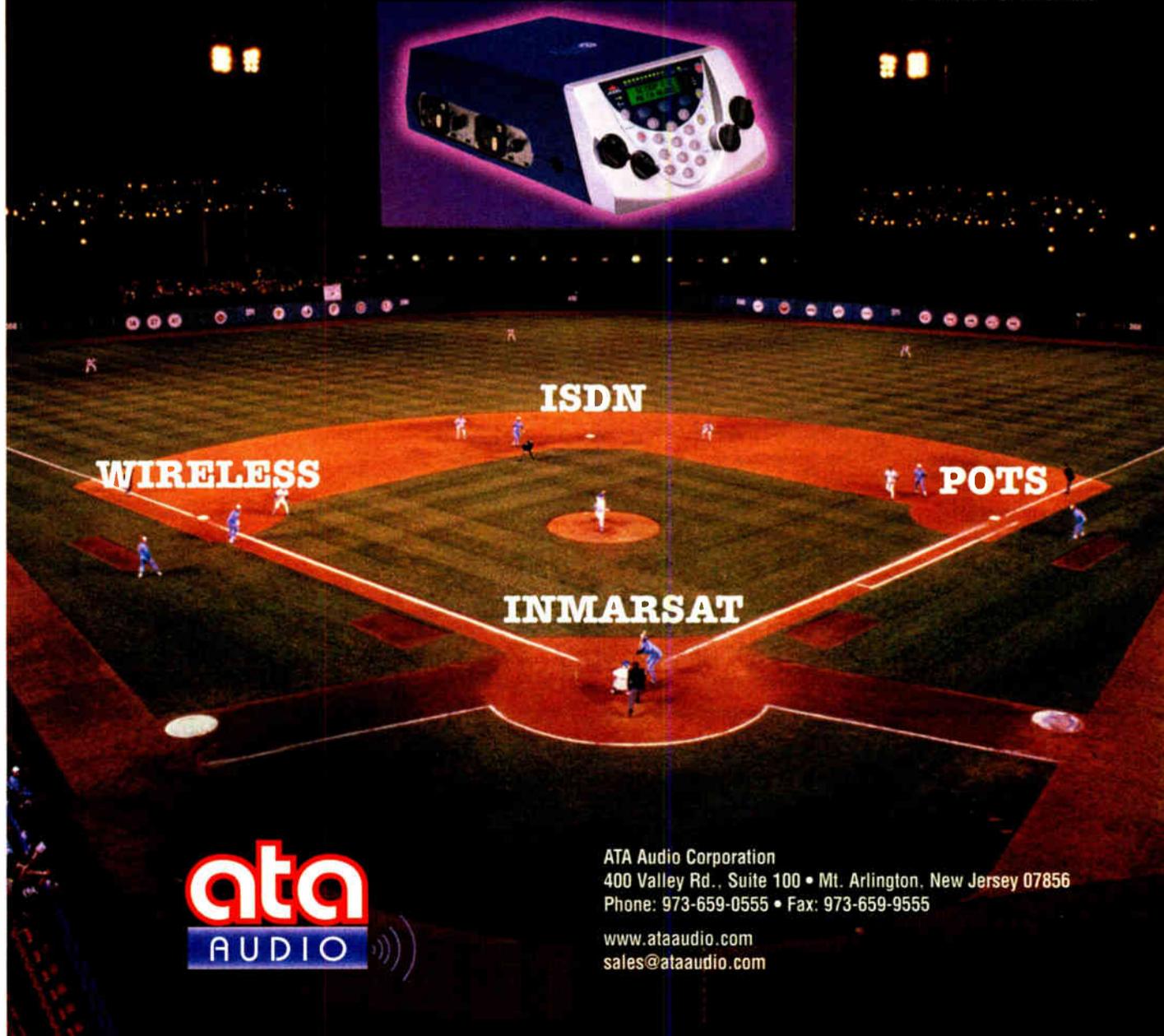
The study can be downloaded at [www.arbitron.com/downloads/hispanicradiotoday03.pdf](http://www.arbitron.com/downloads/hispanicradiotoday03.pdf).

# Have all your remotes covered with SCOOP E-Z

- POTS  
7 kHz speech
- GSM - Wireless
- Inmarsat Capabilities
- Microphone Supplies  
Ph48, Ph12 or T12

- ISDN  
7 kHz, (G722)  
20 kHz, (MPEG Layer II)
- Two Channel Audio Mixer
- Small Weight and Size  
<4 pounds  
9 x 6 x 3 inches







ATA Audio Corporation  
 400 Valley Rd., Suite 100 • Mt. Arlington, New Jersey 07856  
 Phone: 973-659-0555 • Fax: 973-659-9555  
  
[www.ataaudio.com](http://www.ataaudio.com)  
[sales@ataaudio.com](mailto:sales@ataaudio.com)

# Station to Nation

*Come Together. Revolutionize Radio.*

**October / 1-3 / 2003**

Pennsylvania Convention Center, Philadelphia

**2-for-1  
Registration —  
NAB Members Only!**  
For more information go to:  
[www.nab.org/conventions/radioshow](http://www.nab.org/conventions/radioshow)

PHILADELPHIA

**Thursday, October 2**  
Group Executive Session



Moderator  
**Sean Hannity**  
The Sean Hannity Show  
ABC Radio Networks

Group Executives Including:



Mary Quass  
NewRadio Group, LLC



Virginia "Ginny" Morris  
Hubbard Radio



John Hogan  
Clear Channel Radio

Sponsored by:



**Wednesday, October 1**  
Super Session  
**John Walsh**  
America's Most Wanted  
ABC Radio Networks



**Thursday, October 2**  
NAB Marconi Radio Awards  
Reception, Dinner & Show  
**Master of Ceremonies**  
**Steve Harvey**  
Comedian & Host  
KKBT-FM, Lcs Angeles  
Syndicated by Radio One

MARCONI  
Radio  
AWARDS

Sponsored by:



**Thursday, October 2**  
Keynote Address  
**Rush Limbaugh**  
Premiere Radio Networks

Sponsored by:



THE NAB  
**RADIO  
SHOW**

# Buyer's Guide

Tech Updates



Inside

Radio World

Codecs & Telco

August 1, 2003

USER REPORT

## AEQ Codecs Assist International Operation

by Efrain Jimenez  
Director of Technical Operations  
WSUA(AM)

**MIAMI** WSUA(AM) 1260, known as Radio Caracol, broadcasts 24 hours in Spanish with a news, talk and entertainment format. We are well-posi-

system. In the ISDN area, we had been using another popular brand of audio codecs for some time. In 2002 we found the AEQ Eagle codec and the Swing ISDN portable codec. A loaner from AEQ changed our minds, and since then we've been using the Swing.



Efrain Jimenez also works with an AEQ console at WSUA.

tioned in the highly competitive South Florida Hispanic market. Late-breaking news and audience participation are essential to our programming, and our audience consists of South American and, in particular, the growing and affluent Colombian and Venezuelan communities.

Since 1994 we have used an AEQ on-air console, digital phone hybrids and the Systel 3000 multiconference

Radio Caracol is an active participant in the LA W FM Network, an international news network with more than 70 participant radio stations in Colombia, Spain, England and the United States. The news program is produced daily in Miami between 5 and 11 a.m. This extensive program has co-hosts in Miami, Bogota, Madrid, New York, London and Los Angeles. The interconnection of these studios in six cities is implemented

with the Eagle.

One benefit of the Eagle is its compact design of only one rack unit, an absolute plus in WSUA's crowded racks. The space-saving design and its multiple features were influential factors in our purchasing decision. Another important element was the Eagle's ability to connect well with our existing codec.

Eagle is competitively priced, which made it even more attractive.

### Multiplexing B

Among the features I like most is Eagle's multiplexing capability of the two B channels. Each B channel in the ISDN connection can dial a different number using a different compression algorithm at 64 kbps, using G.711, G.722, MPEG-2 or -3, and we are able to multiplex both lines to enable an on-air multiconference between two lines and on-air talent at the studio.

We are using four Eagles to cover six hours of W FM daily programming, and we are pleased with the results we are getting.

We have covered the Formula One Grand Prix around the globe and sent teams to cover this event in Malaysia, Brazil, Europe, Japan and Indianapolis. In these cities the broadcast was performed with the Swing ISDN portable.

The features I like the most are that it is a portable and compact unit and has three microphone inputs. The mixer allows a reporter to set up a remote on the spot if there are fewer than three participants.

The Swing has a telephone hybrid allowing a reporter to set up a remote in places where ISDN lines are not available. The worldwide capability of the terminal adapter in the Swing was handy during the Formula One broadcasts.

See AEQ, page 32 ▶

USER REPORT

## KSL News Depends On Comrex

By John Dehnel  
Chief Engineer  
KSL(AM)

**SALT LAKE CITY** For a news-talk station like Bonneville, Utah's KSL(AM), remote broadcasts make up a large part of the day. In order to keep up with each day's stories, our reporters broadcast about 30 remote reports using various methods.

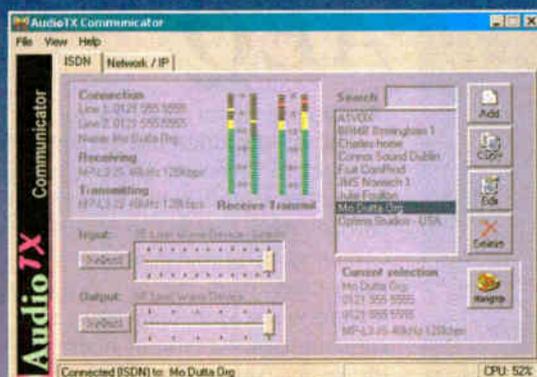


The Comrex Matrix and BlueBox Kit

For most breaking stories, they communicate with the studio using a wide-band two-way system, a longtime staple at KSL, that includes mobile radio units and mixers installed in each of the station's news vehicles.

When broadcasting press conferences, news conferences and other remote programming, however, we generally rely on the Comrex line of codecs. During a recent political controversy, we set up a Matrix in the city

See COMREX, page 32 ▶



## AudioTX COMMUNICATOR

Turns your PC or Laptop into a Broadcast Quality ISDN Codec

- Compatible with Telos Zephyr, CDQ Prima & virtually all other ISDN Codecs, MPEG Layer 2, 3, G.722 and G.711 telephony mode.

LIVE AUDIO OVER IP: FOR STL, LIVE STUDIO CONNECTIONS & REMOTES

- High-quality, low delay, broadcast reliable audio. Connect over LAN, WAN, T1 or even the Internet! Compressed (MP2, MP3) or Linear audio.

# www.audioTX.com

FREE trial version available for instant download. Tel. MDOUK on +44 121 256 0200 (GMT+1)

World Radio History

# Comrex

► Continued from page 31  
commission chambers, ran a long wire to a borrowed fax machine line and returned both our reporter and the P.A. audio from a public hearing back to the studio easily.

When no line is available, we can connect the Matrix to a digital phone for wireless operation. We also use the TelCell module, which allows us to use broadcast-quality mics and headsets with Matrix's mixer and headphone outputs connected to a wireless phone's analog headset jack.

When nothing else is available, this beats the sound of a typical cellphone microphone while also providing mic

mixing and a tape input.

We recently added a Comrex BlueBox to our fleet of portable POTS codecs, which also includes three HotLines and two field Matrix units.

## Codecs for all

On election night last November, we had them all in use at various venues. Our reporters got comfortable with the units soon after we got them. Now, instead of going out for a story with just their cellphones, they often stop in to grab a codec on the way. In fact, keeping track of who has them is sometimes an interesting exercise.

Even our sales staff has learned the benefits of the codecs. Before we got the Matrix systems from Comrex, we were using older analog cellphone gear for supermarket-type remotes. Our staff had

gotten so accustomed to the horrible-sounding cell quality that trying to convince them it was worth the extra effort to try to find a POTS line to improve it was like pulling teeth.

After hearing one too many supermarket remotes hollered through a cellphone connection, I set up a demonstration for the sales, program and marketing people. I played back recordings of the same audio bite run through the Matrix in each of its modes.

One pass used a cellphone's headset jack connected to the TelCell module, another used encoding on a GSM digital cellphone and the final one used the POTS codec mode. Everyone at the meeting, from the manager on down, agreed it was worth the extra effort to seek out a phone line when possible, and they have been trying to do so since.

In addition to commercial remotes, we usually take one or more of our regular talk shows on the road each week, which is our other significant use of the POTS codecs. During the Olympics last year, each of our shows broadcast live from various game venues, totaling about 30 remotes in two weeks. When we take a full show out, I won't do it on a cellphone; we have to establish a decent-quality audio link.

## We ended up getting 24 kbps out of the Virgin Islands, with no glitches in three game broadcasts.

We have a movie-review show, kind of a non sequitur with the rest of our issue-oriented news/talk programming, but a hit nevertheless. We take "The Movie Show" on the road almost every week. One regular venue has ISDN, where we usually use a Nexus, but for the rest we generally use the POTS codecs.

Our POTS codecs have gone far beyond Utah, as well. We sent a reporter to New York with a BlueBox for the anniversary of 9/11 last year. As the flagship station for Brigham Young basketball, we followed the team to the Virgin Islands for a tournament last month. Although the normal venues in our conference have ISDN available, getting it down there would have cost us \$1,000 — not very cost-effective for three games, especially given that the arena had a POTS line available for free.

So I just took a deep breath and, thinking the BlueBox would be more forgiving of bad phone lines than the older HotLines, we sent that with the normal basketball setup. After all, I reasoned, in the worst-case scenario, our custom-built basketball console has a hybrid built in, so we could go on the air with that, if connect rates were too low for a codec.

The broadcast went much better than I expected. We ended up getting 24 kbps out of the Virgin Islands, with no glitches in three four-hour game broadcasts.

Comrex will be releasing a new Matrix plug-in module this year, with an integrated GSM wireless phone.

For more information, including pricing, contact the company in Massachusetts at (978) 784-1776 or visit [www.comrex.com](http://www.comrex.com).

# AEQ

► Continued from page 31

The Swing does not require cards to connect to different ISDN systems. We use the same unit in the United States and abroad. Also, the external power supply comes with rechargeable batteries and has a range from 90–240 V, a convenient feature when your team travels to different countries. Its ease of operation makes life easier for the on-air talent in remote broadcasting situations and the technical department of WSUA.

For more information, including pricing, contact the company in Florida at (954) 581-7999 or visit [www.aeqbroadcast.com](http://www.aeqbroadcast.com).

## F.M. and T.V. Transmitters 8 REASONS TO SWITCH TO OMB

Technology  
Quality  
Service  
Price  
Spare parts  
Available stock  
Experience  
Technical specifications

...and  
many more.

All OMB equipment is synthesized and broadband.  
Available in powers from 20 W. up to 20 KW.



<http://www.omb.com>  
TOLL FREE NUMBER (Nationwide)  
1-800-8980719

3100 NW 72nd, Avenue Unit 112  
MIAMI, Florida 33122  
Ph.: 352 683 0434 - 305 477 0973  
Fax: 305 477-0611  
Internet: <http://www.omb.com>  
e-mail: [ombusa@bellsouth.net](mailto:ombusa@bellsouth.net)  
Videoconference: 1 305 5940991/92

## USER REPORT

# Telos Xport Is Fast on Its Feet

by Michael Black

**GENEVA, N.Y.** The sport of lacrosse has been described as the fastest game on two feet (not to be confused with the fastest game on skates). At the NCAA college level, the sport is found mostly in the Northeast and Mid-Atlantic, but it is rapidly expanding.

In Texas, this is especially true at the high school level. It is with this background in mind that the first Division I men's college lacrosse game in 32 years and the first broadcast in that state was scheduled between the Hobart College Statesmen and the Georgetown Hoyas.

The venue was the Texas Military Institute, a private institution with a great athletic program that counts General Douglas MacArthur among its notable alumni. As with any remote broadcast — especially at a distant location and, in this case, with no knowledge of the facilities available at that location — making sure the right connections were available was key.

## Too cool for its flight

We wanted the quality and also the simplicity of using our normal "home broadcast" equipment for the show, which includes a mixer, wireless parabolic microphones and return audio from the studio. While our first choice was ISDN, this would not be available in the press box; fortunately a POTS line was available.

We routinely use standard POTS codecs in certain circumstances. However, this seemed the ideal situation to call upon the capabilities of the new Telos Zephyr Xport.

The Xport has a stunning appearance. Its frame is constructed of extruded metal; rubber bumpers front and back protect the controls and connectors and also act as the "feet" of the unit.

Xport's appearance actually raised some concerns with airport screeners when carrying it to our flight; one exclaimed that it was too "cool looking" to be allowed on the plane, and he would have to take it home. Thankfully, we were allowed to keep the box.

But the real beauty of the Xport is in its simplicity and straightforward operation. An LCD display provides information, including a graphical display that shows send and receive audio quality in addition to audio levels. The display mirrors that of the Zephyr Xstream, which makes operation for our student and community volunteers that much easier.

Auto dial setups based on location are included for both POTS and ISDN remotes. Did I forget to mention that this codec will do both? The unit connects to your Xstream in the studio using either ISDN or POTS — whatever's available. This streamlines equipment requirements and operations at the "receive" end of the call, because a single Zephyr Xstream does double duty.

Controls on the Xport are intuitive. Stowable "push to extend" knobs control the two inputs (one mic, one line), the headphone volume, and the headphone mix of send and receive audio. The back-panel inputs and outputs are balanced; connections are laid out logically, including an output for a PA feed. Everything is easy to get to and labeled to minimize mistakes, including the POTS and ISDN jacks.



One final connector is an Ethernet port that allows for Internet software updates and remote control from a standard Web browser. You won't find little mini plugs on this unit.

## Sound of the sticks

Game time arrived. We set up the phone call by having the studio call us via the POTS phone line. The connection was made on the first attempt, and stayed solid for the entire duration of the game;

no renegotiations or audio dropouts. (If line quality degrades, Telos provides an extra "security blanket": Xport contains a full telephone hybrid, and will convert to a POTS call, if things get that bad.)

Audio quality was outstanding. The aacPlus algorithm used provides great fidelity to the studio. For contrast, we also conducted a "listen test" of a similar game transmitted using ISDN, and were amazed to hear how good the

Xport sounded using POTS. Every hit, the metal sticks hitting each other, conversations from the field, all were reproduced with great clarity and fidelity over the POTS line.

Xport has proven to be a valuable tool for remote production, and we have used ours all around the country as well as locally. One common use is to broadcast city council meetings. Xport has simplified this process greatly; we now use the Xport as our entire remote kit, rather than lugging along the extra mixer and interface equipment needed before. The two balanced inputs cover this application perfectly.

I would prefer that both inputs be XLR (the line level input is 1/4-inch TRS); it would also be nice if the second input were mic/line switchable. However, the Xport does not disappoint in its operation, design nor its ruggedness for remotes. It has become a favorite of our staff for remote broadcasts.

Our historic broadcast came off successfully, with only one minor problem: the Statesmen lost to the Hoyas, and would have to wait another day until their first victory in the Lone Star State. However, our broadcast was a winner, thanks to the Xport.

*Michael Black is general manager of WEOS(FM) in Geneva, N.Y., the public radio station of Hobart & William Smith Colleges.*

*For information, contact Telos Systems in Ohio at (216) 241-7225 or visit [www.telos-systems.com](http://www.telos-systems.com).*

## TECH UPDATES

### Orban Encodes With Opticodecs

**Orban/CRL's** Opticodec 7000 is a portable audio recorder that can edit and transmit live signals.

It contains an ISO/MPEG Layer II- and Layer III-compliant codec for use with ISDN. Also included are G.722 7 kHz and G.711 telephone modes. Opticodec reduces the bit rate required to transmit and receive audio between the audio source and the remote receiver location. The ISDN interface provides support for ISDN telephones, eliminating the requirement for additional 1 MB service for voice communication. The Opticodec also includes a digital audio recorder and editor for ISO/MPEG Layer II, and transmits ISO/MPEG Layer III over ISDN in a small, lightweight battery- or AC-powered package.

Features include solid-state PCMCIA Type III RAM recording media, file transfer to FTP server with optional software, Index marks embedded in a file for editing with other digital audio systems, a playlist editor and 20-bit A/D-D/A converters.

Orban/CRL also produces the Opticodec 7400 (shown), an ISO/MPEG Layer II- and III-compliant codec for use with ISDN. It is TCP/IP- and UDP-addressable for use over LAN, WAN, Intranet or the Internet. G.722 7 kHz and G.711 telephone modes are included.

According to the company, this Opticodec reduces the bandwidth required to transmit and receive audio between the audio source and the remote receiver location. The ISDN interface provides support for ISDN telephones; an extra 1 MB service for voice communication is unnecessary.

The 7400 is compatible with the Telos Zephyr and CCS CDQ Prima at 64 kbps mono and 128 kbps stereo. Ninety-four entries can be stored in the directory and accessed via speed dial. It uses 20-bit A/D-D/A converters and has digital input and output, AES/EBU and S/PDIF, with sample rate converters. Features include data rates of 56-384 kbps, 11 ISDN D-protocols, eight remote control I/Os and a 9600 bps ancillary data channel.

*For more information, including pricing, contact the company in California at (510) 351-3500 or visit [www.orban.com](http://www.orban.com).*



### Digital Cellcast Is Combo Mixer/Cellphone

Targeted at sportscasters and other remote users is Marti's Digital Cellcast, an all-in-one mixer and cellphone.

The Digital Cellcast is lightweight and can plug into most power sources, mix four microphone and headset channels and transmit live remote feeds over standard cellular telephone networks.

Marti said it designed the unit for remote locations where line-of-sight issues limit the use of RF RPU systems or where there is no access to landlines, although the unit can operate on POTS lines.

The four-channel mixer has pots for each channel, which can be set up for program or cue, and mix or line selectable. The unit comes with a battery pack and AC/DC converter; it can run on battery power or plug into an electrical outlet or a car cigarette lighter. When plugged into an AC circuit, the battery can still be plugged in to act as a UPS.

This unit operates on popular cellular telephone networks, including TDMA networks used by AT&T and Cingular. Marti plans to introduce a CDMA model and new GSM versions of the Digital Cellcast soon.

*For information contact the company in Illinois at (217) 224-9600 or visit [www.martielelectronics.com](http://www.martielelectronics.com).*



USER REPORT

# Musicam USA Nets a 'Star'

by Dave Immer  
 Founder/Chief Engineer  
 Digifon

**FAIRFIELD, Conn.** In early June I received a NetStar unit for evaluation. The NetStar is the latest in a 15-year line of great products from Musicam USA, a logical progression from the established Prima line of codecs. The Prima is still very good at what it does and delivers excellent audio results with high reliability at a reasonable cost. But the NetStar is a quantum leap in power and features from its predecessor.

First of all, the NetStar, compared to the Prima and other prior-generation codecs, has much more flexibility in implementing and upgrading codec improvements and control functions. Plus, IP protocol figures heavily in this approach, and Musicam USA uses it to great advantage. Over the course of a week I got to know the front panel, the menu system and the remote control capabilities and did some listening tests.

The button-set on the NetStar has a positive mechanical "click" feel and can be optionally configured to "beep"



Dave Immer and Musicam USA's NetStar Codec

when pushed. Response is quick and solid and, being about the size of those on a standard keyboard (1/2 inch), the buttons are easy to see and push even

with poor vision and fat fingers.

The backlit LCD screen is bright and sharp; it shows up to seven lines of alphanumeric text, allowing plenty of information to be shown on a screen. The menu system is laid out logically, with the common commands a few button presses away. For

look of the unit in operation. Also present are the familiar "Line" connection status and "Framed" indicator LEDs as well as the headphone status lights. The headphone output can be made to monitor the encoder or decoder or both.

The audio quality is typical of Musicam USA's high-end codecs: excellent resolution and signal-to-noise ratio with analog or AES/EBU digital I/O standard. As on all of its models, its enhanced version of the Layer II algorithm is included, which has the advantage of "passing through" to the far-end decoder (even if it is not a Musicam USA product) and thereby improving the audio result over the "standard issue" Layer II.

Besides the familiar algorithms of MPEG-1 Layers II/III and G.722, included are the new MPEG-2 AAC and MPEG-4 AAC low-delay plus G.711, for POTS connectivity, as well as "uncompressed" (J.57) linear audio, for use over IP or T1.

The bidirectional IP connectivity between them makes NetStar versatile and enables an existing LAN to bear the transmissions "in-house" and, depending on conditions, even via the "public" Internet. Bit-rates of such transmissions, being a function of the network bandwidth, typically can support linear 16-bit, 48-kHz audio, making it convenient for quick-turnaround production activities where the audio may need to make several "jumps" prior to broadcast or mix while avoiding multiple coding cycles.

**Bidirectional IP connectivity enables a LAN to bear the transmissions in-house and, depending on conditions, the Internet.**

instance, to change the codec mode, one needs only to press the enter button three times, which takes you to the encoder parameters.

On the NetStar, the decoder is always in an incoming "auto-detect" mode, so decoder values don't need to be set. Two pushes of the Dial button takes you to the screen where you select IP, ISDN, Voice mode or X.21. Then you enter the address or phone numbers and connect, direct and simple. The numbered submenus can be accessed by pressing the corresponding number button, a quick alternative to scrolling down or up with the cursor arrows.

The manufacturer's familiar "Speed Dial" register has been renamed "Profiles" and does largely the same thing — configure codec parameters and/or initiate network connections — while losing the reference to dialing, which doesn't really apply when connecting via IP and X.21.

The NetStar has large, bright LED input and output (L&R) level meters in the shape of traditional ballistic VU meters that add a nice flash to the

My favorite new feature is the remote-control panel accessible by opening an Explorer or Netscape browser window on any LAN computer and typing in the IP address of the NetStar. The browser control panel is complete and allows quick entry of parameters found in the NetStar while showing the current status, including ISDN line "Ready."

I wish I could also see some representation of levels (perhaps peaks in the last 5 seconds or so), but overall the browser control panel makes dealing with one or multiple NetStars easy. Finally, with the IP control, one no longer has to be framed with the far end to issue commands, so the risk of losing that control has been eliminated.

These new features and capabilities along with a suggested list price of \$3,950 make a compelling case for including the NetStar codec in one's equipment budget.

For more information contact the company in New Jersey at (732) 739-5600 or visit [www.musicamusa.com](http://www.musicamusa.com).

## "We're On-Air in Five Minutes."



**When you've got audio to cut and no time to spare...**

Trust Short/cut 2000™ to get a move on. How fast is it? You'll be editing tracks as fast as you can push the buttons. And when you're working on-air, Short/cut's ten Hot Keys keep your best clips cued-up and ready to go.

We've also tripled audio storage to a whopping 12 hours — and with a hard drive so quiet you can work right next to an open mike.

Whether it's breaking news, phone-ins, sports, interviews, or live events, the new Short/cut 2000 is radio's #1 choice for stand-alone digital audio editing.

Log on  
**360systems.com**  
 Get the Story

360 Systems, 5321 Sterling Center Drive, Westlake Village, CA 91361 • Phone (818) 991-0360 • Fax (818) 991-1360

USER REPORT

# AA Roadwatch Uses Sonifex Codecs

by **Stuart Barton**  
Area Manager  
AA Roadwatch

**STANMORE, UK** AA Roadwatch, the traffic news provider for radio and TV stations in the U.K., has installed 69 Sonifex Nica X audio codecs to provide travel news to the GWR group of radio stations.

The traffic news service from AA Roadwatch began in 1973 when Capital Radio and LBC turned to the AA for traffic and travel information. The size of the AA's operation has increased with the amount of traffic problems on the roads; it now services a number of clients.

Roadwatch and GWR started discussions about provision of services at the end of 2001, about 10 months before the existing contract was due to finish. We previously had provided some services to GWR, so it was a natural progression to service the whole of their requirements. We also have a relationship with the Unique Broadcasting Co., which manages a service vs. commercial airtime business model for us; we provide traffic news in return for commercial airtime, which is sold by UBC.

Taking on GWR has been the largest single intake of radio stations for us in our history because we're now covering 50 stations for them, including both the Gold and FM services.

This project was challenging technically and in terms of manpower. We had to get 16 new staff in place across the U.K. within a two-month period. Six of those were airborne, providing news from airplanes based at airports in Southend, Coventry and Bristol.

The technical challenge was more about speed of implementation. Sonifex has done an excellent job in providing the codecs to us in what turned out to be quite a short timescale. We have seven Nica Xs here in Stanmore, 10 at transmitter sites, six at the airfields, two at Exeter, four at Cardiff, four at Halesowen, one in Cheadle, one at each at the GWR sites and a couple of spare units.

**'Air' chain**

The Nica Xs at the transmitter sites are used for studio-to-transmitter links. From the planes, the reporters will talk on the transmitter receiver down to the base station, of which there are five for the three sites. Each of the five transmitter points has two Nica X codecs, one for each person in the plane. These are each connected to two ISDN lines, which feed two positions each at Stanmore, Halesowen and Cardiff.

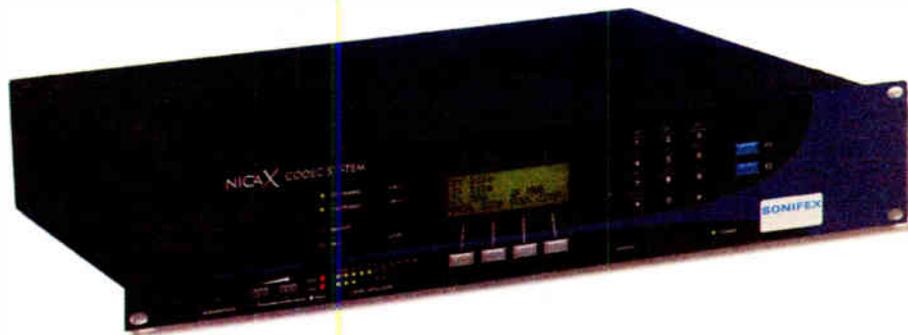
From there, using another Nica X, we dial out to the appropriate stations to provide the link to the stations from the plane. The reporters in the planes can do live reports to any of the dialed stations in the GWR network. We also can record clips into our database for later traffic reports so that we can broadcast clips recorded within the last 10 minutes to multiple stations at the same time.

Some of the Nica Xs were modified for the airfield sites by the addition of an internal microphone amplifier together

with a headphone output built into the codec, so that the operators have a self-contained unit. Together with beyerdynamic headphones and microphones chosen to cut out background noise, they provided an ideal solution in an area where there is a lot of aircraft noise.

Most of the FM services will take up to four broadcasts per hour, 6-9:30 a.m. and 3:30-7 p.m. We have about 30 staff here and try to organize the shifts so that

See SONIFEX, page 37 ▶



Low Prices. Smart People.

# CLEARANCE!

**C414B/ULS**

**SALE Price too low to print!**



**RAMSA**



**WP1200**

120W/ch - amps

**\$289.00!**

**LAST CHANCE!**



**800-356-5844**

**www.fullcompass.com**



**audio-technica.**

**ATW-7376X**

**Handheld**

diversity wireless system

**\$295.00!**



**HUGE B-STOCK & DEMO MIC SALE!!**

**Get a FREE catalog CALL TODAY!!**



**Pro 227 Body Pack**  
diversity wireless system

**\$149.95!**

**SENNHEISER**



**EW300IEM-SE**  
wireless in ear monitors

**\$595.00!!**

**COMPASSXPRESS**

Not a 9-5 shopper?

Call 800-476-9886

8am-8pm M-F CST

10am-4pm Sat.

# THE AMAZING LITTLE MIXER



## ALM

### *Routes any INPUT to any FADER...*

**OR ANY INPUT TO YOUR MONITORS!**  
The ALM-12d console from AUDITRONICS combines the benefits of a router and a console—all into one cost effective package. It's got everything you need: twelve faders plus two caller faders, four microphone pre-amps and of course control room and studio monitoring, built-in cue and headphone amplifiers, and a concealed headphone jack.

It's got the high end features too, like bright LED dot matrix source displays above faders and monitor pots, and 24-bit A>D and D>A ins and outs.

Its AES digital inputs have sample rate converters so it works with virtually any digital source gear you have. It can run your source machines too—up to eight of them—all opto-isolated. It even has DSP digital metering that simultaneously displays VU columns and peak hold full scale digital so you can be assured of pristine performance. It has powerful caller tools that generate MXMs automatically, and you can program any of its four MXMs to be pre or post fader.



*Digital so easy you don't install it—you CONNECT it!*

**DIGITAL CAN BE EASY**—Just check out the ALM! It's available NOW from:

**AUDITRONICS**  
www.auditronics.com



**SCMS, INC.**  
YOU-KNOW-WE-KNOW-RADIO!

tel 800-438-6040 / sales@scmsinc.com

**SPECIAL OFFER!** Buy an ALM-12d and get a FREE Behringer B-1 microphone and OC White 14198 mic arm!

# Sonifex

► Continued from page 35

the customer will get the same voice reading the traffic reports at the same times for each radio station, so that the listeners can build up an identity with them. They'll do up to 15 broadcasts per hour, while other staff will spend time researching and gathering information.

Most stations like to have an input from the airborne service, which covers all the GWR stations, so we've arranged the flight path of the planes so that the traffic hotspots are covered at peak hours.

When deciding which codecs to use for the job, there were a number of factors. We needed compatibility with the existing 64 kbps codecs, and also Tim Donaldson, head of group engineering services for the GWR Group, specified that we needed to use 128 kbps codecs to provide good audio quality. The existing products we had didn't do 128 kbps, so we needed to look for something else. Codecs using the apt-X algorithm already were being used due to their high audio quality and low latency, so it made sense to continue using an apt-X-based codec.

Where the Nica X units really won over the competition was in their front-end ease of use, with simple book entries and one-touch dialing. Additionally, the Nica Xs were already in use at some of the sites, so it was important for compatibility with these codecs and others. We have eight broadcast studios here in Stanmore where we use the Sonifex Arc Multi-Master ISDN codec control system for dialing and routing ISDN calls that are made. So we were familiar with, and had confidence in, the Sonifex brand.

GWR is happy with our services and Sonifex has done a great job providing us with a solution.

Contact Independent Audio in Maine at (207) 773-2424 or visit [www.independentaudio.com](http://www.independentaudio.com).

## AudioTX

### Communicator

#### Focuses on IP Audio

MDOUK says its AudioTX Communicator software codec is used most frequently as an ISDN codec. But the company is seeing a growing number of IP network-based applications.

Communicator now has three modes of IP operation for network connections including DSL or cable-modem Internet. Its two network modes for operation on LANs and WANs (or private circuits like T1) minimize transmission delay, typically as low as 30 ms; the new Internet mode measures connection quality and optimizes performance, offering a reliable connection when faced with difficult network conditions.

Another addition allows the user to enable auto-reconnection should a link fail. Intelligent fallback can attempt multiple alternative IP or ISDN connections.

Projects include a station in London that has signed a deal with a provider of Wi-Fi Internet access at locations around the city. Using Communicator on reporter laptops allows them to broadcast from key locations. Others are using it on private IP networks or T1 for STLs or transmission backup feeds, some as a way to connect buildings across existing networks.

Contact MDOUK in the UK at 011-44-121-256-0200 or visit [www.audiotx.com](http://www.audiotx.com).

## TECH UPDATES

### APT Goes Global With WorldNet

Audio Processing Technology has developed a range of complimentary ISDN codecs that includes the recently launched WorldNet Tokyo, offering compatibility with compression algorithms like MPEG Layer II and III and G.722.

The WorldNet Tokyo has the apt-X suite of compression algorithms, which APT says were developed to deliver high-quality audio with a low processing delay or latency (under 5 ms) and a resistance to the effects of cascading.

The WorldNet Tokyo is a 2 RU, 19-

inch unit and is based around the Intel Celeron processor. With the ability to recognize and auto-configure to incoming ISDN calls, it is suited for radio or TV broadcasters control rooms. According to the company, when the WorldNet Tokyo is used in

conjunction with APT's WorldNet Milano, the WorldNet Tokyo addresses all aspects of ISDN management.

For more information, including pricing, contact the company in Northern Ireland at 011-44-28-9037 11110 or visit [www.aptx.com](http://www.aptx.com).



## The Dorrrough Loudness Monitor



Two 40-A2 meters in an optional dual rack

### Today's audio requires careful attention to precise level control...

Simultaneous display of Peak & Average. See the actual loudness of program content with the Dorrrough ballistics based on Time and Amplitude. Select from 6 different models including AES/EBU meters.

#### Features common to all models:

- Peak hold functions • Sum/Difference • Alarms for audio loss and full scale
- Scale selection for 14dB and 20dB of headroom
- AES/EBU includes more features



## Remote

A wired remote for accessing phase from the 280 analog and 280 digital reading meters. Display the functions of L/R, Sum/Diff, Phase, Overs Display/Overs Reset, 3 sec. Peak Hold, Peak Hold Permanent, and Reference Mode. Red alarm status lights for Phase, BSC, and Full Scale.

Model RW-100



Please visit our web site [www.dorrrough.com](http://www.dorrrough.com)

Dorrrough Electronics Inc. 5221 Collier Place • Woodland Hills CA 91364  
Tel: (818) 998-2824 Fax: (818) 998-1507



# Products & Services SHOWCASE

**SIX MILLION  
THUNDERSTORMS HIT  
PLANET EARTH EVERY YEAR!  
IT TAKES ONLY ONE TO  
PUT YOU OFF THE AIR!**



The STATI-CAT LIGHTNING PREVENTION SYSTEM provides a continuous, low-resistance discharge path for the static electric charge on tall structures. Dissipation points are 1/8" stainless steel rods.

This affordable and rugged system has proven itself in the field for over 20 years.

**Cortana**  
Corporation Inc.

Write or call for a free brochure and design  
P.O. Box 2548, Farmington, N.M. 87499-2548

Toll Free: 888-325-5336 • Fax: 505-326-2337 • www.cortanacorporation.com

## Affordable Custom Broadcast Furniture

Constructed,  
Delivered and  
Installed by

STUDIO  
**TECHNOLOGY**

Now also serving you  
from the West Coast!

Studio Technology West  
310B Coney Island Dr.  
Sparks, NV 89431  
TEL: 775-351-2042  
FAX: 775-351-2082



TEL: 610-640-1229  
FAX: 610-296-3402  
32 Pennsylvania Avenue  
Malvern, PA 19355

e-mail: sales@studiotechology.com  
web: www.studiotechology.com



**MOORETRONIX**  
BROADCAST & INDUSTRIAL ELECTRONICS

PRE-OWNED  
BROADCAST EQUIPMENT

**Buy with  
confidence!**

All equipment is sold with documentation and  
a 30-day Limited Warranty.

We also repair and refurbish PR&E  
consoles, modules and accessories.  
We speak BMX-I, II, III, AMX,  
ABX, Newsmixer,  
Stereomixer & Radiomixer.

Visit our web site for available equipment  
and news updates.

[www.mooretronix.com](http://www.mooretronix.com)

800-300-0733



## OPTILATOR™

New & Improved OPTILATOR



### Fiber Optic Modem Protection

Lightning Protection that keeps on working!  
Fiber optic protection impervious to Lightning.  
It is now a recognized name brand in the RF Industry.  
For more technical information call toll free 888-471-1038,  
Ph: 727-548-5418. For pricing and sales call: Harris,  
Broadcast General Store, Broadcastworks, Broadcast  
Richardson, RF Specialists, Crouse-Kimzey, EuroExchange  
Brokers Inc., or your local distributor.  
See our web page: [www.opticsshield.com](http://www.opticsshield.com) It is for real!  
The Ultimate Lightning Protection!

## 15 kHz MPEG-IN-A-BOX!

**NEW! DigiStor-MP stores 20 minutes  
of 15 kHz MPEG audio!  
It's ideal for...**

- Station ID, SFX
  - Network news delay
  - Translator spot insert
  - EAS store-and-forward
- More great features...
- 99 messages
  - Remote control
  - 2 EOM relays
  - Download audio from PC

Now In stock.



**We Build Solutions**

Detailed datasheet at [www.henryeng.com](http://www.henryeng.com)



626.355.3656  
Blueboxes, Inc.

## USER REPORT

# Innkeeper PBX Has a Simple Spirit

by Conrad Agte  
Vector Broadcast

**SPOKANE, Wash.** The Innkeeper PBX from JK Audio is one of those products that fills such a void you wonder why it took so long for somebody to finally figure it out.

With a simple connection to the handset cord at your master control extension phone, you can insert a true digital hybrid to provide deep nulling of your send audio, leaving remarkably clean caller audio to put on the air.

In the last couple of decades, multiline telephone systems have gotten further from the ability to provide plain old analog audio for connection to the console. Most radio stations have abandoned any hope of utilizing their main phone system for live or recorded call-in segments.

The newer phone systems have digitized even the audio stream, rendering any attempt at interfacing to the phone itself futile. The typical answers to dealing with current phone systems are: 1) install discrete contest lines with dedicated telephone hybrids, which can get expensive and precludes any connection to the station's PBX business lines for on-air use; 2) install a separate multi-line "broadcast" phone system; 3) utilize the analog "fax" outputs provided by the phone system, which usually requires several steps in identifying and transferring calls intended for on-air use.

The Innkeeper PBX solves all that.

## Better calls needed

One of the stations I engineer as an independent contractor is Spirit 101.9, KTSL(FM), a contemporary Christian music station in Spokane with respectable ratings and a solid 12-year history in the community.

The station's successful live morning and afternoon drive shows are replete with contests and live call-ins. Although their analog telephone hybrid had been getting the job done switching between one outside line and a custom interface to an extension on the multi-line phone system, it became clear that caller audio was not up to contemporary standards.

We started evaluating the newest digital hybrids to improve call-in quality. Then this summer the other shoe dropped; station management decided it was time for a new phone system, and when the installers packed up their tools and slithered away, we were down to one contest line and a roundabout connection to the office PBX system using a "fax extension" and a seven-step process to get a call into the hybrid for on-air use.

Needless to say, this was six steps more than any jock was willing to endure, so we were desperate for a better solution. A check with Shannon at BSW uncovered the announcement of the Innkeeper PBX as a new product, and we were ready to try. Unfortunately the product was still in the pre-production phase, so I made a call to JK to see how soon one might be available. After some authentic whining and begging, the nice folks at JK Audio agreed to send one of the vry first beta units for us to try out.

We plugged it into the system the day it arrived, and the jocks have had nothing but raving praise for its simplicity and performance.



Afternoon drive personality Kyrsten Lee takes a call on the Innkeeper PBX.

As a contract engineer with several stations to give attention to, I'm always impressed when a "simple" installation actually turns out to be simple. In this

case, just unplug the handset coily cord from your multi-line phone and plug it into the Innkeeper, connect the Innkeeper to the phone using the supplied cable, hook up the XLR out for caller audio and the XLR in for your console's send audio and you are on the air.

A pair of front-panel pushbuttons switch you between Handset mode and Broadcast (caller-on-the-air) mode. Broadcast mode mutes the handset microphone.

At the price of this unit, it almost seems pretentious to have bonus features, but there are some: the send audio can be switched from line to mic level for a simple one-microphone feed; there is also a second send input with its own level control and a 3.5mm mini phone jack; plug in an MP3 player, tape deck or sound card for newsroom operations. One-person sports remotes become one-box simple with a digital hybrid at remote end to boot.

There is a three position switch on the back of the Innkeeper PBX to accommodate various handset microphone types: electret, carbon and dynamic.

The FAQs on JK Audio's Web site at [www.jkaudio.com/innkeeper-pbx.htm](http://www.jkaudio.com/innkeeper-pbx.htm) reveal a disclaimer that, due to the proprietary nature of telephones, there may be a

rare case of a handset with non-standard wiring that will not work with the Innkeeper PBX. On the new Comdial DX-80 system at Spirit 101.9 it works just great.

LED indicators meter actual caller level (level control affects the XLR output level but not the metering) and the adjustable send level. Throw in a headphone jack with level control and about the only feature "missing" is the ability to remotely activate the Handset/Broadcast switch from the console.

During our initial testing I turned up the caller level into the console and listened to the send audio nulling with normal speech being sent down the phone line and a silent connection on the other end. The nulling was impressive considering the handset connection on a digital phone system. Send audio was definitely suppressed enough to cause little distortion to the announcer's voice in real-life caller interaction.

JK Audio is on the right track with the initial release of this hybrid's DSP. In the words of PD and morning personality Dave Masters, "The Innkeeper PBX makes putting calls on the air a snap. It's a keeper."

Conrad Agte operates Vector Broadcast, providing contract engineering services to broadcasters around the Inland Northwest. For information about the Innkeeper PBX, contact JK Audio in Illinois at (815) 786-2929 or visit [www.jkaudio.com](http://www.jkaudio.com).

## USER REPORT

# Tieline Serves 'Open House Party'

**SOUTHBOROUGH, Mass.** The syndicated, live top 40 program "Open House Party" has become a radio institution since going on the air in 1988.

In 1997, it conducted its first remote via satellite. During a proposed upgrade, another alternative came into view.

Reed Lewis, vice president of technology for "Open House Party," answered questions from Tieline Technology America for this article.

**Q:** How was it that you came to look for alternatives to your satellite setup?

**Reed:** We were changing our satellite transmission and would have needed to purchase a more-powerful transmitter and dish. It was then someone suggested that we take a look at Tieline codecs.

We did a demo of the Tieline i-Mix and we were blown away by the results we achieved. It was then we seriously had a look at the benefits of using analog lines. There were so many advantages using codec equipment compared with our traditional satellite setup.

This year we were scheduled to broadcast the "The Open House Party" live from the Grammys in New York. We discovered that replacing our satellite gear with Tieline codecs would immediately save us over \$20,000 in equipment purchases and save us from having a staff of six on hand for four days for a single remote.

There was also the ongoing time saving needed for setup and breakdown. In addition, analog phone lines can be found anywhere in the country whereas putting a satellite dish on a rooftop can be difficult. So we decided to purchase a Tieline i-Mix 5-channel POTS codec mixer combo for the field and a Commander for use back at the main studio.

**Q:** Did you look at any other 15 kHz POTS codecs before purchasing the Tieline i-Mix?

**Reed:** John Garabedian (the show's host) looked at other 15 kHz POTS codecs but felt that the Tieline gave us the audio quality and stability we required. As we were broadcasting live to more than 160 stations across America, the audio quality must be pristine. The "Open House Party" is the most listened to live Top 40 radio show in America.

**Reed:** This was a mission-critical situation, make no mistake about it. We had only one shot to get this remote right. We could not afford to provide a substandard feed out of New York. The Tielines delivered broadcast-quality audio over analog phone lines, which I've got to admit, is simply amazing.

**Q:** What would you say to other engineers



Artist Amber talks to host John Garabedian.

**Q:** How has Tieline changed the way you conduct your remotes?

**Reed:** We used to carry a 1.3-meter uplink satellite dish and satellite transmitter. It has reduced the number of boxes needed to take to a remote from 20 to three. It has changed setup time from three days to several minutes. Breakdown used to take three hours with six people at the end of the remote. Now it literally took a couple of people and about 10 minutes to wrap up the remote gear.

One time we had to snake two runs of heavy satellite cable from the ballroom of a hotel to the roof — 48 stories. Not anymore.

**Q:** How does the audio quality of the Tielines compare to your previous set up?

who may be a bit skeptical of using Tieline POTS codecs for large-scale events?

**Reed:** I used to think that ISDN was the only way to go for these types of events. But the performance of the Tieline codecs has really changed my opinion.

We were able to deliver broadcast-quality audio to 160 stations over POTS lines and the connection remained solid for seven hours without a single retrain on typically noisy, terrible New York City phone lines. And this was using Planet Hollywood's PBX phone system, no less.

For information, contact Tieline in Indiana at (317) 259-8000 or visit [www.tieline.com](http://www.tieline.com).

# Products & Services SHOWCASE

## WEATHER RADIO

Model CRW



Price \$540.00

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm audio output. Double conversion crystal controlled, crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel ( $\pm 25$  kHz) down to 70 dB. 19" rack mount, 3.5" H, all metal enclosure. In stock—available for immediate delivery.

**GORMAN REDLICH MFG. CO**

257 W. Union St. • Athens, Ohio 45701

Phone 740-593-3150 • FAX 740-592-3898

www.gorman-redlich.com/jimg@gormanredlich.com

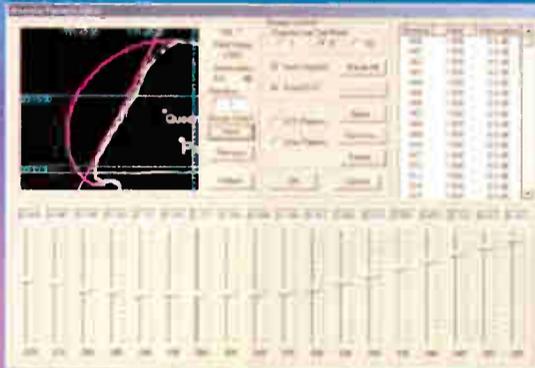
**rfSoftware, Inc.**

communications solutions

352-336-7223

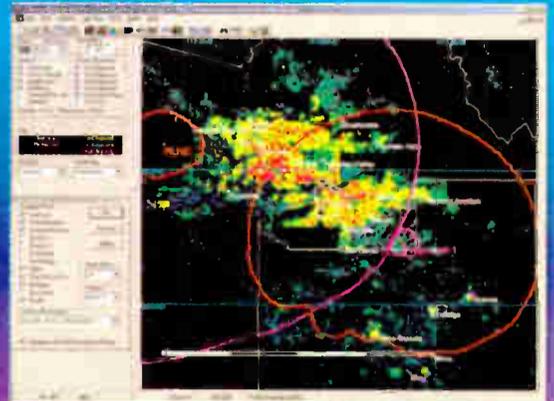
www.rfsoftware.com

Visit our website for a complete list of products and features.



DA design is a snap!

Never buy another FCC database!



Recover your software investment quickly.

## AES/EBU DIGITAL AUDIO DISTRIBUTION AMPLIFIERS

DDA106-XLR (1x6)  
DDA112-XLR (1x12)  
DDA206-XLR (Dual 1x6)  
DXA112-XLR (1x12)

DDA112-BNC (1x12)  
DDA124-BNC (1x24)  
DDA212-BNC (Dual 1x12)  
DXA124-BNC (1x24)



- Accepts sample rates from 27 to 96kHz
- Data reclocking and regeneration
- Loop-thru inputs with switchable terminations
- Up to 12 XLR or 24 BNC outputs

- Transformer balanced inputs
- Adjustable Input cable equalization
- Sample rate, Status and Error Indicators



AUDIO TECHNOLOGIES  
INCORPORATED

Dedicated to sound engineering  
AT • 328 W Maple Avenue, Horsham, PA 19044  
(800) 959-0307 • (215) 443-0330 • Fax: (215) 443-0394 • http://www.atiguys.com  
Free Brochure Available Upon Request

It's New!



## FlipJack FJ-500

3 channel cell phone interface

- Two headphone jacks
- Two Mic inputs And a Line Input
- Connect To A Standard Telephone Line.
- Operates on "AA" batteries or external power
- Balanced Line Level Output
- Small Size: 1.5"H x 4.8"W x 4.5"D
- Tuner input for off-air monitoring
- LED level indicator

www.conex-electro.com

**CONEX ELECTRO SYSTEMS**

1602 Carolina St. P.O. Box 67 Bellingham, WA 98227  
360-734-4323 FAX 360-676-4822  
EMAIL conex@conex-electro.com

800-645-1061

**S.C.M.S., Inc**  
Charlotte, N.C.

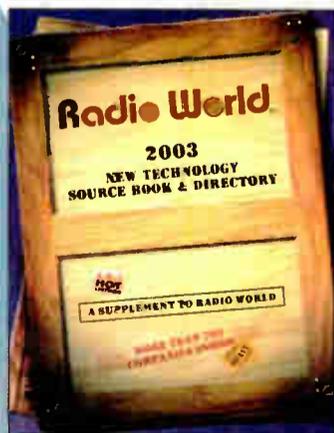


- ✓ Competitive Prices
- ✓ Extensive Rental Fleet (RF Coders Test Equipment, Audio)
- ✓ Experienced Staff
- ✓ Used Trade-Ins Welcomed
- ✓ New and Rebuilt RF and Audio
- ✓ Custom Studio Design and Furniture
- ✓ Representing Over 600 Quality Manufacturers
- ✓ Turnkey Installations Available

**You Know We Know Radio**

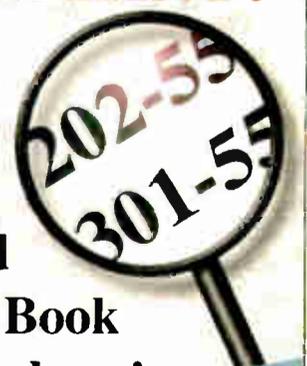
800-438-6040 • www.scmsinc.com • Fax 704-889-4540

## Looking for a MANUFACTURER, a DISTRIBUTOR, a CONSULTANT?



Look no further...

The 2003  
Radio World  
Directory Source Book  
is available for purchase!



**ONLY \$14.95**  
(INCLUDES SHIPPING/HANDLING)

To order copies contact: Simone Fewell at  
sfewell@imaspub.com or  
fax your request to: 703-671-7409

There will be no billing; all orders must be pre-paid. We accept VISA, MasterCard, and American Express.

## USER REPORT

# WorldNet Milano Has Enhanced apt-X

by Peter Frost  
Freelance Engineer

**LONDON** The introduction of the APT WorldNet Milano was a welcome relief. It brought together the ability to use eight ISDN bearers giving dial-up ISDN ability of 512 kb in a straightforward and accessible manner.

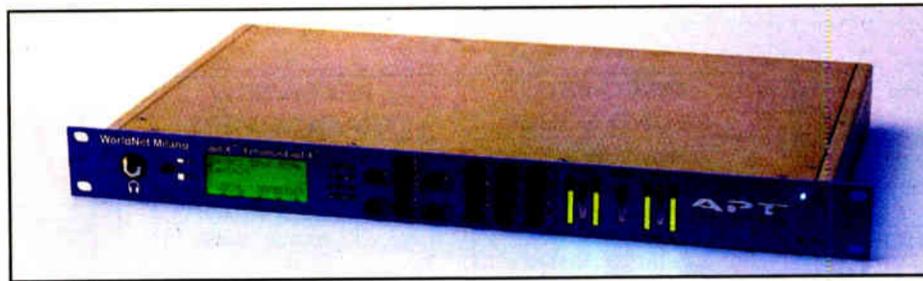
The Milano is the first hardware product from APT to incorporate the new Enhanced apt-X algorithm alongside the widely used and respected standard 16-bit apt-X.

What Enhanced apt-X brings to the party is an even more robust coding algorithm with 16-, 20- and 24-bit working modes decreasing the noise floor and bringing even lower coding delay (latency). It is a mixture of the new algorithm and the "quick one-look confidence" ability of the Milano that was encouraging; in the field this proved invaluable.

The Milano lends itself to the nature of outside broadcasts and temporary remotes, with setup and configuration proving to be straightforward once you have your head around the menu structure, which is controlled from front-panel keys.

The front of the unit identifies active bearers (one to eight) with associated LEDs, red for healthy ISDN, green for bearer-connected. Then via the front-

audio as ISDN lines come on-stream and then will retry any failed bearers up to the number of retries you have set in the setup menu.



panels keys and menu you set up the configuration needed or recall a preconfigured one. Presets can be saved, allowing you to call up various algorithm modes and bit rates you can dial using speed dials.

The two special Fast Dials FD0 and FD1 are dedicated buttons on the front. When initiating a call, each bearer dials sequentially. If one does not connect (usual ISDN gremlins), then the unit continues connecting, builds up the

Once connected, audio quality is clear and robust. In fact, if you have a bearer failure, the Milano will drop down to the best available data rate.

This means that on a 384 kbps circuit at 20 kHz stereo, the loss of two bearers results in a drop to 15k stereo only, not a loss of circuit! Moreover, it rebuilds itself to 20k stereo when the bearers return. This I found invaluable, because for some of my clients, continuation of some sort of audio feed is paramount.

## USER REPORT

**Low latency lends itself to using the Milano where a remote needs to take live cues from another non-studio source.**

This 1 RU, 19-inch unit is in a fetching blue color, thoughtfully adorned with multicolored LEDs to indicate state and status changes, with a large front-panel LCD to the left-hand side, allowing you to check unit setup and operating mode.

Interfacing with audio feeds is done via three-pin XLR with the I/Os selectable via menu as either AES3 (+18 dBu peak) or analog. With no breakout leads required, you just needed a box full of XLRs and four CAT5 patch leads. Imbedded serial data of 9600 kbps can be fed via an RS-232 9-pin D connector (useful for remote control of playout systems) and you can even have simultaneous linear time code if you wish.

### Bearers of good news

Arriving on site at the remote and identifying just where the ISDN S-bus provision was tended to be the most taxing problem. The rest was straightforward.

Powering up the unit brings a boot-up sequence on the LCD display, taking approximately seven seconds, and then you're ready to go, with the relevant number of ISDN lines connected into the rear RJ-45 S-bus sockets.

by John Katonah  
Owner  
River Communications

**WALDEN, N.Y.** My company specializes in the design and installation of satellite delivery transmission systems for radio networks as well as engineering services to local stations.

Several months ago, I was contacted by Clarence Beverage of Communications Technologies Inc., who advised me that one of his clients, Five Towns College, had acquired an AM broadcast facility now licensed as WFTU at the end of Long Island.

They required a method of providing a reliable, high-quality stereo program from their studio in Dix Hills, N.Y., to their new transmitter site in Riverhead. The total distance between the new studio and transmitter is approximately 50 miles.

Beverage had investigated several traditional equipment approaches including terrestrial microwave (940-960 MHz) and dedicated phone lines. Both had limitations including cost, multiple tower sites and the sometimes difficult-to-attain STL frequencies. Let's not forget the cost of digital STL equipment itself or monthly recurring tower rent and/or telephone line lease costs.

A second alternative was to consider a satellite link. The equipment for this approach would have cost around \$20,000 for the uplink and about \$2,500 for a single downlink. The monthly satellite segment time would have cost around \$850 per month. Although this would give them the ability to be received anywhere the continental United States at an unlimited number of sites, it remained somewhat excessive for just one site.

During the past few years I have had the opportunity of purchasing a number of transmitters from Energy-Onix and I have been pleased with the performance of their equipment and the personalized attention I have received from them.



Tele-Link Display

Recently, I became familiar with their Tele-Link system. It would be a perfect solution for the Long Island client. It uses the Internet to transport stereo or mono audio from one point to another practically anywhere Internet access is available. Because the college already had a relatively large data connection in place to the Internet and the transmitter site (surprisingly) had broadband cable service available, it seemed this may work and be relatively inexpensive. Both proved to be true.

Bernard Wise, president of Energy-Onix, offered me a Tele-Link system consisting of two terminals to evaluate its performance. The system was installed in May. At the time of this writing, it has functioned flawlessly for six weeks.

The Tele-Link is a duplex system. Each terminal contains an encoder and decoder. It permits monitoring at the studio of both the encoded studio audio as well as what is being received from the air monitors at the transmitter, although the audio is delayed returning from the transmitter.

Hey, it's a remote, but you don't want to jeopardize station output, do you?

The low latency lends itself to using the Milano where a remote needs to take live cues from another non-studio source, i.e. a traffic reporter in a helicopter or elsewhere, as long as apt-X is being used for that nonlinear link.

Another operational bonus is the ability to see the audio input and output simultaneously at a glance via the bright LED stereo meters. Not only that, but a 1/4-inch jack on the front means you can select either input or output to monitor in a separate headphone feed. Sometimes it's good to know at a glance that "It's leaving me OK."

There is a bit of fan noise, but the unit does not run hot, so you can disconnect it. Just don't keep it in a rack with no gaps. I've found the Milano easy to use and dependable. The TA locks up quickly and solidly better than any other APT product I have come across.

If you want the benefits of apt-X and reliability of links, the WorldNet Milano fits the bill.

For more information, including pricing, contact the company in Northern Ireland at 011-44-28-9037 11110 or visit [www.aptx.com](http://www.aptx.com).

# Tele-Link Puts Internet to Work

The system is capable of handling either balanced analog or AES/EBU digital audio sources and can be easily changed from the 64 kb of compression being used to any one of eight compression rates from 32 kb to uncompressed (1.4 Gb).

Keep in mind though, most cable modem services rarely exceed 500 kbps on the download and even less on the upload so cable/DSL connections on both ends could be a limitation.

Another concern is that due to the buffering in the link to compensate for Internet "slowdowns," use of air monitors for live announcers is not practical. But then again, how much "live" radio is left anyway?

The important thing is that the equipment does an excellent job of compensating and adjusting for "net congestion" and can easily be set up and used without reading the manual (typical engineer approach).

Even if "net congestion" does exceed the "buffer," or the Internet connection is interrupted, the Tele-link contains a 12-hour "fill disk" which would automatically be switched to. During this interruption period, the terminals automatically will attempt to reconnect every two seconds to each other's encoder and, after a solid connection has been achieved, normal programming from the studio would automatically switch back.

Overall, I am pleased with the Tele-Link performance, as is the client. The Internet is here to stay, and inexpensive solutions such as the Tele-link definitely can be added to our often-difficult and expensive choices of getting programming to a transmitter site.

The author can be reached at [john@riverc.com](mailto:john@riverc.com).

For information from Energy-Onix, contact the company in New York at (518) 758-1690 or visit [www.energy-onix.com](http://www.energy-onix.com).

# BROADCAST

## Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

**ACOUSTICS**  
Want to Sell

**AcousticsFirst™**  
Toll-Free Number 888-765-2900

Full product line for sound control & noise elimination.  
www.acousticsfirst.com

**AMPLIFIERS**  
Want to Sell

Bogan amp/mixer, 70 volts & meter, like new, \$300/BO. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middletown NY 13406. 315-891-3110.

**ANTENNAS/  
TOWERS/CABLES**  
Want to Sell

**Superior Broadcast Products FM Antennas**  
All Power Levels.  
Contact Jimmie Joynt  
Phone 800/279-3326

340' Rohn CC tower. Includes beacon, guy wire, lighting & other hardware. 24" face, disassembled & ready to ship. Digital photos available. Any reasonable offer. 731-772-3700 or email: carlton@billdancefishing.com.

**AM Ground Systems**  
Reliable, On-time Installation  
Quality Workmanship  
Ground System Evaluation and Repair  
www.amgroundsystems.com  
1-877-766-2999

Andrew LDF4-50A 1/2" heliack. One 381' section, \$300; one 278' section, \$200, good used, no kinks or damage. Can be picked up in Western North Carolina or will meet buyer in North Georgia, Eastern Tennessee or Western North Carolina for 25 cents per mile (prepaid), or you pay packing & shipping. Victor Stiles, WKKK Radio, 427 Hill St., Murphy NC 28906. 828-837-4332.

**THE ANTENNA SITE STORE**  
Tower Registration Signs  
FCC and OSHA Compliance  
Tower Leasing Signs  
Your Wording Added  
610-458-8418  
www.antennaid.com  
Antenna ID Products Glenmoore, PA

Cablewave CP-1000-2 two bay, true circular polarized, FM transmit antenna with radomes. Tuned to 92.3 MHz, 2000 watt input power capacity, new in factory sealed carton, \$1500/BO. Ray Knudson, KNXR, 1229 Park Ave, La Crosse, WI 54601-5641. 608-782-2254.

**S.W.R FM & Television Antennas**  
Contact Jimmie Joynt  
Phone 800/279-3326

ERI 3 bay FM antenna, 5 years old, excellent condition, tuned to 102.1 FJ, \$3950. Rod Chambers, KSUE, 3015 Johnstonville Rd, Susanville CA 96130. 1-800-366-9162.

**AUDIO PRODUCTION**  
Want to Sell

CRL Dynaflex DX-2 NR unit, excel cond, stereo, rack mount, balanced input/outputs, \$250. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

Eventide H3000B ultra harmonizer in excel cond w/manual, stereo, rack mount, \$950. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**CART MACHINES**  
Want to Sell

Beaucart, used, stereo play (3), BO; Cart winder with clock, BO. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middletown NY 13406. 315-891-3110.

Broadcast Electronics 10 Spot, like new, never used, 10 bays, BO over \$500. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middletown NY 13406. 315-891-3110.

Broadcast Electronics Duratrac 90A, excel cond, stereo, many available. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

ITC 99 Series stereo cart recorder with ESL, looks and works great, \$750/BO. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

ITC Delta, 3 deck stereo, like new, mint condition, \$500 +shpg. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07628. 800-585-1031.

**CD PLAYERS**  
Want to Sell

Tascam CD 401 player, good condition, runs well, \$100 +shpg. John Wilsbach, WMSS, 214 Race St., Middletown PA 17057. 717-948-9136.

**COMPLETE FACILITIES**

**NEW OR USED COMPLETE PACKAGES**  
STUDIO/STL/TRANSMITTER/ANTENNA OR ANY COMBINATION OF ABOVE.  
-LEASE OPTIONS-  
-EMERGENCY RENTALS-  
-REMOTE BROADCAST RENTALS-  
SCMS, Inc. (800) 438-6040  
"You Know We Know Radio"

**CONSOLES**  
Want to Sell

Broadcast Electronics 8M150 in good condition, 8 pot mono console, \$300 +shpg. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

Broadcast Electronics 8S150A, like new, 8 pot stereo console, mint condition, \$850 +shpg. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**DISCO-PRO SOUND EQUIP**  
Want to Sell

Retainer 12" 3 way speakers (2), used, in walnut enclosure, \$300 each. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middletown NY 13406. 315-891-3110.

**Radio World**

**LIMITERS/  
AUDIO PROCESSING**  
Want to Sell

Aphex Compellor 320A, stereo, w/manual, \$800. Ron Witt, WSTG/WAEY, POB 5588, Princeton WV 24740. 304-425-2151.

Modulation Sciences CP803 FM composite clipper w/manual, \$800. Ron Witt, WSTG/WAEY, POB 5588, Princeton WV 24740. 304-425-2151.

Optimod 8100 with add-on XT2, \$1200. Ron Witt, WSTG/WAEY, POB 5588, Princeton WV 24740. 304-425-2151.

Optimod 8100A FM processor, just through the shop, like new, \$2800. Ron Witt, WSTG/WAEY, POB 5588, Princeton WV 24740. 304-425-2151.

Texar Audio Prisms (2), with #5 Texar card, \$800/both. Ron Witt, WSTG/WAEY, POB 5588, Princeton WV 24740. 304-425-2151.

Optimod 8100A, newer style with LED bargraph meters, new in 1997, excellent condition, \$3250. Rod Chambers, KSUE, 3015 Johnstonville Rd, Susanville CA 96130. 1-800-366-9162.

**Want to Buy**

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

**MICROPHONES**  
Want to Sell

Telex PH-91 sportscaster headsets (2), good condition, \$75 each +shpg. John Wilsbach, WMSS, 214 Race St., Middletown PA 17057. 717-948-9136.

**Want to Buy**

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

**MISCELLANEOUS**  
Want to Sell

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin, Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402 493 1886 FAX 402 493 6821

Symetrix T1-101 telephone interface, rack mounted, works great, \$125. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**RECEIVERS/  
TRANSCIVERS**  
Want to Sell

Russco Electronics T212 stellar telephone EQ, good condition, \$100 +shpg. John Wilsbach, WMSS, 214 Race St., Middletown PA 17057. 717-948-9136.

**RECORDERS**  
Want to Sell

DJ EQUIPMENT: System 360, Mackie board, Tascam 302 tape decks, mic, mic arm. Call 757-220-4256.

Revox A-77 r-r's, 1 PB only, 1 R/P only, \$60 each +shpg. John Wilsbach, WMSS, 214 Race St., Middletown PA 17057. 717-948-9136.

Tascam DA-30 R-DAT, rack mount, excel cond, balanced & unbalanced inputs/outputs, \$450. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**REMOTE & MICROWAVE**  
Want to Sell

**Superior Broadcast Products FM STL Transmitter & Receivers 3,500 for both**  
Contact Jimmie Joynt  
Phone 800/279-3326

Bext LC-STL-R tunable STL receiver, excellent condition, composite output, manual, \$2100. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

Telos Zephyr 9101 mono ISDN, studio use only, excel cond, ISDN ready with V.35 (2 avail), \$2500 ea. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**WE RENT FOR LESS**

Hotlines	FM Exciters
Zephyrs	STL's
Nexus	FM Pwr Amps
Audio	Test Equipment

If we don't have it, we will get it!  
SCMS, INC. (800) 438-6040  
"You Know We Know Radio"

## SERVICES

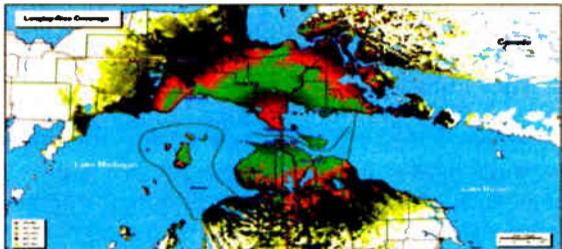
**Got Services?**

Spotlight them here!

For more details, call Simone Fewell at 703-998-7600, ext. 154 or e-mail: sfewell@imaspub.com

**VSoft COMMUNICATIONS®**  
R.F. Communications Software and Engineering Consulting

**Broadcast Engineering Propagation Software**



Professional software packages for FCC applications and predicting coverage

- Create stunning "real-world" coverage maps and interference studies using Longley-Rice, PTP, Okamura/Hata and FCC with Probe II™.
- Search for FM channels under spacings and contour to contour protection using FMCont™.
- Prepare AM skywave and groundwave allocations studies and map FCC contours with AM-Pro™.
- Plot STL paths over 3D terrain with Terrain-3D™.

The leader in broadcast engineering consulting software.  
www.v-soft.com (800) 743-3684

Telos Zephyr 9200 stereo ISDN, used in studio only, excel cond, ISDN ready with V.35, \$2750. Gerry Turro, WJUX, 75 Second St, Dumont NJ 07627. 800-585-1031.

**STATIONS**  
Want to Sell

1,000 watt AM station in single station west Texas market. All new equipment and solid state Broadcast Electronics solid state transmitter. 4 acre transmitter site and building included. Great money maker for owner/operator. Owner retiring. Call Paul Beane, 806-789-8700 or evenings at 806-792-4658.

**Want to Buy**  
Looking for AM's, FM's, non-commercials or commercials, translators or CPs in RI, CT, MA areas, will consider partnership. Michael Cadillo, 401-942-8341 or email: mondomikeradio@aol.com.

**TAPES/CARTS/  
REELS/CD's**  
Want to Sell

Various carts, used 50cents each, new \$1 each; Various used 10.5 reels, some with music, \$2 each. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middletown NY 13406. 315-891-3110.

**Radio World**

5827 Columbia Pike, 3rd Floor Falls Church, VA 22041  
PHONE: 703-998-7600 • FAX: 703-671-7409

**Classified Advertising Rates Effective January 1, 2003**

	1x	6x	13x	26x
1-9 col inch (per inch)	\$105	100	95	90
10-19 col inch (per inch)	\$90	80	70	60
Distributor Directory	\$130	125	120	115
Professional Card	\$100	95	90	85
Station/Studio Services	\$195	165	140	119
Classified Line Ad	\$2/word			
Blind Box Ad	\$15 additional			

**Call Simone Fewell, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.**

## TRANSMITTERS

Want to Sell

**Superior Broadcast Products**  
**FM Transmitters**  
 20 watts to 30 Kw  
 Contact **Jimmie Joynt**  
 Phone 800/279-3326

1972 Harris 2 kw FM transmitter, Model FM2H3 with extra tubes. DuQuoin Bdctg Co, Hwy 51 North, Du Quoin IL 62832. 618-542-3894 or wdqradio@onecliq.net.

1972 Harris 1 kw AM transmitter, Model BC1G, presently in service. DuQuoin Bdctg Co, Hwy 51 North, Du Quoin IL 62832. 618-542-3894 or wdqradio@onecliq.net.

**OFF THE AIR?**  
**Emergency Back-up Rentals**

FM Exciters - STLs -  
 FM Pwr Amps - Antennas -  
 Studio & Test Equipment

**SCMS Inc (800) 438-6040**  
 "You Know We Know Radio"

1949 Gates 250W AM transmitter, Model BC250 GY. Not working, antique or salvage value. DuQuoin Bdctg Co, Hwy 51 North, Du Quoin IL 62832. 618-542-3894 or wdqradio@onecliq.net.

(5) Five KW FM's. Continental Communications., 314-664-4497, ContComm@sbcglobal.net.

Harris BC-5-HA, 5 KW AM (2). Continental Comm., 314-664-4497, ContComm@sbcglobal.net.

Harris MW-5-B, 5 KW AM (5). Continental Comm., 314-664-4497, ContComm@sbcglobal.net.



**Vacuum and Gas Capacitors**

Standard equipment in all major AM and SW transmitters

513-831-5000  
 www.cometna.com

Harris SX-1A, 1 KW AM. Continental Comm., 314-664-4497, ContComm@sbcglobal.net.

**CCA HELP**

- Rotron Blowers ▪ Rebuilt Plate Blockers ▪ Tubes
- Tube sockets/parts ▪ most all transmitter parts
- rebuilt tuning line assemblies

**Goodrich Ent. Inc**  
 402-493-1886  
 www.goodrichenterprises.com cgoodrich@tconl.com

McMartin BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

CCA 800G FM transmitter in excellent condition with spare PA tube, still in box, \$20,000/BO. Cale Tharp, WASE, 519 North Miles, Elizabethtown KY 42701. 270-766-1035.



**BEXT**  
 From the tall to the small  
 WWW.BEXT.COM  
 888 239 8462  
 Transmitters & Antennas

Continental 831G-1 FM, 20 kW transmitter. Main transformer replaced 1 yr ago, Harris exciter included. Willie Kennedy, WPAE, POB 1390, Centreville MS 39631. 601-645-6515.

Tepeco J-3250 250 watt FM RF power amplifier, excellent condition, maintained by manufacturer technicians, \$1250. Ray Knudson, KNXR, 1229 Park Ave, La Crosse, WI 54601-5641. 608-782-2254.

## TRANSCOM CORP.

Serving the Broadcast Industry Since 1978

Fine Used AM & FM Transmitters and Also New Equipment

USED FM TRANSMITTERS			NEW TV - VHF		NEW TV - UHF	
2.5kW	1978	Collins 831D2	10 watt	500 watt	10 watt	500 watt
3kW	1996	OEI Quantum	100 watt	1,000 watt	100 watt	1,000 watt
3.5 kW	1985	BE FM 3.5A	250 watt		250 watt	
10kW	1980	Harris FM 10K				
10kW	1991	OEI FMQ10.000B				
20kW	1976	Collins 831G2				
20kW	1982	Harris FM20K				
20kW	1989	OEI FMQ20.000B				
25kW	1980	CSI T-25-FA Amplifier Only				
30kW	1984	BE FM30				
35kW	1989	Harris HT35				
40kW	1978	2-RCA BTf 20E1 (combined)				
50kW	1982	Harris Combiner w/auto exciter-transmitter switcher				
USED AM TRANSMITTERS			USED MISC. EQUIPMENT			
1kW	2000	BE AM-1A	Belar AMM3 Mod. Monitor			
1kW	1996	Nautel ND1	Burke ARC-16, Remote Control			
1kW	1980	Harris MW1A	Continental 802B Exciter			
1kW	1988	Harris SX1A	Harris AMS-G1 AM Stereo			
5kW	1982	Harris MW5A	Inovonics AM Stereo Processor, Model 250-01			
5kW	1984	Harris MW5A	Kintronics 50kw AM RF Switch, Model RFC8-1			
5/10kW	1982	Continental 316F	Optimod 8100A (cards 3 thru 5 only)			
50kW	1982	Continental 317C2	Potomac Phase Monitor AM1901, Digital			
50kW	1986	Nautel AMPFET 50	Potomac Phase Monitor AM19, 2 Tower			
			Potomac TU-16 Remote Control			

2655 Philmont Ave #200, Huntingdon Valley, PA 19006  
 800-441-8454 • 215-938-7304 • FAX No. 215-938-7361  
 VISIT OUR NEW INTERNET SITE: www.fmamtv.com  
 SEND YOUR E-MAIL REQUESTS TO: transcom@fmamtv.com

Tepeco J-340 M, 10 to 40 watt FM translator with local modulator included. Excellent condition, maintained by manufacturer technicians, \$2250/BO. Ray Knudson, KNXR, 1229 Park Ave, La Crosse, WI 54601-5641. 608-782-2254.

## DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

**CORNELL-DUBILIER MICA CAPACITORS**

FROM STOCK

**JENNINGS VACUUM CAPACITORS**

FROM STOCK

**JENNINGS VACUUM RELAYS**

**SURCOM ASSOCIATES**  
 2215 Faraday Ave., Suite A  
 Carlsbad, California 92008  
 (760) 438-4420 Fax: (760) 438-4759  
 e-mail: link@surcom.com web: www.surcom.com

...country, top 40, news, urban, talk, jazz, the classics, mixed bag...

RADIO! The beat goes on!

**CROUSE-KIMZEY OF ANNAPOLIS**  
 tops in broadcast equipment  
 1-800-955-6800  
 ask for Kathleen  
 kkannapolis@att.net

**Are You a Distributor?**

**ADVERTISE HERE!**

Space is available.

Call 703-998-7600, ext. 154.

## CONSULTANTS



**Consulting Communications Engineers**

FCC Applications • Design • Field Engineering • Tower Detuning Upgrade & Relocation Studies • AM Directional Array Tuning & Proof

EXPERTS IN:  
 TV • DTV Transition • FM • Directional Antennas • RF Exposure

210 S. Main St., Thiensville, WI 53092, (262) 242-6000, FAX (262) 242-6045  
 http://www.evansassoc.com Member AFCE

**Consulting Communications Engineers EMC Test Lab**

- FCC Applications and Field Engineering
- Frequency Searches and Coordination
- AM-FM-CATV-ITFS-LPTV
- EMC Test Lab-FCC and European (IEC)

**OWL ENGINEERING, INC.**  
 800-797-1338 Fax (651) 784-7541  
 5844 Hamline Ave. N., Shoreview, MN 55126 (651) 784-7445 Member AFCE

**FASTER... MORE ACCURATE RADIO COVERAGE**

- Real Time 3-D Displays
- Interference calculations
- Cost effective mapping
- Fully integrated databases
- Used by the FCC
- Latest standards built-in

**RADIO SOFT**

Visit us on the web at www.radiosoftware.com  
 109 West Knapp Ave., Edgewater, FL (305) 426-2521

**System One Communications**  
 Broadcast Constructors & Consultants  
 Houston, Texas  
 888-625-5649

- AM-FM Site Construction Specialists
- Complete Tower Service
- Antenna & Transmission Line Diagnostics

**GRAHAM BROCK, INC.**  
 BROADCAST TECHNICAL CONSULTANTS  
 Full Service From Allocation to Operation/AM/TM/TV/AUX Services  
 Field Work, Antenna and Facilities Design

Over 35 years engineering and consulting experience

912-638-8028  
 202-393-5133  
 www.grahambrock.com

**M Celenza Communications Consultants**  
 TV-\$550; LPTV-\$550; FM-\$250;  
 AM Freq Searches-Call for quote  
 Applications, Amendments & Upgrades  
 Antenna Structure Registration, Field Work Avail  
 631-928-0077  
 Fax: 631-928-1905

**MULLANEY ENGINEERING, INC.**  
 Consulting Engineers

- Design & Optimization of AM Directional Arrays
- Analysis for New Allocation, Site Relocation, and Upgrades
- AM-FM TV LPTV Wireless Cable (MDS/MMDS/ITFS/OFS)
- Environmental Radiation Analysis
- Field Work
- Expert Testimony

9049 Shady Grove Court  
 Gaithersburg, MD 20877  
 Phone: (301) 921-0115  
 Fax: (301) 590-9757  
 email: mullengr@aol.com

**Communications Technologies, Inc.**  
 Broadcast Engineering Consultants  
 AM FM TV LPTV Cellular/PCS Site Analysis

P.O. Box 1130, Marlton, NJ 08053  
 Phone: (856) 985-0077  
 Fax: (856) 985-8124  
 Internet: commtechrf.com

Clarence M. Beverage  
 Laura M. Mizrahi

**Doug Vernier Telecommunication Consultants**  
 Broadcast Engineering Consulting  
 AM/FM/TV/LPTV/DTV  
 Custom mapping service  
 Frequency searches  
 Propagation prediction  
 FCC application preparation

**V-Soft**  
 Software for your PC  
 (800) 743-3684  
 www.v-soft.com

**Promote Your Business!**

Space is available.  
 Call 703-998-7600, ext. 154.



**Market Analysis Engineering Software Ethnic/Demographic Data Custom Full-color Mapping Sales Marketing Packages**

www.dataworld.com 800-368-5754  
 info@dataworld.com fax: 301-656-5341

**Structural Analysis**



Electronics Research, Inc.  
 7777 Gardner Road  
 Chandler, IN 47610  
 (812) 925-6000  
 www.ERInc.com





**NEW**

**ECONCO NEW TUBES**

New tubes are now manufactured by ECONCO at our award winning facility in Woodland California! Of course, we continue our 34 year tradition of high quality power tube rebuilding.

TEL: 800-532-6626  
 INTL: +1-530-662-7553  
 FAX: +1-530-666-7760  
 www.econco.com  
 SE HABLA ESPAÑOL



CSI 12000E in good condition. Taken out of service in June 03, \$5000/BO. Charlie Russell or Dennis Cope, WESR, POB 460, Onley VA 23418. 757-787-3852.

Harris FM-3H, wKW FM transmitter, perfect working condition, must pick up by July 30<sup>th</sup>, off interstate, fits in pickup, \$1000. John Kimel, Kimel Broadcast Group, 43 Suburban Square, South Burlington VT 05403. 802-343-2666.

**Looking to Buy or Sell Used Equipment?**  
 Look no further, you're in the right place!  
  
 Call today for current rates and details: 703-998-7600, ext. 154  
 www.rwonline.com

**TUBES**

Want to Sell

**FOR THE BEST PRICE**  
 24 Hr service on transmitting tubes & sockets/ports, new & rebuilt call Goodrich Int. at 402-493-1886 day or night, www.goodrichenterprises.com.

TUBES, Eimac, Svetlana  
 Phone: 905-844-5772  
 Fax: 905-844-6263  
 ams@hard-to-find.net  
 www.hard-to-find.net

Various tubes in (2) TV repairman caddy's, \$1 per tube. Joseph Lalino, WLAL, 319 N.Y. State Rt 29, Middleville NY 13406. 315-891-3110.

**RF PARTS COMPANY** • Broadcast • Industrial Communications  
 • EIMAC • TAYLOR • ECONCO • SVETLANA  
 Also Motorola • Toshiba • SGS-Thomson & Mitsubishi Semiconductors  
 Catalog: www.rfparts.com  
 Se Habla Español • We Export  
 760-744-0700 • 800-737-2787  
 Fax: 760-744-1943 E-mail: rfp@rfparts.com

**D And C Electronics**

An International Distributor of RF Components  
**Tubes**

NEW & REBUILT

TRANSMITTERS, STUDIO EQUIPMENT, STLS, ANTENNAS,  
 RADIO DATA SYSTEM (FOR CAR RADIO DISPLAY)  
 EXCITERS-TRANSMITTERS, TRANSLATORS, MIXERS-CONSOLES, RADIO LINK  
 RPU, MOSFETS, VACUUM CAPACITORS, SOCKETS



**Pro-Tek®**

SVETLANA



**EEV**

BEST PRICES

To Order:  
 1-800-881-2374  
 Outside U.S. (352) 688-2374  
 Se Habla Español

FROM OUR STOCK

3089 Deltona Blvd.  
 Spring Hill, FL 34609



BEST SERVICE

352-688-2374  
 Fax 352-683-9595

Website: www.dandcelectronics.com

**EMPLOYMENT**

**HELP WANTED**

**RADIO ENGINEERING ASSISTANT:**

The Free Lance\*Star Publishing Companies have an opening for a Radio Engineer Assistant. The Radio Engineer Assistant will provide electrical/electronic technical support for all areas of The Free Lance\*Star, WFLS, WYSK, WWUZ Radio, and Fredericksburg.com. Successful candidate must have strong electronic troubleshooting skills. Our state-of-the-art facility requires maintenance of AM and FM transmitters, digital studios and analog equipment. Associates degree in electronics preferred; minimum high school diploma with electronics training required. This is a full-time position with a comprehensive benefits package. Send resume with salary requirements to Human Resources, The Free Lance\*Star, 616 Amelia Street, Fredericksburg, VA 22401 or email to: hr@freelancestar.com. The Free Lance\*Star Publishing Companies is an Equal Opportunity Employer.

**The ClearChannel New York City Cluster has an opening for a Chief Engineer at WALK-AM/FM in Patchogue, LI, Market #18.**

**Job requirements:** Must be able to operate/maintain/troubleshoot AM/FM transmitters (1kw AM/25kw FM) without supervision; be able to troubleshoot to the component level; support and maintain Prophet; LAN/WAN systems; Telephones; and of course, 24 hour on call status. Some heavy lifting is required, as well as overnight maintenance. Salary commensurate with experience. Reply with resume and three industry references to: joshhadden@clearchannel.com. Or: Josh Hadden, Director of Engineering, C/O WWPR-FM, Clear Channel New York City, 1120 Ave. Of Americas, New York NY 10026.

**TELECOMMUNICATIONS**

**CONSULTANT:** Evans Associates, a nationally recognized consulting firm, seeks a broadcast consultant with experience in AM, FM, TV, DTV engineering and field work. Full-time position, salary commensurate with education and experience. Good people skills required. Partner track available. Contact Liz Wilson at 262-242-6000.

**POSITIONS WANTED**

**Friendly, industrious, commercial FCC-1<sup>st</sup> Class w/radar-amateur radio extra licensed, asst. CE, seeks FT, PT, contract, with AM/FM, cable, TV, preferred within 75 mile radius of metro NYC area. 718-969-5224 or write: Mitchell Rakoff, 110-64 Queens Blvd., PMB# 494, Forest Hills NY 11375-6347 or email me at MitchellRakoff@yahoo.com.**

**Recent ABS graduate** looking for on-air position. Experienced in digital production, copy writing, and on-air DJ. Have diploma, will travel. Bobby, 405-214-6053.

**Young and bright** but a rising star in the making who knows a lot but wants to know more. Rookie, yes, but could be a 1<sup>st</sup> round draft pick. Cleo, 405-737-1061.

**Young female ABS graduate** ready to join a fun and exciting radio family. Lots of flava, talent and energy. Excellent in Cool Edit. Angela, 405-788-9764.

**You're Here!**  
  
 ...and so are the potential buyers for your products and services.  
 Radio World's Classifieds section is a great place to find things for your business, and a great place for prospects to find you!  
 To advertise, call 703-998-7600, ext. 154 or e-mail: slevins@mcspub.com.

**ADVERTISE YOUR EMPLOYMENT AD ON OUR WEB SITE FOR ONLY \$2 PER WORD!**

ADS GET POSTED THE NEXT BUSINESS DAY AND WILL RUN FOR A FULL TWO WEEKS!  
 COMBINE THIS WITH AN AD IN OUR RADIO WORLD NEWSPAPER EMPLOYMENT SECTION AND REALLY COVER THE BROADCAST INDUSTRY AND THEN SOME!

Call Simone Fewell for all the details at 703-998-7600, ext. 154.

[www.RWOnline.com](http://www.RWOnline.com)

**ACTION-GRAM**

**EQUIPMENT LISTINGS**

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information: Are you currently a subscriber to Radio World?  
 Yes  No  
 Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Contact Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company/Station \_\_\_\_\_  
 Address \_\_\_\_\_  
 City/State \_\_\_\_\_  
 Zip Code \_\_\_\_\_  
 Telephone \_\_\_\_\_  
 Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS  WTB  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS  WTB  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS  WTB  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

WTS  WTB  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

\*Closing for listings is every other Friday for the next month's issue.

All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

**Broadcast Equipment Exchange**

PO BOX 1214, Falls Church, VA 22041 • Tel: 703-998-7600 • Fax: 703-998-2966

# ADVERTISER INDEX

This listing is provided for the convenience of our readers.  
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
34	360 Systems	www.360systems.com
26	Armstrong Transmitters	www.armstrongtx.com
29	ATA Audio	www.ataaudio.com
40	ATI	www.atiguys.com
28	Audion Labs	www.voxpro.net
17	AudioScience	www.audioscience.com
14	AudioTX Communicator	www.audiotxmultiplex.com
31	AudioTX Communicator	www.audiotx.com
28	Autogram Corporation	www.autogramcorp.com
26	Belar	www.belar.com
28	Bext	www.bext.com
6	Broadcast Tools	www.broadcasttools.com
24, 25	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
28	Burk Technology	www.burk.com
28	Circuit Werkes	www.circuitwerkes.com
20	CKE/HVCA	www.rectifiers.com
7	Comrex	www.comrex.com
40	Conex Electric Systems	www.conex-electro.com
1	Continental Electronics	www.contelec.com
38	Cortana	www.cortanacorporation.com
37	Dorrough Electronics	www.dorrough.com
3	Electronics Research Inc.	www.eriinc.com
35	Full Compass	www.fullcompass.com
40	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
38	Henry Engineering	www.henryeng.com
8	Inovonics	www.invon.com
18	JK Audio	www.jkaudio.com
12	Kintronic Labs	www.kintronic.com
28	LBA Technology	www.lbagroup.com
11	Logitek	www.logitekaudio.com
38	Mooretronix	www.mooretronix.com
15	Musicam USA	www.musicamusa.com
23	NPR Satellite Services	www.nprss.org
32	OMB America	www.omb.com
9	Omnia, a Telos Company	www.omniaaudio.com
19	OMT Technologies	www.omt.net
10	Radio Design Labs (RDL)	www.rdlnet.com
5	Radio Systems	www.radiosystems.com
40	rfSoftware, Inc.	www.rfsoftware.com
40	S.C.M.S.	www.scmsinc.com
27	Sierra Automated Systems	www.sasaudio.com
16	Sine Systems	www.sinesystems.com
38	Stormin Protection Products	www.optilator.com
38	Studio Technology	www.studiotechology.com
13	Telos Systems	www.telos-systems.com
22	Telos Systems	www.telos-systems.com
21	Tieline America	www.tieline.com
47	Wheatstone	www.wheatstone.com
48	Wheatstone	www.wheatstone.com
2	Wheatstone/Audioarts Engineering	www.audioarts.net
36	Wheatstone/Auditronics	www.auditronics.com

## ENTER TO WIN

Here's your chance to unpack **FREE GEAR** in 2003.  
Enter to win one of 26 New Technology prizes.

Over the past two years, Radio World and dozens of industry suppliers have joined forces to award more than \$115,000 worth of radio and pro audio gear — from microphones, master clocks and sound cards, to audio processors, routers, CD mastering machines and shopping sprees.

In 2003 you can expect a similar range of cool New Technology products from our great sponsors. It takes only seconds to sign up online. And best of all, there are 26 chances to win in 26 drawings — one for every issue of Radio World. This is our way of saying "thank you" for allowing us to bring you New Technology for the past 27 years.



To enter the sweepstakes you must complete these 3 easy steps:

- 1 Go to our website [www.rwonline.com](http://www.rwonline.com)
- 2 Click on the New Technology Sweepstakes icon
- 3 Follow the instructions and fill out the electronic entry form — that's it, you're done!

So what are you waiting for? Don't miss out in '03. Enter to win New Technology products from these fine Radio World supporters:



Contest Rules: To enter the drawing, simply register online at [www.rwonline.com/sweeps](http://www.rwonline.com/sweeps). 26 drawings will be held throughout the year. Contest registration expires Dec. 3, 2003. Final contest prize announcement on Jan. 1, 2004. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification; however, actual delivery time may vary and is not guaranteed by IMAS publishing. Federal, state and local tax/tariffs may apply to prizes and are the sole responsibility of the winner. Employees and affiliates of IMAS Publishing are not eligible.

◆ READER'S FORUM ◆

Cool thanks

We are grateful for the recognition that Radio World has provided our company as a result of the KinStar Antenna developments, winner of the Radio World "Cool Stuff" Award. The cover letter can be addressed to Dr. Jim Breakall, professor of computer engineering at Penn State University, as the recipient. He is the inventor of this antenna. Thank you for this award.

Tom King  
President  
Kintronic Labs  
Bluff City, Tenn.

Seeking affordable portable

A few issues back, James Careless wrote about a new Radio Shack handheld digital recorder that was of "broadcast quality." I have pushed Radio Shack to provide specifications, but the best they

my own testing of the unit, it was better than a "glorified note taker."

Don't kill AM

As a radio engineer since 1948, I have had the privilege of putting nine AM radio stations on the air, plus some FMs and low-power TVs. I write regarding Leonard Kahn's comments on the threat of DAB and IBOC, and further destruction of the AM band ("Kahn: Rescind DAB Order," April 23).

In 1948, radio had a peak limiter. Then in the 1950s came AGC STA Levels and Level Devils as AM tried to squeeze out more modulation. I remember the rise in background noise if the announcer paused for a few seconds and the leveling device brought up the gain.

Since that time, FM has taken over much of the listening audience. I, for one, would hate to see the present system

**We continue our hunt for a broadcast-quality, simple-to-operate digital field recorder at a price point less than \$500.**

— Laverne Siemens

can do is give me some dimension numbers and battery life hours, nothing at all about sonic performance.

I have my doubts that this unit is anything more than a glorified memo taker and thus not of broadcast quality. I was wondering if James could provide some data that would show its performance, frequency response, signal-to-noise etc.

We continue our hunt for a broadcast-quality, simple-to-operate digital field recorder at a price point less than \$500.

Laverne Siemens, CET  
Director of Engineering  
Golden West Radio  
Altona, MB  
Canada

James Careless replies: Unfortunately, we will never know the answers to these questions. Soon after publication, Radio Shack discontinued the iTalk. Based on

made obsolete. I grew up with AM, getting WLW and WHAS and some of the Mexican superpower stations.

Don't make it harder for AMs to exist. Don't make obsolete every transmitter and receiver out there now.

J.B. Crawley  
Owner/Engineer  
WMSK(AM)  
Campbellville, Ky.

50 for Cleo Reed

August will mark the 50th anniversary of Cleo Reed's employment at WBEJ(AM) in Elizabethton, Tenn.

When she went to work there in 1953, as copywriter, she was 20. It is unusual to find someone who has worked at the same radio station, located in the same office building, with the same call letters, for that period of time.

Gloucester's Geller Remembered

Recently an anniversary came and went that may have gone unnoticed by many. Eight years ago, on July 11, 1995, station owner, broadcaster and one-man show Simon Geller passed away at age 75. For 25 years or so, Geller ran classical station WVCA(FM) 104.9 in Gloucester, Mass. — the "Voice of Cape Ann" — from his apartment in this Atlantic coastal community.

Programming was interrupted frequently so Geller could turn off the stove or fix a skipping record. He was WVCA's sole employee, described in media accounts as "cantankerous" and "quirky." It has been suggested that, due to his limited finances, he only aired music on which the copyrights had run out. By all accounts, both Geller and WVCA were among radio's oddest characters.

Had it not been for a fairly visible case between Geller, Grandbanke Broadcasting and the FCC some years ago, he and his station may have ended up as an asterisk somewhere in broadcast databanks.

During the license renewal period for WVCA in the mid-1980s, Grandbanke challenged the renewal. Geller's expectancy of renewal was lost, which meant the FCC proceedings took on the tone of a comparative hearing. Among the issues pondered by the commission were Grandbanke's technical superiority, programming diversity and Geller's record of service to the community vs. what Grandbanke had in mind. In the end, Grandbanke was awarded the license for 104.9 MHz.

But the victory did not last long. Some time later, on appeals, Geller won back the license and was free again to broadcast his classical music to the residents and visitors of this seaport community, who were glad to have him back.

Geller finally sold WVCA in the late 1980s. The station changed calls to WBOQ "W-Bach," then later shifted to a swing standards format. This past March, the station again changed hands as Marlin Broadcasting passed it off to Westport Broadcasting.

Do not miss the obvious lessons from this bit of Bay State broadcast history: First, do not hang all of your hopes on expectancy of renewal. Lack of service to your community can cost you dearly at renewal time.

Second, in this day and age of consolidated ownership, is there truly such a thing as programming diversity? There still can be. Those stations that have not yet been swallowed up can still serve their audiences in ways that cannot be duplicated on a grander scale.

And third, in spite of the lasting opinion of Simon Geller's personality, radio needs more with his kind of brass. He lost his station, then fought like mad to get it back. That is the kind of fire that should be part of every broadcaster's being.

His style of radio may not have been everyone's cup of chowder, but reflecting on the eighth anniversary of his passing, we pay tribute to New England broadcaster Simon Geller. We remember him not for being a cantankerous announcer with a lot of old records, but for his tenacity as America's original one-man radio station and for the service he brought to his community.

— RW

Cleo, who is the general manager of the station, has been dedicated to the station, the community, the Chamber of Commerce, as well as her church. She has kept scrapbooks at the station, about eight volumes, of the people and events there. In the first book, on the first page, is the Western Union telegram from the FCC, giving permission to go on the air and test the signal, back in 1946.

She is a remarkable woman.

Don Crisp  
President  
CB Radio Inc.  
Elizabethton, Tenn.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Send letters via e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com), with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

—EDITORIAL STAFF—

Paul J. McLane	ext. 117	Editor
Leslie Stimson	ext. 129	News Editor/Wash. Bureau Chief
Michele Kramer Peterson	ext. 149	Studio Sessions Editor
Thomas R. McGinley	—	Technical Adviser
Alan Peterson	—	Technical Adviser
John Bisset	—	Contributing Editor
Skip Pizzi	—	Contributing Editor
T. Carter Ross	ext. 120	Editor-in-Chief (International)
Marguerite Clark	—	Editor (International), Milan
Rogelio Ocampo	ext. 121	Latin America Editor in Chief
Karina Gerardi	ext. 137	Latin America Editor
Terry Hanley	ext. 130	Editorial Assistant & Listings Coordinator
Peter Finch	—	Editorial Assistant, Milan

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, Frank Beacham, Naina N. Chernoff, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Charles Fitch, Ty Ford, Scott Fybush, Harold Hallikainen, Jeff Johnson, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Mark Persons, Sharon Rae Pettigrew, Michael LeClair, Carl Lindemann, Frank R. Montero, Ted Nahil, Tom Osenkowsky, Ken R., Rich Rarey, Randy Stine, Travis the V/O Guy, Barry Umansky, Tom Vernon.

Radio World

Vol. 27, No. 16 August 1, 2003

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245  
E-mail: [radioworld@imaspub.com](mailto:radioworld@imaspub.com) • Web site: [www.rwonline.com](http://www.rwonline.com)

—ADVERTISING SALES REPRESENTATIVES—

US East: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: <a href="mailto:jcasey@imaspub.com">jcasey@imaspub.com</a>
US West: Dale Tucker	916-721-3410	Fax: 815-352-1698	e-mail: <a href="mailto:dtucker@imaspub.com">dtucker@imaspub.com</a>
Product Showcase & Classified Ads: Simone Fewell	703-998-7600 x154	Fax: 703-671-7409	e-mail: <a href="mailto:sfewell@imaspub.com">sfewell@imaspub.com</a>
Germany, Austria, Switzerland: Charles Kingston	+49-69-4908-5785	Fax: +49-69-4908-5804	e-mail: <a href="mailto:chaskingston@t-online.de">chaskingston@t-online.de</a>
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: <a href="mailto:rcalabrese@imaspub.tin.it">rcalabrese@imaspub.tin.it</a>
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: <a href="mailto:callern@msn.com">callern@msn.com</a>
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: <a href="mailto:wwg@imaschina.com">wwg@imaschina.com</a>
Latin America: Alan Carter	703-998-7600 x11	Fax: 703-671-7409	e-mail: <a href="mailto:acarter@imaspub.com">acarter@imaspub.com</a>

NEXT ISSUE OF RADIO WORLD AUGUST 13, 2003

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcome for review; send to the attention of the appropriate editor.

—ADMINISTRATION & PRODUCTION—

Stevan B. Dana	President/CEC
Carmel King	VPI/Group Publisher
Marlene Lane	Editorial Director/COO
Chuck Inderrieden	CFO
Eric Trabb	Sales & Marketing Director
John Casey	Associate Publisher
Annette Linn	Production Director
Melissa SE Robertson	Production Publication Coordinator
Kathy Jackson	Ad Traffic Manager
Robert Green	Circulation Manager

Radio World (ISSN: 0274-8541) is published bi-weekly by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Joanne Munroe, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600, Fax: (703) 998-2966. Copyright 2003 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

# WHEATSTONE D-4000

---

## DIGITAL AUDIO CONSOLE



*Based on the technical architecture of our popular D-5000, this new D-Series console is totally modular, offering features to satisfy the most demanding engineers — but at a lower price point than its predecessors.*

- Hot-swap design
- Four stereo mix buses
- Six pointer-style true VU meters
- Any mix of digital and analog inputs
- AES and balanced analog outputs
- Choice of master clock rates
- Up to 4 mix-minus outputs using SPD-4000 phone remote modules
- 24 bit A-to-D conversion on analog inputs,
- A/B source switching with fully independent logic and machine control
- Mode selection on stereo inputs
- Low profile drop-through counter design
- Multiple studio outputs with talkback interrupt

*Wheatstone has more digital audio experience than most of our competition combined. The D-4000 is a truly high performance, reliable console that will make your transition to digital a pleasure. Benefit from our expertise — **CHOOSE WHEATSTONE** — the Digital Audio Leaders!*

 *Wheatstone*



## **GENERATION 9 DIGITAL CONTROL SURFACE**

Designed to integrate flawlessly with the Wheatstone BRIDGE digital audio network router, the Generation 9 control surface allows you to easily create large or small platform-based systems that are exceptionally user-friendly and flexible. Wheatstone BRIDGE network cages house all I/O ports and engine cards, and may be wired in tandems within a single equipment room or interconnected to separate remote locations by means of fiberoptic or CAT-5 cables to provide single wire studio integration schemes.

Once configured, the system operates entirely independently of external computers. Configuration itself is intuitive and carried out onsite by means of user-friendly graphic interfaces provided by Wheatstone desktop software. We have gone to great lengths to make these setups easy for your field engineers, allowing expansions and changes to be achieved painlessly. Naturally, the Generation 9 system also takes full advantage of Wheatstone's exclusive VDIP® configuration

software as well, so that studio functions (like mutes, fader and timer starts, tallies, etc.) are easily accomplished right at your desktop. Once set-up is completed the desktop is disconnected; all settings are retained in nonvolatile storage and the entire system runs standalone. Ethernet protocol is built in, providing interface with automation, scheduling, and hardware controllers as you require.

Whether you're planning a small, centrally located studio network or a large, multiple format build-out, the Generation 9 Digital Control Surface can form the basis for a fully integrated, reliable and user-friendly broadcast system that will handle your most demanding requirements and be able to change with your varying needs as they arise.

At Wheatstone we have more combined digital design expertise than anyone. **Benefit from our hard work!** Choose **WHEATSTONE—the Digital Audio Leader.**

 **Wheatstone Corporation**

600 Industrial Drive, New Bern, North Carolina, USA 28562  
www.wheatstone.com / sales@wheatstone.com

copyright © 2003 by Wheatstone Corporation  
tel 252-638-7000 / fax 252-635-4857