



# ◆ NEWSWATCH ◆

## NPR2 Gets New Production Facilities

**WASHINGTON** Work is underway on production facilities to serve NPR2, the network's new satellite programming division.

NPR has begun construction on a studio in its Washington headquarters. It also has earmarked funds for a facility on the West Coast, possibly in San Francisco or Los Angeles. The location had yet to be announced by early September.

In the Washington studio, the primary console work surfaces will be from Klotz Digital America Inc. The automation sys-

tem is based on the Broadcast Electronics AudioVault.

Basic intake and editing will be done on Dalet Digital Media Systems USA Inc. products. Dalet and AudioVault workstations will communicate using MPEG Layer 2 and linear file formats.

Facilities will be brought online as NPR2 begins feeding two 24-hour channels of live programming to Sirius Satellite Radio.

NPR has hired a host for its new morning newsmagazine, which will air on Sirius. Former ABC and BBC TV anchor Melinda Wittstock will host the show, the first program to be created by NPR2.

NPR plans to begin piloting the show in September and running mock shows in October and November.

## Tristani: No More Violence

**WASHINGTON** FCC Commissioner Gloria Tristani says Americans are fed up with violence on TV and radio.

In a letter to CBS Television President Leslie Moonves in August, Tristani said, "Two concerns dominate the calls I have received: the misuse of the public's airwaves to suggest that violence solves

problems and the implicit endorsement of vigilante action against those with different opinions."

Tristani referred to a "Snipers Wanted" graphic that appeared below a photo of Governor George Bush on "The Late Late Show With Craig Kilborn" and to a caller on the "Howard Stern Show" who reportedly threatened to kill Sen. Joe Lieberman, D-Conn.

Recognizing there may be no government solution for what she called the "thoughtless broadcast of misguided humor," Tristani urged CBS to use these incidents to assess its public interest obligations.

See NEWSWATCH, page 3 ▶

## Index

### FEATURES

- A Peek Into the Broadband Future**  
by Craig Johnston 15
- Generators Can Be Profitable Too**  
by Charles S. Fitch 16
- Workbench: Take Stock of Your Transmitter Site**  
by John Bisset 19
- Radio's Original Tower of Power**  
by Alice Brannigan 20
- Congress Gets Into the Clear Act**  
by Mark Durenberger 22
- After ISDN: What Next?**  
by Ken R. 24
- Don't Be Called for Interference**  
by Pete Krieger 28
- Angry at Online Squatting**  
by William Barnett 30

### GM JOURNAL

- News You Can Use ... And Can't**  
by Ken R. 33
- More Postcards From Radio Hell** 33
- The Fierce, Raw, New Frontier**  
by Carl Lindemann 34
- Xenote iTag Is Two-Way Radio**  
by Bill Mann 39
- Nothing to It: ITag Installation** 39

### STUDIO SESSIONS

- Pomann Sound: Integrated Audio**  
by Ken R. 43
- Engineers Descend on Steel City**  
by Alan R. Peterson 43
- TerraSonde Toolbox: No 'GameBoy'**  
by Alan R. Peterson 44
- Promise Maxes HD Performance**  
by Read G. Burgan 46
- Grid-Dip Meters Tune Circuits**  
by Tom Vernon 49

### BUYER'S GUIDE

- Telco, Radio: Past Meets Future**  
by Alan R. Peterson 53
- Talking Pictures With Gentner, the Sequel**  
by Jim Gilmore 53
- Getting Primo Sound From Musicam**  
by Andrew Rosenberg 54
- A1VOX Implements ISYS Pro**  
by Charles Nove 55
- Aeta Scoops Concerts**  
by Glen Jones 55
- Zephyr Goes Live for Two L.A. Shows**  
by Craig Robbins 56

### OPINION

70

## AUDITRONICS 4.0 NuStar

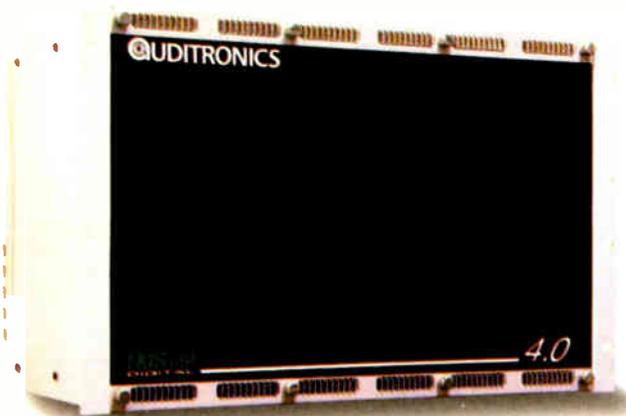
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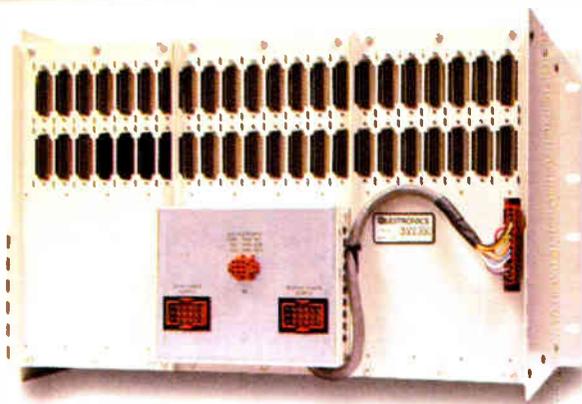
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**BUSINESS DIGEST**

## CRL Reports Losses, Begins Shipping New Optimod

**TEMPE, Ariz.** Circuit Research Labs Inc. lost money in the first six months of the year, but is expecting better things ahead as it begins shipping the latest Optimod processor.

CRL reported sales of \$1.2 million

in the first six months of this year, compared to \$649,000 for the same period last year.

The publicly traded company said it lost \$662,000 or 96 cents per share in that period.

The business numbers were posted at a time of change for CRL. Under a new majority owner, the firm grew substantially this spring when it acquired Orban Inc. with operations commencing at the end of May.

The company also reported pro-forma six-month summary figures as though its acquisition of Orban had

occurred at the beginning of the year. It said the combined company would have had six-month revenue of \$6.2 million and a loss of \$89,000 or 13 cents per share, compared to revenue of \$7.4 million and a loss of \$510,000 or \$1.24 per share for the same period last year.

CRL President/CEO Jay Brentlinger said, "The decline in pro-forma sales was due to customers deferring their audio processor orders until our new Orban Optimod-FM 8400 was introduced in April."

He said the "substantial" narrowing in the net loss resulted from cost reductions put in place by CRL management.

As of late summer, he said, CRL had received orders of approximately \$1 million for the new audio processor, which began shipping in mid-August.

CRL may adjust prices of its older processors to bolster sales.

"These changes, along with the introduction of the 8400 and total current bookings of \$1.7 million, make us confident that we will experience a higher rate of growth in revenues during the second half of this year," Brentlinger said.

CRL also is working on products in the area of streaming audio, eyeing an early 2001 introduction.

The company is in negotiations to raise the capital to meet debt obligations related to the Orban acquisition (RW, June 21).

— Paul J. McLane

**DIGITAL NEWS**

## iBiquity Makes IBOC Data Real

**SAN FRANCISCO** For the first time, USA Digital Radio and Lucent Digital Radio planned to exhibit together at The NAB Radio Show under their new name, iBiquity Digital Corp.



The company wanted attendees to hear San Francisco stations KDFC-FM and KLLC(FM) broadcasting iBiquity's in-band, on-channel digital audio signal live. It also planned a data demonstration.

Four transmitter manufacturers were set to air low-power IBOC broadcasts in the exhibit hall. Armstrong and Broadcast Electronics planned to transmit IBOC signals from the San Francisco stations. Harris and Nautel were to transmit AM IBOC signals from programming generated in their booths and transmitted to iBiquity booth 628.

— Leslie Stimson

# NEWS WATCH

► Continued from page 2

## Spanish Empire Now Biggest?

**LOS ANGELES** Spanish-language media empire Entravision Communications Corp. completed its acquisition of radio/outdoor group Z-Spanish Media for \$448 million in a combination of cash and stock in August. The deal creates the nation's largest Spanish-language radio group, according to the companies.

Entravision gets 25 radio stations and 10,000 billboards serving New York and Los Angeles. With the addition of these assets and other pending deals, Entravision will have 57 O&Os and more than 11,000 billboards.

Entravision Chairman/CEO Walter Ulloa said the transaction gives his company an enhanced distribution platform to reach Hispanic customers.

Z-Spanish Media President/CEO Amador Bustos becomes president of Entravision's radio division, as well as a member of Entravision's board while Glenn Emanuel, president of Z-Spanish Media's outdoor advertising group, assumes the same position with Entravision.

## Indecency Fines Rescinded

**WASHINGTON** The FCC has rescinded two Notices of Apparent Liability against two stations for airing indecent material and will not collect penalties against the stations.

Both stations filed timely responses to the complaints, but several years have passed since the material was aired and the stations have since been sold.

Both of these factors contributed to the FCC's decision not to collect the fines, however this "in no way condones the broadcast of the material at issue," stated the FCC in July.

The FCC rescinded the fines issued against Americom Las Vegas Ltd. Partnership, former licensee of KFBI(FM), Pahrump, Nev., for material it found indecent during several broadcasts of the "Howard Stern Show" in 1992 and 1993. The content described sex with children and recovery of jewelry from a toilet. Material the FCC considers indecent describes sexual or excretory organs or actions in patently offensive terms and must air between 10 p.m. to 6 a.m.

At the time, the FCC said the station was liable for more than \$111,000.

Also in July, the FCC rescinded the NAL issued against Flambo Broadcasting Inc., the former licensee of KFMH-FM, Muscatine, Iowa, for airing descriptions of oral sex and female sex organs during a call-in joke contest in 1991. At the time, the station was "apparently liable" for a forfeiture of \$12,500.

— Harold Hallikainen

## Gentner Makes Fast List

**SALT LAKE CITY** Gentner Communications Corp. is listed as one of the 100 fastest-growing companies in the United States by "Individual Investor" magazine.

The publication ranks this year's fastest-growing companies in a special September 2000 issue. To earn a spot on the list, a company must have doubled its earnings compared to year-earlier levels during at least one of the past four quarters. For the 12 months ending in that quarter, the company's revenue must also have increased by at least 25 percent over year-earlier numbers.

Fran Flood, president and CEO of Gentner, said, "With healthy revenue growth and burgeoning market opportunities for our core divisions, we are very optimistic about Gentner's potential for long-term growth."

The "Individual Investor" list of fastest-growing companies is available at [www.individualinvestor.com](http://www.individualinvestor.com)

— Sharon Rae Pettigrew

## Montero Leaves FCC

**WASHINGTON** Frank Montero, director of the FCC's Office of Communications Business Opportunities, planned to leave the FCC to return to private practice. The communications attorney and **Radio World** free-lancer planned to start Sept. 5 at the Washington law firm of Shaw Pittman.

C. Anthony Bush of the FCC's Office of the General Counsel was named acting chief of the OCBO.

During his tenure at the commission, Montero worked with industry, trade associations, financing institutions and governmental agencies to create business opportunities for small businesses in telecommunications.

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# This Is, After All, Radio World

As editor, I see the comments you send in on your **RW** subscription cards. Thank you for the fabulous, supportive words in recent months. We'll be printing many of them soon.

Occasionally I get a gripe, too, and I think it's fair to acknowledge those.

A reader recently wrote me to say that he likes *Workbench* and equipment reviews in **RW**, but he complains that our articles also include "political" and management topics, in which he places not only news about controversial LPFM and pirate radio issues, but also stories about public radio, programming trends, market profiles and articles about large engineering organizations — "none of which," he writes, "have much to do with the normal workaday life at radio stations around the United States."

Why, he implies, do we cover management, programming and political stories?

I'm not sure what he means by suggesting that public radio and programming aren't part of everyday life in radio. But his broader question is dear to me, and I could write about it for many pages.

In short: I, too, recognize that **RW** was at one time a hard-core, purely technical publication. I didn't start the expansion of **Radio World** into a broader newspaper, but I'm pleased by it.

The days when radio stations employed big engineering staffs to install and tend systems are gone. The few engineers we do have are as precious as fine wine and are overloaded with work. Meanwhile, many non-engineers are being asked to make informed decisions about new facilities, digital STLs and managing computer networks or Web sites.

Smart managers, techie or no, educate themselves in order to do their jobs better. Part of that process is reading a good trade publication like ours.

Also, developments in and around radio are having a *huge* impact on the future of all radio jobs, including technical ones. Webcasting, consolidation, proposed FCC regulations, the employment crisis, certification, satellite radio — do these things affect you?

Heck yes. Maybe they aren't the first things out of your mouth at the monthly SBE meeting, but if you ignore these developments, you do so at your peril.

Frankly, it's tempting sometimes to write only about black-box hardware solutions and to print the latest "how-to" schematic — to write only for a very narrow audience. I know it would be an easier job for us.

But that's not where our industry has gone. Readers want to keep up so they can advance their careers. That means having a diverse set of interests and expertise. And *that* means I will keep providing that diversity in the pages of **RW**.

**The engineers we have are as precious as fine wine and are overloaded with work. Meanwhile, non-engineers are asked to make informed technical decisions. They need information, too.**

This issue is an example.

Where else can you read in one issue about: the implications of a recent false EAS alarm; the history of clear-channel radio stations; making money from your power generator; expert commentary about what's next after ISDN; a review of a cool audio test device; technical updates about new codecs and telco gear; a profile of a successful production wiz; and a description of a device that lets your listeners click a little tag to store your station's advertising and program information?

Not to mention a whole story about GMs from hell.

But even if you strip away the non-technical content, **RW** still provides more product news, evaluations, engineer profiles, technical commentary and facility visits than any competitor, by far. I'm proud of that.

So if a story doesn't float your boat, turn the page. There's always something interesting on the next one!

★ ★ ★

Rarely do I point out a specific ad in our pages; we are pleased to have the support of all of our advertisers.

But I think the one on page 29 deserves a special mention. I commend Susquehanna Radio Corp. for acknowledging the work of its engineering talent and for taking a high-profile approach to attracting more good engineers to their fold.

I've never worked for Susquehanna, so I can't comment on what it's like to work there. But if I were an engineer on their staff, I think I'd feel pretty good about my job after seeing those ads.

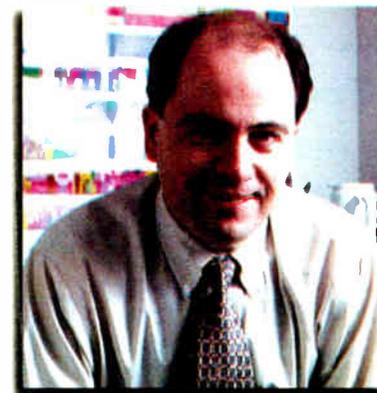
★ ★ ★

Call it "Cindy's Expo."

Sure it's a Harris event, but we all know Cindy Edwards has made it a success. So on Oct. 25, head over to Durham, N.C., to see the latest gear from 27 manufacturers and get some free food in the bargain (breakfast, lunch *and* dinner provided).

It's the eighth annual expo put on by Edwards, who joined Harris after the company acquired Audio Broadcast Group. It will draw engineers and managers from North and South Carolina, Virginia and other states in the Southeast.

## From the Editor



**Paul J. McLane**

Who is invited? Anyone who has interest in the latest technology for broadcasting. Among the companies to exhibit are Comrex, Gentner, Orban, Denon, Mackie, Audio-Technica, Enco, Marti, Dielectric, Gepco, 360 Systems, Applied Wireless, Symetrix, Sony, Musicam USA, Digidesign, BEST, Burk, Telos, SAS, Crown and Tascam.

The range of Harris offerings, including Intraplex, PR&E and Harris Radio and TV, will also be represented.

"This show started from a plan to expose engineers who could not attend NAB to the new equipment that manufacturers introduced," Edwards said. "Eight years ago, when (digital) automation was first introduced to the radio market, I thought it would be a good idea to expose the engineers to as many different systems as possible.

"Today only a few of those original manufacturers are still around. However my show has become known as the NAB of the South and its time frame is perfect for customers to see the actual product rather than a prototype that was introduced at NAB."

The scheduled presentations offer a chance to get in-depth with some interesting new products, including the Comrex Matrix codec, Gentner VRC2500 remote control, Orban Optimod-FM 8400 and Dielectric Skytiller. *Workbench* author John Bisset will talk about how to get your managers to understand what you do and what it is worth.

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# Emergency

► Continued from page 1

The FCC is awaiting the Michigan State Emergency Coordinating Committee's official report on the false EAN before deciding a course of action.

Frank Lucia, special EAS advisor for the Technical and Public Safety Division of the FCC Enforcement Bureau, said this was apparently a case of a mislabeled distress message rather than intentional harm.

"It's something the (FCC) takes very seriously. It's possible a station could face a fine and have itself stripped of its LPI status, if it were a malicious act. That appears not to be the case. The FCC will likely follow the lead of the Michigan Emergency Coordinating Committee," Lucia said.

The incident in Michigan points to the possibility of future EAS origination errors, Estlack said, because EAS products from various manufacturers differ.

"This incident should serve as a warning to every other broadcaster who participates in EAS," Estlack said. "Know what your encoder is capable of. Some EAS encoders allow an EAN to actually be created. That should be locked out in the software and taken off the menu. There is a radio station out there sitting in the same situation as the (Michigan) station just waiting to get burned."

The error took place at a Local Primary 1, or LPI radio station in Lansing, Mich. During the construction of a Severe Weather Warning for a local county, the station operator entered an EAN event code, with an originator code of CIV for "Civil."

The message was automatically relayed by EAS equipment at the State Primary station in Lansing and relayed to radio, TV and cable outlets across the state.

The EAN origination error at the LPI station "was a major mistake, but an accident caused by human error," said Estlack. "EAS is something all broadcasters take very seriously. Steps have been taken by the station to prevent another occurrence."

## EAS retraining

The radio station, WFMK(FM), licensed to East Lansing, Mich., has since implemented EAS training and retraining programs for station personnel, Estlack said.

WFMK serves as the LPI station for the Central EAS operational area of Michigan and is monitored by LP2s and other broadcasters in its area. Liggett Broadcasting owned WFMK at the time of the incident. Citadel Communications Corp. has since acquired the station.

Of the unintentional EAN activation, WFMK GM Rod Krol, said, "It was found that the EAS encoder was not prohibited from sending an EAN, although the operating manual notes that this action is blocked as a default setting. Corrective action ... and a complete EAS review with all staff was conducted."

Estlack said the false EAN resulted from a series of events.

"The station's meteorologist is responsible for weather warnings and sends the EAS activation from his office. On this day, the meteorologist was experiencing equipment failure," Estlack said.

"So the on-air person scrolled through the menu on a Sage Endec EAS encoder in the studio and in the process of building one of the weather warnings selected

the EAN notification. The announcer then sent an 'End of Message,' not realizing his mistake.

"To add to the confusion, there was no audio portion to the message stating it was a weather warning."

Most broadcasters keep their EAS decoders in the manual position, Estlack said. This allows the stations to preview any activations before carrying the message. However, the EAS digital system architecture allows broadcast stations, cable systems and participating satellite companies to receive emergency information automatically if those facilities are unattended.

## EAN error

Estlack said most broadcasters recognized the EAN as an error.

"The problem was really kept to a minimum. We had a lot of heads-up operators out there who noticed the header code on the message was for an EAN, but that it was issued for a single mid-Michigan county with an expiration time. They realized something was amiss before proceeding," Estlack said.

The Central, Northeastern and Northwestern operational areas of the state had the highest numbers of stations transmit the false EAN.

"In the northern part of the state, I think it's a case of having more automated and unattended stations. That's not a problem in the more heavily populated areas," he said.

Estlack said the false EAN affected only broadcasters and no other part of the EAS system, which includes local or state governments, the National Weather Service and local emergency services organizations.

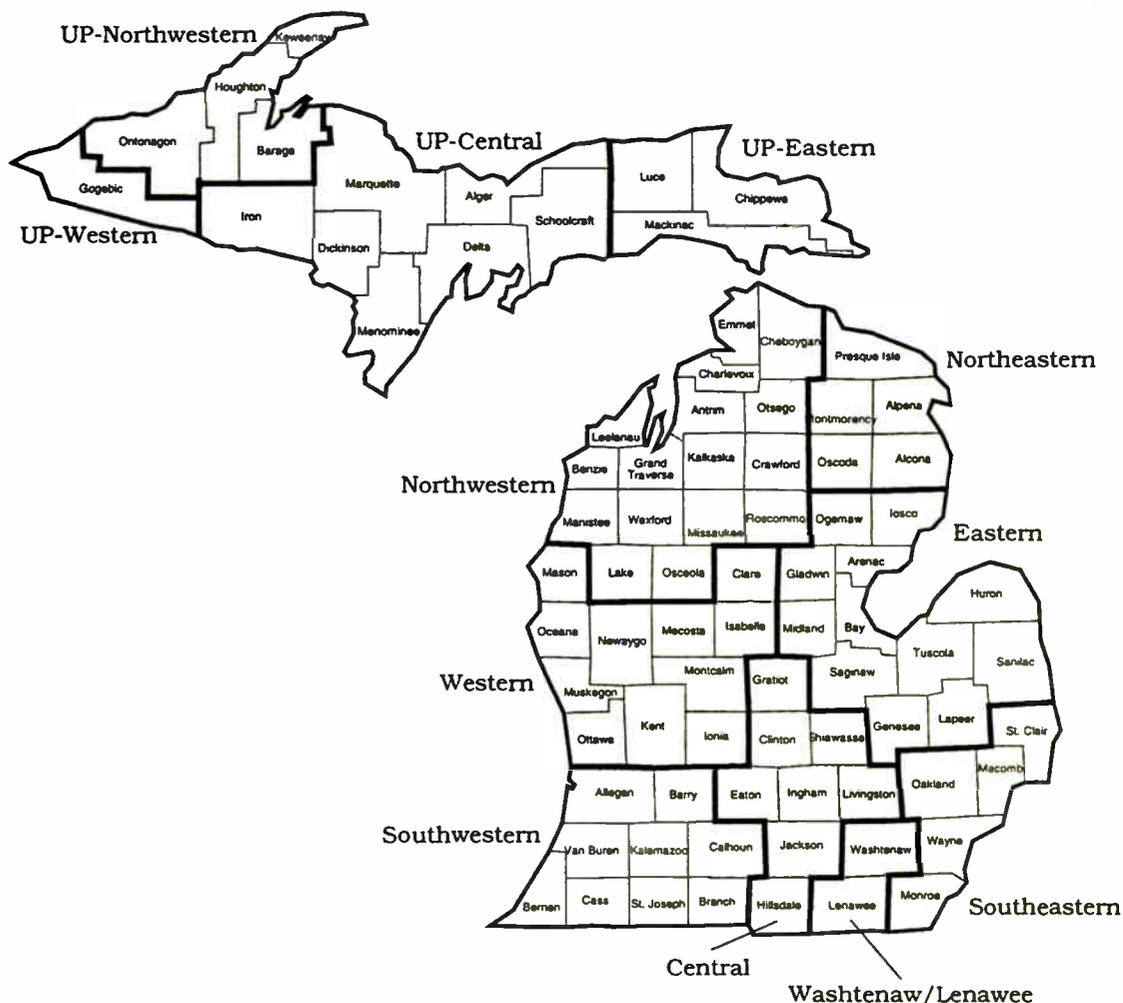
"The system did work the way it was intended. The alert was carried within the state's EAS web. Operators were paying attention and caught the error. These just weren't the ideal circumstances for it to happen," Estlack said.

A false EAN created by an origination error could create two dire circumstances, according to Leonard Charles, CE for Wisconsin Television Inc., a member of the Wisconsin SECC and Society of Broadcast Engineers' EAS committee.

"The EAN code is the only EAS code that comes with an FCC mandate for immediate relay and does not include an End of Message code. As such, some manufacturers of EAS equipment force an automatic relay when this code is received regardless if the user has programmed manual or automatic operation," he said.

"The result is a receiving station's EAS equipment takes over that station's audio chain. The only way to get the audio chain back is to reset the EAS box, which usually means pulling its power plug," Charles said.

"The worst consequence is in an automated or unattended station. In those cases there may be no operator to reset the box, so the interruption will continue until the problem is noticed."



Lucia said the one previous false EAN occurred in April 1997. The Federal Emergency Management Agency originated the message. The error involved four Primary Entry Point stations and

affected states such as Ohio and Hawaii. In that case, Lucia said, operator error was cited as the cause of the mishap and steps were implemented at FEMA to prevent a recurrence.

# Value

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# XM

► Continued from page 1

the studios should be completed by the end of the year.

XM has nearly gutted and is rebuilding the former Judd & Detweiler printing plant, built in the 1890s. The National Geographic Society was one of Judd's more famous customers.

Now, the brick building with solid concrete floors has been transformed into three floors. XM occupies two floors of studio space, offices, meeting space and a cafeteria for employees. It leases one floor to Quest Communications, a telecommunications company that provides XM long-distance telephone service.

Masiello spoke with **RW** News Editor/Washington Bureau Chief Leslie Stimson about the progress of work, the challenges of managing an IT-style broadcast facility. XM's planned ancillary locations and its various operation "centers." These include broadcast, network and information technology operating centers, called the BOC, NOC and ITOC.

**RW:** What have been the big challenges so far?

**Masiello:** The size. Taken individually and in smaller chunks, it's manageable.

**RW:** You're putting in more than 80 studios.

**Masiello:** Eighty-two. There are a lot of facilities going in. It's the coordination of studio construction, the buildout of the base building itself, all the infrastructure

**RW:** What is the difference between your plant and a typical radio network facility?

**Masiello:** Size, again, is one of the major differences. The types of studios we have here you may find at a radio network, but just not as many of them: production studios, air studios, edit booths. We have a large broadcast operations center, a master control, if you will.

We'll have a facility called a network



XM's Technical Operating Center

that's necessary, HVAC, sprinkler systems, electrical.

operating center that monitors our terrestrial repeater network. NOCs are not typ-

ically found at radio networks.

We also have a fairly large information technology center. Typically at radio networks, (that work is) handled by the IT people. Here, it's an integrated facility and we depend heavily on computers. All of those facilities are actually considered part of operations.

**RW:** You've said this is more like a computer facility.

**Masiello:** The technical operating center, the type of wiring we have in place, is more like a computer or dot-com facility, based on the type of wiring system we chose and the fact that it's heavily relying on computers.

The two types of wiring you're going to see here are CAT-5, using the Radio Systems StudioHub system, and fiber optics. The only traditional audio wiring you're going to see is between the microphone and the input into the console. Even the feeds that go to the speakers are digital and get there on CAT-5 cable.

**RW:** Describe the digital audio air chain.

**Masiello:** Typically, it starts in the studio, microphone, going through the Klotz console. It has an audio frame associated with it. From there it goes to the Klotz router, and from the router to the Omnia processor, from the processor to the uplink encoder cards, from there to the modulators, to the high-powered amplifiers and then to the (satellite) dish.

**RW:** Is processing audio for satellite different than in a typical radio application?

**Masiello:** A little. We're not in a loudness war. We're not fighting other radio stations and so we don't use it competitively, as some processing is used. ...

What we're using the processing for ... is to shape the audio and to enhance the audio based on the formatics chosen.

On a hip-hop channel, there are certain frequencies that you want accentuated. You probably have a bass boost there, so you'd get a big, thumping bass. Clearly, you would not use those settings on the classical channel, for instance. ... Various settings and different types of processing have been developed for different formats, to enhance and complement the music that's on them. ...

The other purpose for the Omnia is to provide an overall level control so that our listeners going from channel to channel will have a fairly consistent level, but still conforming to the programming they're listening to. If there's a low passage on the classical (channel), it's not going to boost it up. It belongs where it does.

What we want to prevent is sometimes what happens on cable channels, if you're flipping back and forth the levels are all over the place depending on the channel.

**RW:** How are the Klotz consoles you're using different than what's in a regular station? You were able to design them, correct?

**Masiello:** We helped design the surface we're using. They have it as a standard product, the Vadis D.C. II console surface.

**RW:** You're using Dalet Digital Media Systems for the digital storage and editing. How much capacity do you have?

**Masiello:** We're up to 21 terabytes of online storage, 310 Dalet workstations. Every studio has multiples of these for various functions.

## XM Satellite Radio

XM Satellite Radio Inc. (NASDAQ:XMSR) was founded in 1992 as American Mobile Radio Corp. In 1997, the company purchased one of only two satellite radio licenses from the FCC to develop subscription-based, satellite-delivered digital audio radio services.

XM expects to begin operations in the first quarter of 2001 and be operational in Q2, offering up to 100 channels of programming.

The company went public and was re-named XM Satellite Radio Inc. in October 1998. American Honda Motor Co. Inc. has joined General Motors, DirecTV Enterprises Inc., Clear Channel Communications Inc. and Motient Corp. (formerly American Mobile) as key strategic investors in XM.

Other investors, led by AEA Investors Inc., include Columbia Capital LLC, Madison Dearborn Partners Inc. and Barron Asset Funds.



Outside XM's new Washington facility

Hughes Space and Communications Inc. and Alcatel Space Industries are building two HS 702 15 kW satellites. The satellites will be placed in a geostationary orbit at 85 degrees west longitude and 115 degrees west longitude. The footprint of each satellite will cover the continental United States to ensure ongoing operations in case of a launch or in-orbit failure. Sea Launch Partnership, a joint venture partnership led by Boeing, will launch the satellites.

Telesat Canada will install and operate XM Radio's uplink control infrastructure, including telemetry and tracking and control. The uplink streams will be created from encoded audio with application software developed by Calian's Systems Engineering Division. Certicom will encrypt the signal.

A network of about 1,500 terrestrial repeaters will augment the satellite signal coverage. Hughes Electronics Corp. is designing, building and deploying the repeaters.

General Motors plans to begin offering a three-band satellite

radio as an option in some of its vehicles in 2001. The Fraunhofer Institute is designing the digital waveform and chipset specifications; STMicroelectronics will manufacture the chipset used in AM/FM/XM radios.

iBiquity Digital Corp. is developing the former Lucent Digital Radio version of its patented compression algorithm, the Perceptual Audio Coder, as an audio codec for XM receivers. (XM competitor Sirius Satellite Radio is using Lucent Technologies' version of PAC.)

XM and Sirius worked out a receiver interoperability agreement earlier this year. The agreement fulfills their obligation to the FCC to ensure consumers can purchase receivers that will encode and decode signals from both companies, allowing subscribers to switch companies without needing to purchase new receivers. The first generation of receivers will not be interoperable. The companies are targeting 2004 for AM/FM/XM/Sirius receivers to be available as OEM and aftermarket units.

Honda plans to incorporate XM and Sirius receivers in its 2002 Honda and Acura models — the first automaker to pledge to do so after XM and Sirius finalized the receiver agreement.

— Leslie Stimson

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# XM

► Continued from page 6

There are some ... that are designed for automated playback. There are desktop units used by the program directors and music directors to help do the formatics of the channels.

**RW:** So no matter where the audio source is coming from, anybody in the studio or on the air can manipulate it?

**Masiello:** There are two types of audio in the physical plant: (one is) live, real-time audio. That is transported and manipulated as AES 3 digital audio carried by fiber optics.

Any audio that is non-real-time is stored in the Dalet system as MPEG Layer 2, 384 kilobits. Those are transported over CAT-5 cable. They're file transfers basically, from the server to the workstations. It's within the Dalet workstations that it's converted from files to actual AES digital audio coming out of the back of the Digigram card.

**RW:** Is the use of fiber optic cable unusual?

**Masiello:** Very few people in radio are using fiber optics.

It's better because it allows me to phys-

ically construct the facility in the time I have allotted. It makes for an orderly facility. We don't have a lot of the typical issues you have with analog wiring: interference, noise, buzz, hum, etc.

So with one tiny piece of fiber, I get 128 stereo channels in and out of a studio. ... As it turns out, we pull six fiber strands to every studio, that's in armored cable on the outside. The fiber is inside.

bundle. ... It's to be able to get this done in a timely fashion and ...how do you interconnect all of these circuits? If you had 128 pairs from every studio, at the other end you'd have to punch them down and do something.

Here, with the Klotz system and the fiber, you just go in and out of the frames. That's another thing you won't find here; traditional audio patch panels don't exist here. A lot of the stuff that's patched, we use a lot of CAT-5 to do that — patch panels you'd find in a computer facility or an IT facility, not audio patch panels, because nothing is really audio here. It's either a file transfer on a LAN or it's fiber optic.

**RW:** Getting back to the network control, your equivalent of the master control, the

See XM, page 8 ►

## 'Even the feeds that go to the speakers are digital and get there on CAT-5 cable.'

Each one of the Klotz frames in the studios has 64 channels of audio going in, 64 coming out. If I were to do that with traditional wiring, even if it was digital, say standalone AES cable, that would be 128 pairs of wire to one studio. ...

We have plenty of backup and expansion.

**RW:** In case you want to build more studios...

**Masiello:** Different circuits or (if) a fiber goes bad; you have spares within the

### Tony Masiello

A 29-year veteran of radio engineering, Tony Masiello is responsible for the build-out of XM's studios in Washington. He joined XM last September as vice president of broadcast operations. In June he was promoted to vice president of operations.



Tony Masiello

He also is responsible for overseeing the systems that monitor the terrestrial repeater network, information technology and the satellite uplink system.

Prior to joining XM, Masiello worked at CBS Radio Networks for 12 years. Most recently, he served as vice president, technical operations. He had overall technical responsibility for the network, designed and implemented the conversion of its studios from analog to digital, and designed and implemented construction of CBS Radio's new central control.

Masiello joined CBS Radio as director of technical operations in 1988 and held technical responsibility for all CBS Radio O&Os.

He began his broadcast engineering career in 1971 at ABC Radio Networks in New York City as operations supervisor.

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# XM

► Continued from page 7

*BOC, what happens if a jock is trying to get something and the feed goes bad, or he/she doesn't understand how to do it?*

**Masiello:** In the BOC (there are) computer terminals, PCs that are connected to the Klotz LAN.

That PC allows you to look at every single console in the system, see how it's configured, call up various configurations and reset configurations. More importantly, if you're doing a live morning show and you want to bring an interview in from our New York studio, and you're not too adept at doing that, the technician in BOC calls up that console, using the mouse and keyboard, and actually routes

the audio feed from New York to a fader position on the console and labels it, right under the fingers of the jock.

**RW:** Labels it so he or she can see it like on an LCD?

**Masiello:** Yes, there's a display. It can say whatever they want it to, so there's a great deal of control. (For) different shift changes you can do that locally at the console. You come on duty, you can hit your profile, because the console has processing in it so each jock can have their own equalization and dynamics and compression. They can sign on and do that, or, you can do that from the BOC.

If the jock gets in trouble and starts pushing buttons, he gets confused, they can re-set it from there (the BOC).

**RW:** Let's talk about redundancies in the

system. If something catastrophic happens with the satellite, what happens?

**Masiello:** We have two satellites, an east and a west satellite. Each satellite is capable of covering the whole United States. ... So, coupled with the terrestrial repeaters, the signal level of the repeater is still sufficient to provide very high availability, 99.98 percent.

**RW:** So if something goes wrong with one satellite, theoretically, you'd get enough coverage?

**Masiello:** Most people would not know the difference, particularly in major metropolitan areas, because the terrestrial repeaters are doing a lot of the work.

**RW:** How's the build-out going for the repeater network?

**Masiello:** We have many sites under con-



Masiello in front of the main link to Quest Communications

tract and under construction and a number of sites that are under test. ... Most of them are on buildings, rooftops.

**RW:** Do you oversee that as well?

**Masiello:** I don't oversee the construction of it, but I oversee the operation of them when they're built. That means the day-to-day operations, getting any faults fixed, monitoring of them.

Another thing that's quite different from a radio network is we have an extensive network monitoring system, NMS. We got it from Harris Telecom. Think of it as a giant supervisory computer tied into every system that we have, from the security system to the electrical, to every single repeater out there, all 1,500.

It's a monitoring system. It detects if there's a problem, you get a screen that shows, for example, there's a fault on repeater No. 3 in New York. You can drill down on the screen and find out exactly which component is bad so you can dispatch someone. Every Dalet workstation here is tied into the system. (So is) every Klotz frame.

**RW:** So it's your troubleshooting system...

**Masiello:** It's the monitoring and troubleshooting. In addition to the NMS, we have a trouble management system, a software package called "Remedy." It's designed for trouble shooting and trouble-ticketing.

This stuff is not new to giant telecom facilities. .... It's just putting this together in a radio facility. This is the first time that that's been done.

Why? It is such a big facility so we have to automate the trouble-shooting process. You know, if the NMS detects a failure of a card in the Klotz frame, there's a mimic panel on the screen of the TOC. The rack row starts flashing red. You click on it, it will take you right to the rack, right to the frame and there's a graphic of the card that's in the frame. And it's red and you click on it and it tells you, "The AES card is bad."

It automatically issues a trouble ticket, puts it in the queue. ... Anything that is service affecting, meaning it causes an outage on the air, is kicked up and tracked so that we know there's a time to resolution.

**RW:** So this helps with your maintenance around the clock?

**Masiello:** Of course. We try and do it more economically with fewer people, but the systems help direct them. ...

This helps finds the problem so you can repair things more expeditiously.

See XM, page 10 ►



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# XM

► Continued from page 8

That's something you won't find in a traditional radio network installation, not yet. I think it will evolve to that.

**RW:** How is construction coming along of your ancillary studios in New York and L.A.?

**Masiello:** The ones in New York we'll be starting shortly. We'll be building one in Nashville at the Country Music Hall of Fame. That one will be installed and finished by the first part of December.

**RW:** Are you using the same equipment in these other studios?

**Masiello:** Yes. New York will be completed sometime after the first of the year.

**RW:** Where is the New York location?

**Masiello:** That is yet to be determined. We haven't signed the full lease yet. We're in final negotiations.

**RW:** There are several things that are different between what you're doing in the studios and what Sirius has done. For example, they're controlling the satellites from the broadcast facility, but XM is not, right? You have a back-up satellite control area here.

**Masiello:** Right. We have contracted with Telesat of Canada to fly the satellites. ...

They monitor computer systems that basically keep the satellite in a small figure 8, keeping it in "the box," as it's called. ... There's very little movement so the antennas that are pointed at it can reach it.

There is a satellite control facility here that's a back up but it could be used at any moment.

**RW:** How many people are in the operations department?

**Masiello:** When we are fully staffed, about 55 people.

**RW:** You must have some positions monitored 24 hours a day?



XM has four 950 kVA generators, which can provide a total of 3.6 MW of power should XM's normal power supply be disrupted

**Masiello:** The BOC is monitored 7/24. The NOC and the ITOC are 7/24, two people at each on duty at the same time. ...

We also have a position called the ECC, Enterprise Control Center. That's a software package and a person. That position is the supervisor, it is this person's job to know what's going on at any given instant in the facility. ...

As part of that software package, at an enterprise level, meaning company-wide, system-wide, they are aware of any service-affecting problem, and it's time to repair.

**RW:** Did you have a master contractor?

**Masiello:** For the studio, you're looking at him. There is a general contractor for the construction, Davis Construction. Studios Architecture did the third-floor (offices).

In conjunction with myself, Al D'Alessio at Northeastern Communications Concepts designed the studios on the second floor. ...

I'm the integrator because it's a fairly unique facility. All of the wiring and installation, that contract was won by Radio Systems.

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## XM Equipment List

Make & Model	Equipment Type	Quantity
360 Systems DR554	Instant Replay 2.0	36
Acoustic Systems	Modular Studios	
Audio-Technica AT808G	Gooseneck Mic	40
Audio-Technica AT857QMALa	Long Gooseneck Mic	30
CJDS/DAL Drake	Automation	
Cutting Edge	Omnia-3 digital audio processors	
Dalet	V5.1 and Team Newsroom Automation/Content Manager (About 300 Workstations)	
Denon DN961FA	CD Player	138
ESE ES-3242	16" Clock	10
ESE ES-3243	12" Clock	73
ESE ES-3244	5" Clock	55
ESE ES-3244-P2	Dual 5" Clock	11
Evertide BD500-100	Digital Delay	36
Fidelipac CTR14	Record/PB Cart Machine	9
Fidelipac ESD10	Eraser/Splice Finder	9
Genelec 1031A	Powered Speaker	16
Genelec 1081A Subwoofer	Powered Speaker	26
Genelec 2029B	Powered Speaker	48
Genelec S300	Powered Speaker	52
Harris Telecom	Network monitoring system	
Intraplex	Codecs to uplink facility	
Klotz	Consoles	81
Leitch	Master clocks	
Lucent Technologies	PBX choke system	
Northeastern Comm. Concepts	Furniture Design/Studio Configuration	
Prolite	On Air Light	81
Radio Systems	Studio Hub CAT-5 wiring	
Rode	Microphones	200
SED	Uplink system hardware	
Sony DVP-S5340D	DVD Player	21
Sony KV-13FM12	13" TV	44
Sony KV-20FS12	20" TV	42
Sony KV-27FS16	27" TV	26
Sony KV-9PT60	9" TV	46
Sony MDR 7502	Headphones	174
Sony MDR 7506	Headphones	96
Sony MDS-E11	MiniDisc Recorder	21
Sony PCM-R500	DAT Recorder	58
Sony PFM-510A1W	42" LCD Display	11
Sony SMS-1P/B	Powered Speaker	118
Sony SS-X500A	LCD Display Speakers	6
Sony VSO1630	VHS VCR	31
Tascam 122MKIII	Audio Cassette Recorder	57
Technics SL120 MKII	Turntable	3
Technics SLM3D	Turntable	8
Telos Systems	Series 2101 multi-line phone systems	

\* ESE part numbers are custom for XM

Source: XM

# Max Blakemore Remembered

by Lynn Meadows

**MURPHY, N.C.** In his lifetime, the late engineer Max M. Blakemore built five stations, beginning in 1950 with WRIC(AM), Richlands, Va., in the south-western portion of the state. WRIC was the first station in the nation on 540 kHz.

Blakemore tried for 30 years to obtain an FM signal in Murphy, N.C., to service the western part of the state. In 1990, he put WCNG(FM), Murphy on the air.

Blakemore, 79, worked as chief engineer for Cherokee Broadcasting Co. until his death from a heart attack on July 16. His son, Dennis Blakemore, president and general manager of Cherokee Broadcasting Co., said his father had wanted to work at the transmitter site the night before he died.

Cherokee Broadcasting owns three stations in North Carolina.

Born in Bristol, Tenn., on Sept. 20, 1920, Blakemore served in the Army Air Corps in the Panama Canal Zone during World War II. Afterward, he took correspondence courses with the Cleveland Institute of Electronics and worked repairing radios and televisions. In 1948, he became station engineer for WKOY(AM), Bluefield, W. Va. Two years later, he built WRIC.

Blakemore built WEMB(AM), Erwin,

Tenn., in 1952. He constructed Georgia town. The FCC assigned an FM WCVP(AM) in Murphy and was granted channel to Murphy in 1988 and

**Mr. Blakemore was a dear friend to us here at CCA and to many others in our industry.**

— Scott Benton

an FM channel for that town in 1962. WCNG(FM) went on the air in 1990. That frequency was lost to a neighboring In 1985, Blakemore and Dennis built

WCVP(FM), Robbinsville, N.C.

In addition to engineering work at his radio stations, Blakemore was a private pilot for 25 years. He was responsible for getting a non-directional beacon installed at the Andrews-Murphy Airport in North Carolina. He maintained the beacon until last year.

His wife, two sons, two daughters and many friends survive Blakemore.

Scott Benton, president of Commercial Communications Associates Inc., said Blakemore and his son had come to Fairburn, Ga., to order a new transmitter four days before Max Blakemore died.

"Mr. Blakemore was a dear friend to us here at CCA and to many others in our industry. Max touched many lives in a special way and he will be remembered fondly and sadly missed," said Benton.

## XM

► Continued from page 10

**RW:** How much of a threat to radio are other technologies coming into the car?

**Masiello:** ... People talk about Internet radio in the car. How's it going to get there? One of the ways they talk about is "You can use cellular." That's all they need to say.

Think of your cell-phone. Think of your car radio. Do you want to take the availability and reliability of your car radio and now have your entertainment done on something drops out a lot, isn't ubiquitous, can't be found in a lot of places, can be congested? I don't see it.

Can you come up with a service that you can transmit to the car using the Internet, Bluetooth, this or that? Absolutely. The technology is there. How reliable is it going to be? Is it going to meet consumers' expectations? Is it going to be commercially affordable? I don't think so. So, I don't view them as threats.

**RW:** You came from CBS. You're a traditional radio guy. How is this different?

**Masiello:** A lot of ways it's different and in a lot of ways it's the same. It's different because of the technology, doing it via satellite and the terrestrial repeaters. ...

But it's the same in that what we're doing here at least is very much akin to traditional radio, producing audio content that's exciting to listen to. ...

It's a big radio facility. We chose the approach that requires that. It's not a bank of servers just playing things out. There's lots of liveness here.

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### NEWS WATCH

## A Peek Into the Broadband Future

Radio is no stranger to new technologies that threaten to render it obsolete. Half a century ago, many predicted that television would lower the final curtain on radio. It was thought that the quality of FM radio would kill its AM brethren. Radio adapted to survive both challenges.

Today, over-the-air radio is hearing footsteps from satellite and Internet radio. But despite great advances in streaming compression, some experts believe the future of Internet radio depends on listeners having broadband Internet access.

While broadband is not yet widespread, estimates are that as many as 6 million American households will have high-speed broadband access to the Internet by year-end. These early adopters are the focus of a study by Coleman Research and The Arbitron Company comparing behaviors and attitudes of broadband users against those of "normal" radio listeners.

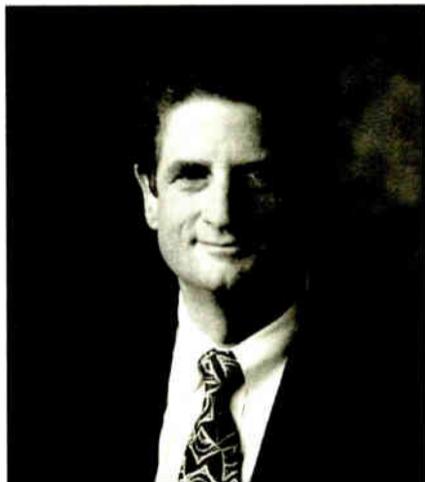
The study results were to be unveiled at The NAB Radio Show in San Francisco in a session titled "Can Radio Survive the Broadband Revolution?"

With broadband projected to be mainstream in the near future — estimates have it reaching 30 million households by 2004 — the study covers a number of key questions: Do broadband homes listen to broadcast radio less? What kinds of listeners is radio most in danger of losing to this new competition? Do streaming audio stations, Napster and MP3 have a big role in broadband households? What attributes of radio lead listeners to embrace the new options the Internet provides?

The study has two elements, a telephone survey and an online survey. The phone survey, done in five markets with heavy broadband penetration, polled Internet users and non-users. The online survey polls Internet users with and without broadband.

"It's critical that we do these kind of studies," said Bill Rose, a marketing vice president at Arbitron and a panelist at the session. "It helps the industry look into the future and prepare for it."

Panelists included Jon Coleman of Coleman Research and Pierre Bouvard of Arbitron.



Jon Coleman

— Craig Johnston

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# Generators Can Be Profitable Too

**Charles S. Fitch**

*This is one in a series of articles about the National Electric Code and how it applies in the radio station environment. Previous installments can be found at [www.rwonline.com](http://www.rwonline.com)*

We began our National Electrical Code generator series in the Sept. 1 issue with an overview of the applicable code articles. We discussed the practical selection of generators for station use, sketching out the critical selection requirements and limitations.

Now we wrap up the selection/decision cycle with a "left field" factor that might sway the case for a long run, low speed, 1,800 RPM unit.

## Need more power

We have talked about a changing climate for the supply of electricity. One element of this is co-generation, in which clients who can generate their own power sell excess electricity back to the utility.

A practical advantage for the utility is cost control. The power company can limit the electric generation facilities it maintains online to meet peak demand needs. In the future, utilities will look to these co-generators to help get through peak periods of hot summer afternoons and intervals of high electric heat demand in very cold weather.

At the least, utilities want customers who have standby facilities to help take the strain off by generating their own power during high-demand events. Often, the compensation for helping the utility is generous. This compensation can make it worthwhile to buy a high-quality, low RPM, long-run engine.

Some utilities are so thankful that they blow off big chunks of your electric bill. A handful are so tremendously grateful that a few stations I know get really excited when high heat comes along, because it creates a new profit center in

peak shedding bonuses.

It's worth a call to your local utility to check the incentives before you sign the purchase order for your new generator. Also, make sure that your generator and changeover have the ability to be controlled remotely. You will need to turn the generator on electively.



Signs and fences can save lives and fend off tremendous liabilities. The signs read 'Danger: This Equipment Starts Automatically' and 'Danger: Diesel Fuel.'

Our national utility power system is at once both robust and fragile. There is redundancy built in, but if key elements are disrupted, serious problems can appear quickly.

Natural disasters that take out interurban high-tension lines, also known as power pool cross connects, can black out whole regions.

We saw this not long ago here in the Northeast, when ice storms took down electric lines from Hudson Bay to New York City, including large sections of cross-state and cross-nation high-tension circuits.

## Getting ready

To help plan for such emergencies, the utilities and local emergency coordinators want to know where the generators are — even small, permanent ones.

In the Niagara Mohawk service area, for example, owners of standby generators are required to fill out appropriate forms. This edict is not unique to NIMO, so you should check with your local utility, emergency office or fire department to see if, when and what requisite forms for your generator must be filed. In some cases, it is required by law that you do so.

Also check with these sources to make sure you have all the proper signage for your generator. Most municipalities use the model firefighter's law, which mandates that all hazards on the property be properly marked. This includes noting the presence, type and location of the fuel that powers your generator, and that the generator is capable of automatic start.

Now let's plan out the installation of a generator for transmitter standby at a northeastern Class B station that does reasonably well in billings.

Last year, this hypothetical station was off 21 hours of the 8,760 hours it wanted to be on, due to power failures. The historic average is about 38 hours sprinkled into outages ranging from 20 minutes to one and a half days.

The station has a really old site at the end of a mile and a half of bad road that leads to the top of a very high hill. This track is passable only by a high-clearance, four-wheeled-drive truck.

The main plant is a 25 kW FM with a four-bay antenna requiring three phase.

Due to the very bad road and other hygiene factors, we have decided to power the generator with environmentally friendly LP. The supply system is a large tank that is filled by the fuel delivery service truck when the road is passable.



trical drawing for this transmitter site and the particulars of the generator installation.

■ ■ ■

*Charles S. Fitch, W2IPI, is a registered professional consultant engineer, a member of the AFCCE, a senior member of the SBE and a lifetime member of CPBE. He is a licensed electrical contractor, station owner and former director of engineering at WTIC(TV) and WSH(TV). He has been a FCC licensed commercial and amateur operator for more than 40 years.*

## More Power Tips

The author provides tips to help you get the most out of the information from your electric bill and electric meter. See the online version of this story at [www.rwonline.com](http://www.rwonline.com)

## At NYISO

From the control desk of the New York Independent System Operator, most of the power in New York state is dispatched to maintain a balance between supply and demand while assuring the reliability of the electricity supply to N.Y. state customers.

Not only are utility-owned generators dispatched from here, but also non-utility generators, co-generators and contract energy. Signals to control generation (like those at your station) are sent via direct computer connection, the Internet or verbally by phone.



Shift Supervisor Steve Rosenberg sits at the main control desk of the New York Independent System Operator, NYISO, formerly the New York Power Pool

The NYISO staff must analyze demand to assure not only power quantity, or PQ, but also power reliability. The task requires the talents of engineers, statisticians, meteorological analyses and forecasters, computer programmers, economists and system maintenance people, among others.

Shift Supervisor Steve Rosenberg is no exception. In addition to his power background, he is a licensed radio amateur, WA2TTP, and holds a general radiotelephone with radar. After his graduation from RCA Institutes, he was an Electric System Operator at the Long Island Lighting Co., charged with the operation of Long Island's communications, transmission and generation.

Rosenberg also has helped build a commercial FM radio station — just for "relaxation."

Back-up communication is provided by satellite and cellular phone systems. A duplicate control center is available if the main center must be evacuated.

A broad experience in utility ops and power distribution is needed to function at this command level. Every one of the personnel can perform multiple jobs. It takes myriad skills to make the high-pressure decisions that affect the power needs of 42 million U.S. and Canadian residents.

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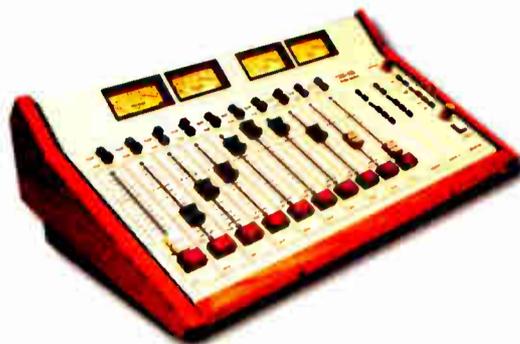
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- Mix minus phone interface



A rugged design with heavy aluminum panels, solid oak trim, 5M operation On/Off switches and full DC control, the 1200 is ideal for On Air, Production, or News applications.

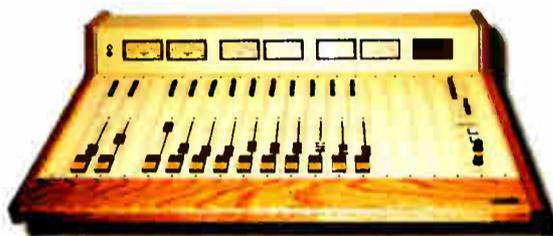
### Standard Configurations

1200 - 5S	5 channels	\$2,295
1200 - 10S	10 channels	\$3,495
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## 12,000 Console

- NEW - redesigned in 1999
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Modular, reliable, flexible, and powerful, the 12,000 is found around the world from Tokyo to Paris to New York. The 12,000 is perfect for any size market or any radio application.

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## Other Products

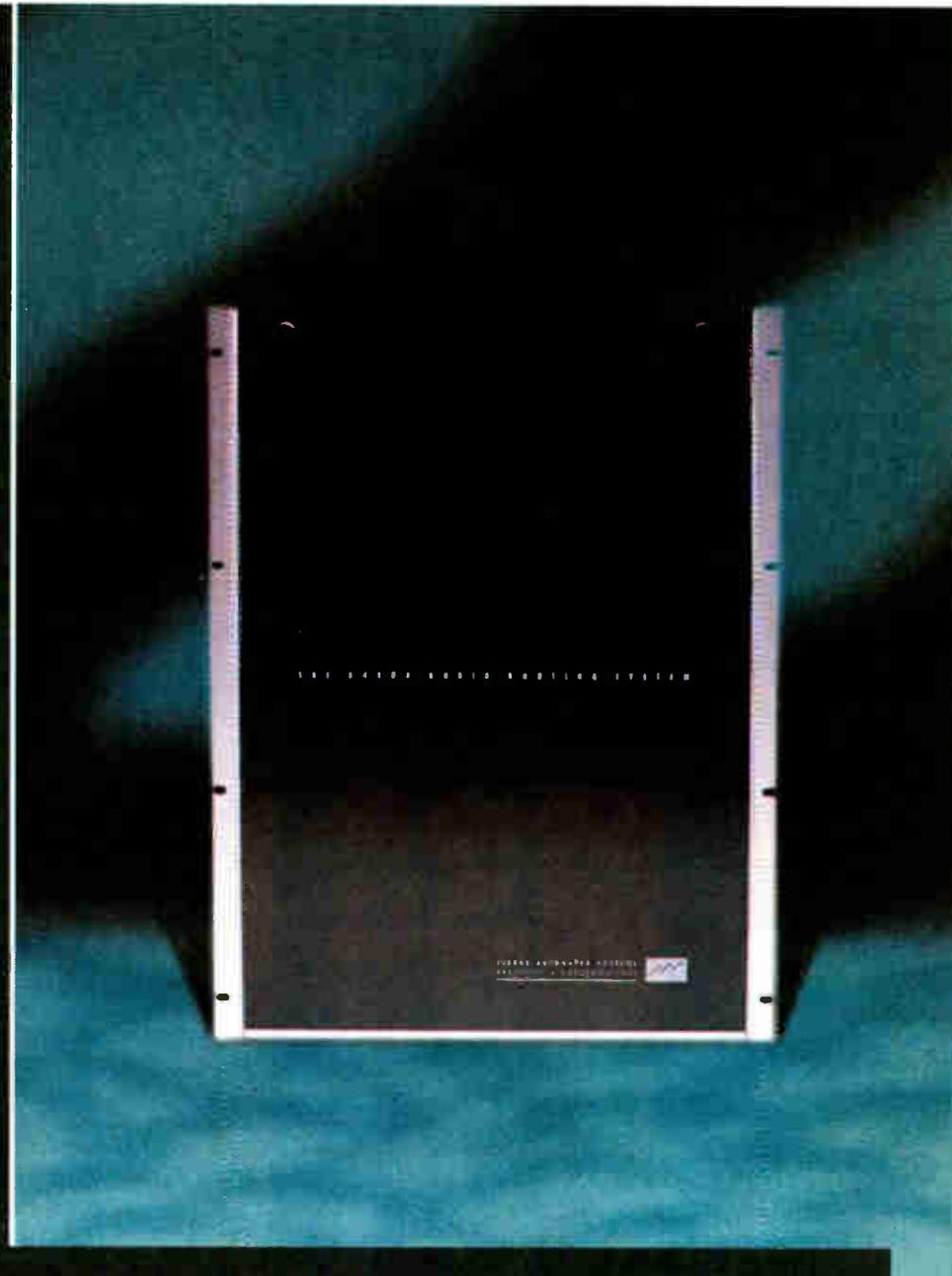
### Digital



### Furniture

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# Workbench

Radio World, September 27, 2000

## Take Stock of Your Transmitter Site

John Bisset

Have you taken stock recently of supplies at your transmitter site?

How is the stock of air filters for air conditioners and transmitters? Do you have a supply of cleaning rags such as Rags-in-a-Box or shredded cotton T-shirt cloth?

Here's one you might overlook: several gallon jugs of clean water. You can buy sealed water jugs, or recycle. The point is that you have good water for cleaning, drinking or an emergency.

then kept at the site, just in case. The moral to that story (in addition to not storing such chemicals at the transmitter site) is to have an assistant with you — and make sure he lives near the transmitter site!

A number of years later, I found myself working on a transmitter. While I worked, it started snowing. A few hours later, I was snow-bound at the transmitter site. The two-gallon jugs of water stored at that site also came in handy.

If your radio station bought canned food for the Y2K disaster, transport some

board and coaxial plugs and connectors are stocked here.

These folks can cross-reference con-

keep the pictures at the transmitter site.

The pace was not so rushed back in 1981. Figure 1 shows a unique bird's eye view of the "new" site for what was then WTGM in Salisbury, Md. The new ground system had just been installed, as evidenced by the plowed furrows for each radial.

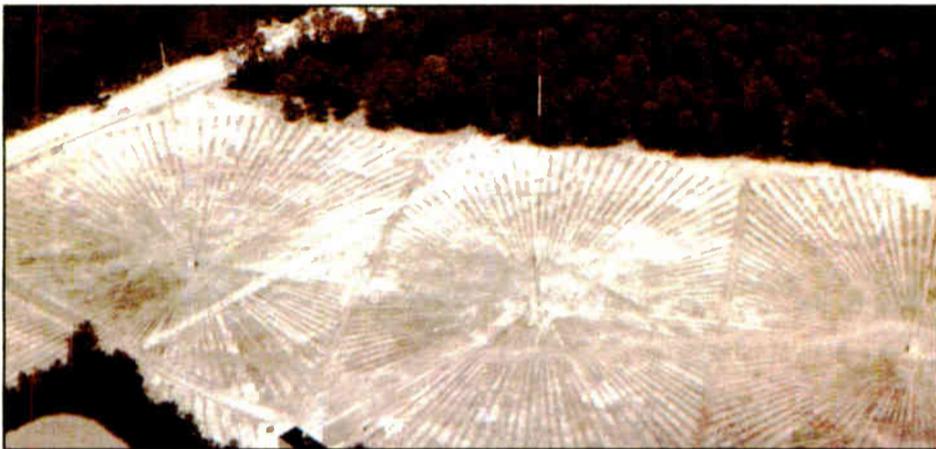


Fig. 1: A new ground system for a three-tower directional

When I was chiefting a radio station, I was doing a little spring cleaning. Unbeknownst to me, a container of muriatic acid was on the shelf where I was cleaning. I accidentally knocked it over.

When it hit the concrete floor, it splattered. A good portion spilled on my legs, eating through my jeans and burning me.

Fortunately, my assistant drove over to his home, fetching some bottled water so I could clean off. Scissors turned my jeans into shorts and we got the mess cleaned up.

A couple of gallon jugs of water were

of it to the transmitter site. With multiple sites these days, you never know where you'll be.

\*\*\*

Lyle Henry, known as the Radio Doctor in Los Angeles, tells us of a neat place for all types of surplus connectors.

The Connector Distribution Corp. is a 50,000-square-foot warehouse packed with perhaps the largest connector inventories in the United States. Audio, circular, rectangular, industrial, military, PC



Fig. 2: The way it was at one station in 1988

connector numbers and help you find the missing connector for your specific need. They even stock some Molex parts. The parts are all surplus, none are used. They'll fill a \$25 minimum credit card order and have a line card at [www.cdc-online.com](http://www.cdc-online.com)

If you have a hard-to-find connector need or are missing a connector for a piece of equipment, try these folks. Bob Averbach can be reached at (800) 421-5840.

\*\*\*

I'm amazed at the number of AM stations that are "cleaning up their act" these days. So often in the rush to upgrade, we neglect to take pictures. Photos can be very helpful to engineers who follow in your footsteps years from now.

When upgrades occur, use a disposable camera to track the progress and

Chris Kelly, the market chief for the Salisbury Cumulus stations, shares this picture with *Workbench* readers. He also provided Figure 2 — talk about memories! This picture is an auxiliary production studio for WQHQ(FM) taken in March of 1988.

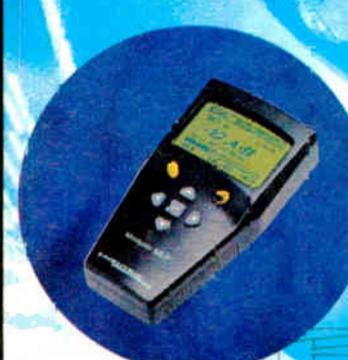
What's fun is listing all the items we don't use any more? With an eye to the future, is that a CD player sitting on top of the console? We've come a long way, baby! Thanks, Chris, for sharing how radio has matured.

The editor of *Radio World* also reminds me that he loves to get photos of your new facility, upgrade project or engineering staff at work for possible use in *RW*. Drop a note to Paul McLane at [radioworld@imaspub.com](mailto:radioworld@imaspub.com)

\*\*\*

See WORKBENCH, page 20 ▶

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# Radio's Original Tower of Power

Alice Brannigan

As France was getting ready to celebrate the French Revolution with the Centennial Exposition of 1889, the government held a competition for the design of a monument. Though many suggestions were offered, the winning one was that of Alexandre-Gustave Eiffel, a leading mechanical engineer who had designed many bridges as well as the framework for the Statue of Liberty.

## Receive antenna

Eiffel proposed and designed a cloud-topping 984-foot, open-lattice tower fabricated from wrought iron. Nothing like it had ever been constructed. It would be the world's tallest manmade structure, soaring twice as high as the Great Pyramid of Giza and the dome of St. Peter's Basilica in the Vatican.

valuable tourist attraction. But mainly, the tower's wireless potentials caused the government to decide the structure was more than purely decorative, it was functional and needed to remain for national defense purposes as the antenna of a new military wireless station.

In 1910, the Eiffel Tower's wireless station was installed and operated from the base of the tower by the French Army Signal Corps.

The transmitter used the distinctive call letters "FL," which instantly identified its location. This was a spark station that originally sent out weather bulletins and time signals, then (eventually) press information. The station initially operated on 30 kHz, 111 kHz and 120 kHz. The antenna consisted of a wire suspended from the top of the tower. By 1920 and at least into the 1930s, this station was operating with CW under the call letters

times on 182, 208, 214 and 1456 kHz, also shortwave on 6120 and 9230 kHz.

The operations on 1456 kHz (206-meter wavelength, near the 200-meter edge of the broadcasting band) meant this was a unique station with a tower structure capable of accommodating a full-wave vertical antenna. The station was widely heard.

By then, the Eiffel Tower had become generally acknowledged as an engineering marvel, an aesthetic gem, and the signature landmark of the Paris skyline. It

had become unthinkable to consider tearing it down.

For more than 40 years — until the Empire State Building was constructed — the Eiffel Tower remained the world's tallest manmade structure. Today the Eiffel Tower is used as a TV and Radio France transmitting site. Recently, Architectural Record magazine named the Eiffel Tower as No. 4 of the world's 10 greatest existing architectural wonders.

Saved by wireless! *Le vrain'est pas toujours vraisemblable.*

■ ■ ■

This article appeared in the September 2000 issue of *Popular Communications* and is reprinted with permission.

## In 1910, the Eiffel Tower's wireless station was installed and operated from the base of the tower by the French Army Signal Corps.

There were those who complained the large tower would be inappropriate, vulgar, extreme, and ugly, as well as unsafe. Eiffel's tower was built anyway, right in the middle of Paris, where it was scheduled to stand for 20 years.

Elevators took a stream of visitors to the tower's observation deck. Still, as 1909 approached, when its scheduled 20-year lifetime would end, plans were being made to take it down.

The Paris city fathers eagerly awaited that day. Police arrested Victor Lustig, a con artist who seized the occasion to fraudulently "sell" the forthcoming remains of the Eiffel Tower to the though of the tower being destroyed. They conceived a list of reasons why it should be spared.

For one thing, Eiffel had discovered that the huge tower was an ideal wireless receiving antenna that brought in stations from all over the world. He convinced the government the tower was an aesthetic beauty, engineering masterpiece and

FLE in the Fixed Public Service. FLE operated on 41.7 kHz, 113.2 kHz and 4081.6 kHz.

## Finding its voice

In early 1922, the Eiffel station installed an experimental radiotelephone transmitter and began conducting two-way tests. This was to explore the feasibility of air/ground radio, ship/shore radio and duplex point-to-point radiotelephone service between Paris and London.

Several broadcasters of musical concerts were conducted in addition to the two-way work. This 800-watt transmitter had more than a 1,500-mile range, being received in North Africa at good level on a loudspeaker. The tests were in anticipation of a higher power transmitter being installed at a later date.

As the 1930s arrived, in addition to its point-to-point CW station, the Eiffel Tower had become home to a full-fledged 10 kW long- and medium-wave broadcasting station. This operated at various

## Workbench

► Continued from page 19

Bill Weisinger provides engineering services in the Cleveland area. EAS antennas have been a weak link in many EAS systems and are a particular pet peeve of Bill's. All too often, the GM is too cheap to buy a second antenna to feed the EAS receivers. Some managers adopt the attitude, "What was thrown together 15 years ago should work fine now."

Stations that have two area FM EAS stations as LP-1 and LP-2 assignments may have been tempted for various reasons to take the original EBS outside antenna feed and split it to feed both EAS FM tuners.

A potential problem is that in a severe storm, that single outside antenna could be damaged and take down both the primary and secondary EAS tuners with one good wind gust.

It may actually be more reliable to use an outdoor antenna on your LP-1 and (if the signal strength permits) use an indoor FM antenna for the LP-2. Perhaps consider using the indoor antenna for the strongest signal (signal to noise permitting) and let the outdoor antenna pull in the weaker signal.

Either way, the redundant tuner situation remains viable if the outdoor antenna system is damaged. If low signal strength is a problem for both monitored stations, consider installing two separate outside antennas on separate masts.

In the Cleveland areas, the LP-1 is an AM and the LP-2 is an FM.

An outdoor longwire antenna is used

for the AM and an indoor antenna captures the more powerful FM signal. Should the AM antenna fail, the indoor antenna for the FM remains intact.

Some stations use the National Weather Service VHF signal as an optional EAS input. Rather than using a cheap omnidirectional "scanner" antenna, you may reap signal rewards from an inexpensive outdoor directional three-element VHF Yagi antenna, tuned to 162 MHz.

This antenna not only provides considerable gain when aimed at the nearest NWS transmitter, delivering a much cleaner signal to the tuner, but also has the advantage of nulling other NWS co-channel signals or pesky adjacent channels.

Cost is not an issue either, the Maxrad MYA 1503 costs less than \$50 from Tessco.

I don't know about where your stations are located, but we've had a slew of inspections on the East Coast recently.

EAS inspections are first on the list and the inspectors are checking to see that the EAS tuners work properly, too. Three separate antennas, masts and coax are a lot cheaper than forfeiture.

Take Bill's advice and check your system and make sure it's redundant!

■ ■ ■

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) 323-8011.

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)

## Dependable Modulation Monitors for AM & FM

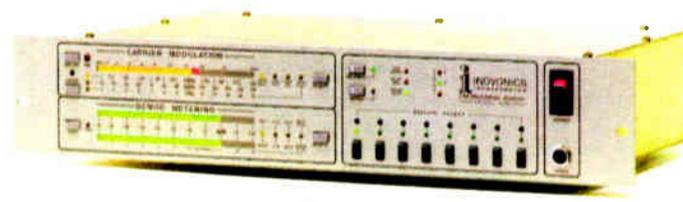
### 520 AM Mod-Monitor

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### 530 FM Mod-Monitor

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**MZ-B50 MiniDisc Portable Recorder/Player** • This recorder means business, combining the excellent sound quality of digital technology with the portable size and convenience of the MiniDisc format. It's the perfect recorder to take on the road for on-location interviews and remote news coverage. Features include a built-in stereo microphone and speaker, remote control index marking for quick search, Voice Operated Recording (VOR) and a long recording time of up to 148 minutes in mono.

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World Radio History



MDS-E10



MDS-E12



MZ-B50



MDS-B5



MZ-R70

ROOTS OF RADIO

# Congress Gets Into the Clear Act

*Back in the Day, Clear-Channel Proposals Took Many Forms and Lasted Into the 1970s*

Mark Durenberger

This is one in a series of articles about the history of clear-channel radio stations in the United States. The previous part appeared Sept. 1.

Last time, we discussed the FCC's landmark 1961 Report and Order that duplicated 13 of the 25 1-A clear channels. It wasn't long before Class II stations began turning up in the Western states. Nighttime radio reception would be changed forever.

In that Report and Order, the FCC noted the remaining 12 unduplicated 1-A channels would be protected for only three more years while it considered potential "super-power." It temporarily froze all applications that might conflict with super-power operation on those 12 channels.

**Failure**

The 1961 FCC vote was not unanimous. Commissioner Robert E. Lee's voice was heard in strong dissent; he continued to advocate super-power as the correct approach to nighttime "white-area" coverage. In spite of Lee's eloquence, momentum was building toward the breakdown of the remaining 12 clears.

The 1961 order was a significant victory for opponents of the clear-channel broadcasters, but the order triggered an avalanche of reaction. Attorneys and lobbyists stalking the halls of Congress are expected as a matter of daily political life. Groundswell opinion from the masses is another matter and there may be no advocacy tool more effective than a 50-kW powerhouse exhorting its lis-

teners to "contact your congressman so your radio service doesn't go away." The Clear Channel Broadcasting Service launched a massive publicity campaign and political crusade. Bills were introduced in Congress to stop

via HR 714, suggesting that the FCC grant a one-year stay of the 1961 order, "to allow all Class 1-A clear channel stations to file for higher power."

Some clear-channel broadcasters responded immediately. The record shows the following activity:

Oct. 17, 1962: WLW(AM) applied for 750 kW on 700

Oct. 18, 1962: WJR(AM) applied for 750 kW on 760 (KFMB agreed not to protest)

Oct. 20, 1962: WSM(AM) applied for 750 kW on 650

Nov. 12, 1962: WGN(AM) applied for 750 kW on 720

Nov. 16, 1962: WHO(AM) applied for 750 kW on 1040



## How Can Clear Channels Improve Service?

Adequate power is needed to provide stronger radio signals to underserved rural regions.

Travel by night and try to listen to the car radio in many remote regions. Failing, interference and static often make this difficult. This is the kind of inadequate service many millions of residents of those areas must tolerate much of the time.

Promotional brochure from CCBS

These applications were all denied a few weeks later, the commission saying that super-power could only be authorized through the process of rule making. In response, the CCBS immediately sought such a rule making, "to permit power in excess of 50 kW by all Class 1-A stations."

The CCBS request and others before the FCC would be disregarded for more than a dozen years. HR 714 accomplished nothing.

The 1-A stations tried other approaches. In 1963, WLW and KSL

filed applications for experimental authorization, at powers of 750 and 500 kW respectively. In that same year at least two stations, WGN and WJR, went before a court of appeals to challenge the FCC order denying their super-power applications. The courts turned them down.

In a separate request, dated June 19, 1964, WCCO, citing its "critical Civil Defense obligations," filed a petition for rule making asking for 750 kW "developmental/test authority" on 830. The FCC returned the WCCO application on July 2, 1967.

All of these filings for super-power were attended by exceptional publicity generated by the applicants. The CCBS pulled out all the stops, suggesting national defense communications would be imperiled and noting that super-power authorizations would put the United States in a better bargaining positioning with the Mexicans, with respect to that country's "Border Blasters."

**More maneuvering**

In 1962 the FCC reaffirmed its 1961 order duplicating 13 of the clears. It reiterated the goal of providing "at least four dependable night-time signals to the entire country." The commission saw the problem as follows: "Is white-area night-time service best achieved by adding duplicate stations on the 1-A channels, or by permitting high power on a few "national stations"?"

Of course there was another solution available, but the FCC still wouldn't consider FM as a radio service and it ignored NBC's proposal that the commission authorize FM stations in the white areas, in lieu of duplicating service on the AM clears.

Again, Commissioner Robert E. Lee dissented strongly. He continued to promote super-power and suggested the majority of the commissioners were "sparring with windmills" in their rush to a duplication of the clears.

The lobbying and maneuvering would go on for another 18 years! Most of the members of the Clear Channel Broadcasting Service urged their listeners to turn up the heat on their congressmen, "so you don't lose your Full Service Radio." Clear-channel stations broadcast promos around the clock and published "educational" literature supporting "the protection of full-service radio."

While the broadcasters worked to stir up public reaction, the FCC seemed to be doing its part to nourish the angst.

In 1966 the commission staff suggested publicly that 650, 830, 870, 1040, 1160 and 1200 "best met staff criteria for use of super-power." That sent a signal to the industry that the issue was still alive.

And one day in late 1975, the FCC issued yet another trial balloon. The headline in the Washington Star read "FCC Ready to OK Super-Power Radio on 10-12 Channels." The story quoted FCC sources and made it clear that super-power authority was indeed a possibility.

Two weeks later the commission announced Docket 20642, re-opening the clear-channel inquiry that had been terminated with the Report and Order of 1961. The commissioners planned to

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World Radio History

## TRANSITION TO DIGITAL

# After ISDN: What Next?

Ken R.

ISDN, or Integrated Services Digital Network, represented a landmark in the timeline of broadcast technology. It has become pervasive, allowing broadcasters to move high-quality audio from point to point with an affordable, dial-up solution.



Jim Godfrey

Is there another system waiting in the wings beyond ISDN — a technology that will have similar sweeping implications for how radio handles audio transport?

"I don't see it being replaced in the near future," said Marty Hadfield, VP of engineering for the Entercom broadcast chain. "There may be supplements in areas where ISDN is not available, but we'll always have something like this."

Hadfield said that ISDN remains the preferred technology because of reliability and compatibility with other systems.

"When you're moving data around, sometimes you don't know what equipment is at the other end of the line."

Add Marty Martin, CEO and president of Management Data Media Systems, to the group of ISDN adherents.

"Especially if it's a dial-up, it's a relatively inexpensive way to get good enough quality audio over very quickly," said

Martin, a supplier whose name is relatively new in the United States. "It's a real pain in the rear with all the different systems, but ISDN is a fine medium."

Eventually, Martin said, Digital Subscriber Line or ADSL, the residential version of DSL, may replace ISDN, if those two systems become more readily available. But many users with stations or bureaus in remote locations won't see this technology for years, and they may need to use satellite schemes instead.

"DSL is not as fast to arrive outside metropolitan areas because of the cost," said Martin.

### Predictable dial-up

SpotTaxi is a firm that aims to help radio stations transfer audio production around the country quickly. Bob Haskitt, director of business development, agrees that ISDN will be around a while, but he sees another trend.

"My people have been noticing fewer ISDN lines and more DSL and T1 connections," said Haskitt. "T1 technology is very popular for transferring data among multiple stations in the same building."

Neil Glassman, president of manufacturer Digigram Inc., said codecs continue



Neil Glassman

to have a role in real-time transmission and file transfer for "off-line" customers.

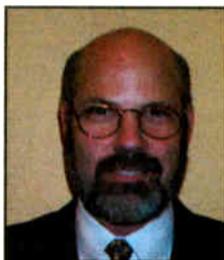
"For live radio," said Glassman, "ISDN and similar codec/transceivers are still the best choice because of the time-reliable signal path." Glassman said the Internet is too unpredictable.

"In a private network, streaming via TCP/IP is just starting to become practical for real-time use. Rotten coding is still rotten, but with enough bandwidth you can still get broadcast quality using a variety of solutions," said Glassman.

Emma Wickens, marketing manager of codec maker Audio Processing Technology Ltd., sees inherent limitations in several methods of data transmission.

"POTS codecs suffer from a long coding delay time and relatively poor audio quality," said Wickens. "Satellite systems are generally point-to-multipoint simplex applications, and Internet systems are simplex, packeted audio links. ISDN enables the duplex high-quality audio transmission for which there will always be a need in our industry."

Wickens also said that ISDN has become the standard within the international telecommunications world.



Marty Hadfield

work and other real-time applications, ISDN remains the preferred delivery method, he said.

"We believe both circuit-switched and packet-based delivery systems will coexist in the broadcast studio of the future."

But could file transfer or real-time audio on the Net replace ISDN?

"File transfer is an excellent way to transport produced elements, especially given the trend toward increased bandwidth at lower costs," Dosch said. "Of course, broadcasters are already using e-mail and network transfers extensively."

"For real-time audio where buffer delay and/or dropouts can be tolerated, broadcasters will probably use packet-based delivery methods. Where reliability and low delay are required, they will use circuit-switched methods such as ISDN."

He said some broadcasters are moving toward ISDN for phone systems as well as codec applications, especially with ISDN-PRI (T1 and E1) lines becoming more affordable, thanks to the audio quality, noise immunity and intelligent line status that ISDN offers.

"We see this trend continuing as many broadcasters replace their older key systems with digital phone systems," he said, adding that because circuit switched digital lines provide fixed bandwidth and guaranteed delivery, they offer the versatility of being used for either real-time or less-urgent packet data.

**There may be supplements in areas where ISDN is not available, but we'll always have something like this.**

— Marty Hadfield, Entercom

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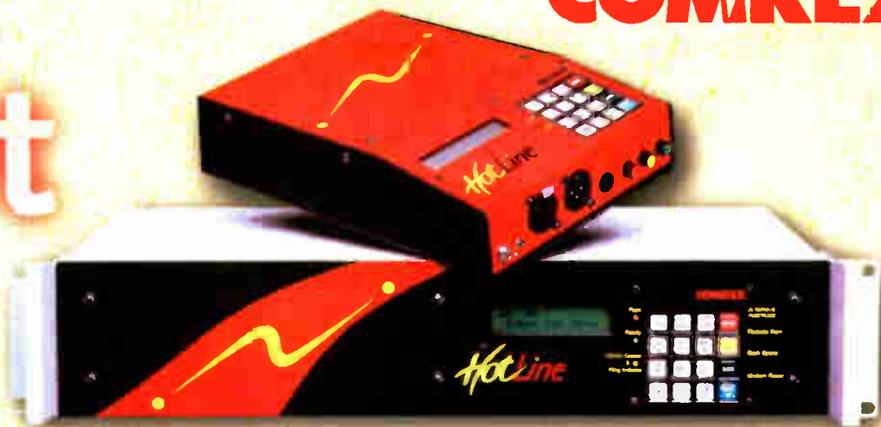
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# Clears

► Continued from page 22

deal with the super-power requests from CCBS, WSM, WCCO, WWL and others that had been on file for more than a decade.

Their intent was to finally bring the entire clear-channel matter to a conclusion, but it would be five years more before the FCC completed the destruction of night-time clear-channel service.

The 1975 notice asked for extensive and qualitative data to support the coming judgment. To evaluate actual listening conditions, the Clear Channel Broadcasting Service commissioned nighttime listening tests of all 1-A stations. Station engineers recorded each other at night and prepared the tapes for submission to the FCC.

In re-opening the matter, the FCC also

## Originally There Were 40 1-A CLEAR CHANNELS

Now there are far less than that.

Many have been duplicated. Additional fulltime stations have been placed on the channels. Service to rural and small town Americans — the very people who need and use radio more than most other groups — has thereby been degraded.

Furthermore:

Once a second station is assigned to a CLEAR CHANNEL on a day and night basis "creeching paralysis" sets in. Other such assignments follow. Some duplicated CFAR CHANNELS now have as many as eleven stations operating thereon at night — all of them in heavily populated well served areas.

Thus, the CLEAR CHANNEL natural resource is gone forever and the only possible means of improving service to underserved Americans — higher power — is forever barred on the channel.

Duplication or breakdown of CLEAR CHANNELS leads to less service to underserved sparsely settled areas and more service to well-served core areas.

Duplication is irreversible.

In short, our too few remaining 1-A CLEAR CHANNELS must be kept intact.

level, they would apply for super-power, if that were the recommended solution. On the flip side of that coin, the FCC asked for comments on whether it should simply eliminate sky-wave protection altogether on the 1-A channels.

This unfortunate proposal was stimulated by certain congressmen goaded into action without the benefit of engineering realities by the Daytime Broadcasters' Association.

The 1975 docket would be the beginning of the end of clear-channel operation and the final trauma in a matter nearly half a century old. With the stakes involved, the paper record was incredible. In response to the 1975 proceeding, many early ideas on how to serve white areas were dusted off, refined and resubmitted.

Among them was a proposal to use the band 150 to 185 kHz for extended ground-wave coverage. (RW readers will recall our series' description of such a proposal,

submitted back in the early 1930s.) The Corporation for Public Broadcasting, looking for frequencies, suggested a reduction in channel spacing to 9 kHz or even 8 kHz and suggested expanding the band above 1600 and below 540 kHz.

The NAB even suggested using FM translators to extend AM coverage! And for the first time, the FCC suggested in its 1975 notice that FM might be included in calculating nighttime service areas.

And the Daytime Broadcasters Association was back. This time they proposed an extension of Pre-Sunrise and Post-Sunset Authority. Later, they would propose breaking up the clears to provide additional Class IV local stations, even suggesting that 1-A operators *should not be protected beyond their "home market."*

In response to general questions about interference, respondents suggested the best way to combat rising interference would be across-the-board power increases "on all channels except the 1-As and 1-Bs." AT&T weighed in on the question of interference that might be caused by super-power, suggesting that AM super-power would cause "unacceptable interference to telephone equipment."

Emotions and unfortunate proposals aside, the official record would morph into some thoughtful technical analysis.

The issues under consideration for a

possible super-power environment included blanketing, self-interference and adjacent-channel interference. Also discussed were the potential effects of non-ionizing radiation and a sky-wave cross-modulation effect variously labeled the "Amsterdam" or "Luxembourg Effect." (It had been demonstrated that high-power RF actually changed the levels of ionization in the atmosphere and even caused plasma wave generation.)

High-power advocates countered NIR concerns by commissioning a study by Fritz Leydorf, a P.E. who took part in the original WLW high-power work. Leydorf went into great detail about how "folks had lived and worked near the high RF fields and apparently felt no ill effects."

## ISDN

► Continued from page 24

non-real-time feeds, but we doubt that a broadcaster would want to depend on the Web for live audio today."

Art Reed, GM of dealer Bradley Broadcast Sales Inc., is a veteran of the format wars. "The advantage of ISDN over other services is its ability to be installed anywhere, like a phone line," said Reed. "Even the fastest T3, DS3 or other IP-based Net connections are at the mercy of other traffic, so I don't think the bandwidth is out there with sufficient reliability at this time to allow the equivalent of dial-up, real-time audio transmission."

### Feasibility

Reed predicts that TCP/IP connectivity might be feasible.

"We already have the technology, but what we don't have is the communications infrastructure that supports it," he said. "Current codec products are designed to work within the limitations of our communications systems, and they work quite well. But one day when our world is wired end-to-end with fiber optics, we won't need these any more."

Other options are out there, too. Infinity Seattle engineer Tom McGinley, who also serves as RW technical adviser, points out that cable TV modems for Internet access are becoming available to businesses like radio stations.

"They perform as fast and even a bit faster than a T1 for downloading at a much lower cost. Upload speeds are slower, up to 512 kbps. I just installed one



In our final installment we'll see how all the brouhaha turned out.

at the house from AT&T cable. No installation cost and only \$19.95 a month for six months, then \$39.95 a month."

Business rates are higher, of course, but McGinley said the relative cost saving is attractive. AT&T business broadband cable service starts at \$200 installation and \$199 a month for three computers.

"My T1 at work costs over \$1,000 a month. And cable modem-delivered Internet puts DSL to shame, in my opinion."

Yet another entry into the engineering game of alphabet soup is VPN, Virtual Private Network.

"It's already being used now and you'll see it in the upcoming Olympics, too," said Ken Tankel, northeast regional sales manager, Dalet Digital Media, and a former broadcast engineer.

"I don't see anything replacing ISDN, but this system is good for audio that doesn't have to be broadcast in real time."

VPN offers a more affordable way to communicate, essentially taking an Internet connection and making it appear as a private WAN connection.

"With a VPN, you don't have to lease a dedicated line," said Tankel. "A combination of passwords and other security measures ensure privacy."

For about \$40/month, a DSL line can be used, or a VPN can be set up with an ordinary phone line.

"The physical carriage and the bandwidth have nothing to do with the VPN," said Tankel. "This one is still being standardized, but it's out there on the horizon."

■ ■ ■

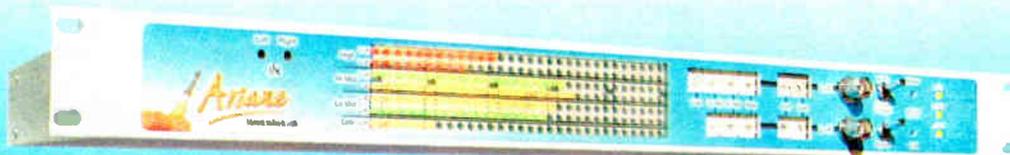
What do you see on the connection horizon? Tell us via e-mail to radioworld@imaspub.com

asked for information on the potential social and economic impact of operation in excess of 50 kW. Among the issues was the FCC's concern that super-power would place an undue concentration of influence in the hands of a few; that this could impact the national advertising picture and perhaps even hinder the ability of smaller stations to secure network affiliations. Music to the ears of the opposition!

The 1975 notice also asked the 1-A licensees to declare whether, and at what

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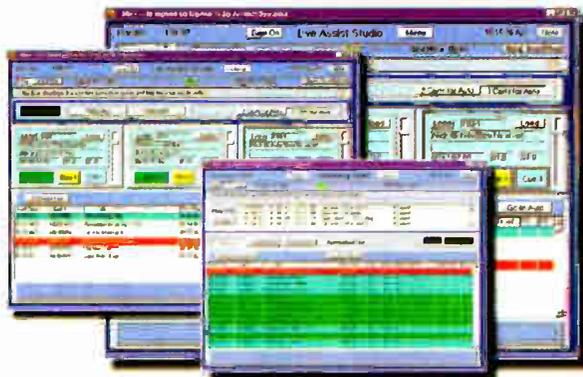
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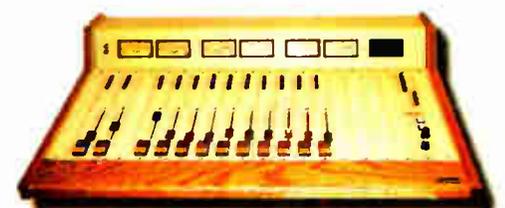
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# Don't Be Called for Interference

*Tips to Help You Fight Telephone RFI Complaints  
In the Age of Cheap Consumer Handsets*

**Pete Krieger**

The author is a former customer systems engineer for Lucent Technologies and is owner of K-COM Telephone Interference Filters.

An irate homeowner tells the engineer, "Your station is turned up too high. I'm hearing you on my telephone."

A motel chain builds a 120-room facility 500 feet from your tower site and every phone is inoperable.

The fax/modem at a nearby business isn't working; they're getting the radio station on the line.

Does anything sound familiar here?

While telephone RFI dates back to the early days of broadcasting, it has become a larger issue in recent years.

Poorly designed telephones continue to flood the consumer market, creating interference where it didn't previously exist. Questionable installation techniques and poor wire often go into new construction or remodeling, defeating the interference protection designed into the twisted pair balanced circuit.

With age and exposure to the elements, telephone wiring inside buildings and occasionally on telephone poles can deteriorate and function as radio receivers.

These are typical of the factors that can heighten a station's interference profile, even in the absence of changes at a station's physical plant.

**That's all you need — people screaming and threatening to sue you when your station is coming through on their telephone.'**

— Bill Glasser  
WHBC-AM-FM

"We do it because we want to be good neighbors," he said.

WKOX(AM) in Framingham, Mass., needed city approval for a planned antenna

In the FCC's own words, telephone interference is not the result of a rules violation by the transmitter operator: "Telephone interference generally happens because telephones are not designed to operate near radio transmitters and the telephone improperly operates as a radio receiver."

While the legal language is crystal-clear, station managements realize the problem contains public relations ramifications.

Bill Glasser, DOE at WHBC-AM-FM in Canton, Ohio, said management does not take a hard-line legal approach.

"That's all you need — people screaming and threatening to sue you when your

reconfiguration to triplex three signals including 40 kW WMEX(AM).

According to Paul Andrews, CE, "When we approached the city for a special permit, there may have been 75 people in attendance and the atmosphere was hostile. They extracted from the station an agreement to solve interference complaints. And of course 95 to 99 percent ... were telephones."

Prior to this, the station had received only occasional complaints, he recalled.

"This was quite a shock. I didn't realize there were that many people who had problems with their telephones."

In his role as interference guru and goodwill ambassador for the station, Andrews has solved problems at more than 200 homes and businesses.

"I go through a lot of filters," he said.

How much in time and resources should a station spend to treat interference complaints? Broadcasters need to make that judgment based on their circumstances.

"We never suggest a station get into the practice of making purchases to satisfy a problem other than possibly filters or inexpensive trials," said Whit Adamson, president of the Tennessee Association of

See PHONE RFI page 29 ▶

## Ten Tips to Handle Telephone Interference

1. Install a filter at the line input of an affected telephone. This is the solution in most cases. If you achieve a noticeable improvement but some interference remains, add another filter. If necessary, install a hard-wired filter on the phone's circuit where it originates at the service entry.

2. If interference continues after trying filters, simplify the problem by unplugging all phone equipment from the jacks. Don't overlook spike suppressors and modems. One at a time, reconnect and listen. This can identify one or more defective or RF-prone devices that are the source of interference.

3. Interference can originate at the service entry where poor connections and/or corrosion may set up rectification. In these cases, rectified audio (rather than RF current) is distributed through the wiring and tends to be of equal volume on all phones. Clean and tighten connections.

4. Interference can enter from the phone company drop. Confirm this by disconnecting the customer side of the demark and monitoring the drop. If interference is present, they are responsible, but getting cooperation can be frustrating.

Develop a relationship with someone on the technical side who can help you cut through the bureaucracy. Paul Andrews, at WKOX, said that demonstrating ability to correctly diagnose problems yielded the direct number for the repair foreman.

5. With business telephone systems, the best plan of attack is to filter incoming lines ahead of the switch. If required, add filters on the switch output and possibly at individual phones. Where telephone headsets are used, a filter on the spring cord may be needed.

6. An exceptionally long run of wire in the telephone circuit can intercept massive levels of RF current. If you find

that filters at the phone end and the service entry aren't enough, it may be necessary to physically cut the wire at one or more points. Then, you should insert hard-wired filters to electrically break-up resonance.

7. As an alternative to the above scenario involving a long span of wire, I prefer the following. Run a new dedicated circuit directly from the service entry. See if you can temporarily run the wire on the floor and cut it intentionally long by 50 or 60 feet.

Use some of the excess to wind one or more decoupling baluns, starting at mid-point. The baluns consist of 10 to 15 feet wrapped neatly at a diameter of six inches. Activate the circuit. If interference traces remain, adjust the number of turns and/or try more than one balun.

Once you have the fix, run your wiring as necessary through the walls and ceiling. Every time I use this method, the interference is eliminated. Conduit is not required or recommended.

8. If you are doing new construction or expanding your telephone system, insist on the highest possible quality wire. Category 3 or better is my choice due to its very aggressive, interference-fighting twist on both the individual pairs and the group. I find that shielded wire has no helpful effect on common-mode RF; it only changes the velocity factor.

9. One possible interference entry point is the AC power line. Effective RF suppression devices are available from manufacturers such as Trip Lite.

10. If you expect to be doing diagnostic work on a regular basis, invest in a good quality telephone-monitoring test set. Use a Dracon TS21 or similar unit to achieve convenient access to telephone circuits and make your evaluations with an instrument that is practically RF-immune.

— Pete Krieger

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At LPB, we've been thinking and buying our way to console excellence. We first thought-up the award winning Blue<sup>5C</sup> on-air console, and then bought-up industry renowned manufacturer Fidelipac, maker of the Dynamax on-air console line.

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**GlobalMedia.com** created a customized GlobalMedia player for Buckley Broadcasting station **WOR(AM)** in New York. GlobalMedia will stream the station at [www.worlive.com](http://www.worlive.com) ...

**BRS Media's** dot.FM, reported strong response. Some of its newest sites include London's **EJazz.FM** ([www.ejazz.FM](http://www.ejazz.FM)), Italy's **MAXIMAL.FM** ([www.maximal.FM](http://www.maximal.FM)), Tokyo's **i-Radio.FM** ([www.i-radio.FM](http://www.i-radio.FM)), SkyPlus.FM ([www.skyplus.FM](http://www.skyplus.FM)) from Estonia, and Poland's **TOK.FM** ([www.tok.FM](http://www.tok.FM)).

BRS also claimed traditional radio stations such as LA's **POWER 106** ([www.power106.FM](http://www.power106.FM)), Tacoma's **FunkyMonkey 104.9** ([www.funkymonkey1049.FM](http://www.funkymonkey1049.FM)), Boston's **WBCN** ([www.wbcn.FM](http://www.wbcn.FM)), and Philadelphia's **B101** ([www.b101.FM](http://www.b101.FM)). ...

Local billing service company **TN Media** signed a five-year agreement with **Columbine JDS** to employ the Spotdata electronic invoicing system.

Christina Mantoulides, senior VP, director of regional buying operations, said, "We have made a commitment to stations that we will no longer require paper invoices if stations have the capability to send their invoices electronically. Spotdata will allow us to view and print facsimile invoices in addition to downloading the invoices off the Web site directly into our agency software." ...

**Studer** reported sales of its **D950 Digital Mixing System** to broadcast facilities. **NPR** purchased three for its facilities in Washington. The **CBC** has purchased three for use in Vancouver and Halifax. **Turner Broadcasting** installed four **D950s**; **E! Entertainment**

**Television** bought one for an air studio in Los Angeles. In France, 12 **D950** systems have been purchased for radio and TV. ...

The **CBC** also placed orders earlier this year for more than \$360,000 worth of **International Datacasting Corp.'s** FlexRoute digital audio satellite broadcast system, to upgrade **CBC Radio North's** satellite radio distribution system, which is based on analog low-level audio subcarriers and band-edge **SCPC** carriers on video transponders.

The digital format will enable **CBC Radio North** to uplink radio programs from Yellowknife, which will be rebroadcast to listeners across the north via **FM**.

"Who's Buying What" is printed as a service to our readers who are interested in how their peers choose equipment and services. Information is provided by suppliers.

Companies with news of unusual or prominent sales should send information and photos to **RW**.

## Phone RFI

► Continued from page 28  
Broadcasters.

He manages a cooperative effort to mitigate station-to-listener interference problems. "Most stations know to reference the complainant to us as a first line of defense."

If a complaint go direct to **FCC**, Adamson's staff acts as mediator with the blessing of the Atlanta District **FCC** office.

"We talk with station managers to ensure that they are right on top of a problem or they'll get with their engineer to get a complete check-up and get back to us."

He said sometimes the local electronics store is brought into the equation.

"Once everyone is convinced they are where they are supposed to be, then we can go back to the complainant. This relationship has worked great over the years to the satisfaction of the public, the commission and the licensees."

Phone interference is sometimes more of a problem for the station than it is for neighbors. At **WNQM(AM)** and **WWCR(SW)** in Nashville, the studios and offices are at the transmitter site consisting of four 100 kW shortwaves and one 50 kW **AM**.

Owner **George McClintock** said phone interference from shortwaves causes problems in the extreme. "The line has so much **RF** coming in, I put filters at the input of the phone unit. It is made of plastic and there is no shielding and the **RF** is just slam-dunking on it. I put a (metal) box around it with a front door so you can open it. It seems to help."

He uses **RF** shielding extensively throughout the plant. The floor, the ceiling and the walls are screen mesh copper. Telephone wiring is distributed in conduit separate from station audio, control and power wiring.

**RF** chokes are used extensively.

"All the filtering in the world doesn't help you until you've found out how it is entering. That's the point where you eliminate it. You use filters up close to the phone. If that doesn't work, I look at the spring cord. With the **AM**, I don't think I've had any problem I can recall caused by the spring cord. But at some point it runs across part of the wavelength of shortwave and in comes **RF**."

■■■

Tell **RW** about your tricks for handling phone interference complaints at [radioworld@imaspub.com](mailto:radioworld@imaspub.com)

# Experience. Stability. Vision. And Max Turner.

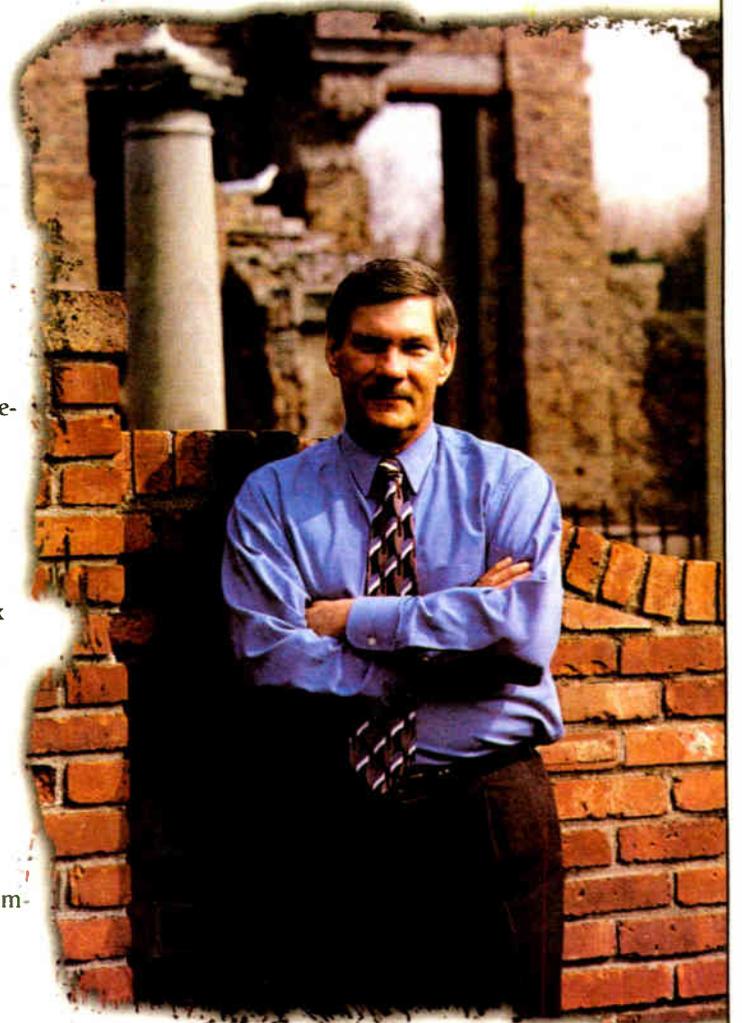
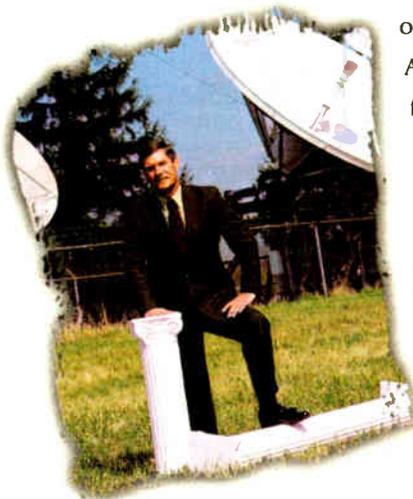
Here's a guy who makes the most of his opportunities. After ten years of on-air work at **WFMS**, Max wanted to better utilize his electronics skills. **Susquehanna** gave him the chance, with a promotion to Chief Engineer.

Then, just two years ago, as Engineering Manager of three Indianapolis stations, Max had the opportunity to fulfill a lifelong dream.

"My dream," he says, "a total rebuild of the facilities...a chance to design the studios the way we

always wanted, with state-of-the-art equipment."

As he took the stations from records and carts to a touch-screen digital operation, Max enjoyed total support from the corporate office. In his words, "Susquehanna has the best group of engineers in the industry. We all communicate and share ideas."



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## Max Turner

Regional Engineering Manager  
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## GUEST COMMENTARY

# Angry at Online 'Squatting'

William Barnett

There are many scammers out in cyberspace, that much we know. Some are far worse than others.

In my opinion, the worst offenders are those that have "reserved" just about every possible four-letter combo starting with K or W and ending with dot-com.

If you try to type in the name of a station that doesn't already have a site, a Web page will pop up proclaiming, "This domain is available at *name-of-the-cyber-squatter.com*."

If you use the InterNIC's WHOIS,

for an example, the system notifies you that the domain name has been taken. Then the "server name" says, "You can buy this domain! Call 1-800-xxx-xxxx!"

I want to puke.

## A shock

We discovered this over a year ago, when we wanted to get unique dot-com domain names for each of our stations, but all four were "taken."

I eventually discovered what was really going on. The company settled for dot-net domains, instead of dealing with that scammer.

When I tried again just the other day, instead of an error, I now get the scammer's own Web page. It informs you that "This domain name is available!" and has the scammer's name emblazoned on it.

I don't even want to dignify them by mentioning their name.

If you were to click the link, you'd discover that you could acquire the call letters of your station for — brace yourself — a mere \$2,500 minimum bid.

When I saw this, I actually yelled out loud.

I am angry. I wonder how much longer these people are going to get

away with this abuse. In my opinion, the domain name should only cost \$70.

Here is an excerpt from a paragraph taken from the InterNIC Web site at <http://rs.internic.net/faq.html>:

Q: *Someone else has registered my company's name as a dot-com domain name. What is the process for resolving my complaint?*

A: ... In disputes arising from registrations allegedly made abusively — such as "cybersquatting" and "cyberpiracy" — the uniform policy provides an expedited administrative procedure to allow the dispute to be resolved without the cost and delays often encountered in court litigation. In these cases, you can invoke the administrative procedure by filing a complaint with one of the dispute-resolution service providers listed at <http://www.icann.org/udrp/approved-providers.htm>. For more details on the uniform dispute resolution policy, see <http://www.icann.org/udrp/udrp.htm>

If I read this right, the legitimate applicant for said domain is virtually guaranteed to win the dispute, because the squatter obviously has no genuine intention of using that name, only milking it.

I do not own the station, so it is not my place to pursue. Therefore, I'm curious if anyone else has taken that route or is considering it. If so, it would be great to know the results.

**I am angry.  
I wonder how much  
longer these people  
are going to get away  
with this abuse.**

Personally, I really hope that these cyber squatters who bought all of those hundreds (if not thousands) of call letter domains lose every dollar (or pound, whatever) in court battles, as one by one, every legitimate owner of those W and K domain names challenges them and wins under the ICANN Rules.

On another, also disturbing, note I discovered that some porn sites have filled the bottom portion of their home pages with numerous call letters — with the font color and background color the same, so it's not normally visible in the browser — making their site show up if you search for your station's calls with a search engine.

Sick! >:[

■■■  
*This commentary originally appeared in slightly different form in an online discussion group. William Barnett is chief engineer for a Connecticut AM station. Reach him at [willieb@compuserve.com](mailto:willieb@compuserve.com) and copy your message to RW at [radioworld@imaspub.com](mailto:radioworld@imaspub.com)*

*RW welcomes other points of view.*

## Introducing AXS3: Scott Studios' Affordable New Digital System

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AXS 3 is also radio's first *affordable* music on hard drive system with *triple overlap* to *three separate console faders*. Your live jocks get the ultimate in level control and mixing ability. For unattended operation, AXS 3's voice trax auto-fades music under voices smoothly, bypassing the console.

**Air Studio Production Bonus:** AXS 3 also gives you *another* stereo production output and record input. You can record and edit phone calls or spots and auto-delay news *and* audition them in a cue speaker while playing triple overlap on the air!

**Premium Hard Drives:** The 3 also tells you that AXS 3 gives you a *3 year limited warranty* on hard drives. AXS 3 uses *exceptionally reliable* and *fast* 10,000 RPM 18GB (or 20GB) *hard drives* from top quality suppliers (like IBM, Seagate, Western Digital and others you trust) to keep your precious commercials, jingles and other recordings *always* at your fingertips. Other systems cut corners with slower and less reliable drives that sometimes choke and sputter with triple overlap and music from hard drive. AXS 3 won't jeopardize your cash flow with unreliable drives that might crash.

**Awesome Sound Quality:** AXS 3 uses only the best *non-proprietary* +4 balanced digital audio cards by Audio Science. These are also sold by most of the major brands of digital systems, but only in their top-of-the-line models costing *lots more* than AXS 3. Scott Studios uses premium audio cards in all our systems, although AXS 3 software will work with any good Windows sound card. Of course, if any card develops a problem, we'll replace it under warranty. You'll also be able to get these non-proprietary audio cards from us, the manufacturer, and several other vendors of high end digital audio systems.

**Easy to Use:** AXS 3 was *designed by jocks*, for jocks. It's 100% intuitive. AXS 3's big on-screen intro timer and separate countdown timers on every deck make pacing a snap.

If you know how to work cart decks, you know how to work AXS 3. It's so simple, everyone can run it! AXS 3 has *big* buttons. Other systems use complex multi-step mouse mazes. AXS 3 gets things done with one simple touch.

**MP3 Import:** AXS 3 plays MP3's, MPEG II and uncompressed (linear) recordings.

**The Music's Easy:** AXS 3 is delivered with *your* music library already pre-dubbed for you at no extra charge. AXS 3 also comes with Scott's time-saving TLC (Trim, Label & Convert) CD Ripper software. It runs in your Program Director's computer and uses a CD ROM drive to digitally transfer 5 minute songs to hard drive in 15-30 seconds.

**The Best Voice Tracking:** AXS 3 works with Scott's optional Voice Trax. Announcers hear surrounding music and spots in their headphones in order to match their voice to the moods and tempos of the music.

**The Best Air Studio Recording:** AXS 3's built-in recorder has a graphic waveform editor for ease of recording and editing phone calls, spots, news or announcer lines. AXS 3's log editor lets you add new items to your schedule.

**Quality Hardware:** You get an industrial Pentium III rack mount Windows computer and a 1RU (1-3/4") tall case is available when space is tight. Jocks can use a keyboard or mouse, or optional button box or touch screen for fast control.



**Jocks love AXS 3, (shown with Scott Studios' 1RU rack mount case and optional flat panel touchscreen). AXS 3 works with three cart players on the right side of the AXS 3 screen. The program log (at left) automatically loads the decks, or you can insert anything from pick lists. The far left of AXS 3 has 12 Hot Keys that can play any time at a touch of a Function key.**

**The Best Tech Support:** Toll-free emergency phone support is available 24 hours a day, 7 days a week (including holidays). Software updates with new features are available for AXS 3 customers several times per year to stations on our annual support plan.

**Easiest to Install:** AXS 3 comes with a pre-wired connections to CAT5 LAN cables for snap-in installation on the AXS3 end of the wiring. Satellite control logic is also a plug-in snap. Your first two satellite audio connections for music format and news network, as well as another for your production console, are built into AXS 3 so interface cards or external switchers are not required.

**LAN and WAN:** AXS 3 and other MPEG and uncompressed WAVE Scott Systems use the same recordings. You don't have to dub the same spot several times for several stations.

**The Best Production Studios:** AXS 3 is compatible with popular multi-track systems you may already have, like Sound Forge, Vegas, Cool Edit Pro, Fast Edit and others. Simply add our time-saving \$500 no-dub instant LAN spot upload option.

**AXS 3 is Affordable:** Satellite AXS 2 systems start at \$7,995 including built-in GPI and switcher. Triple overlap AXS 3 includes AXS 2 and adds 18GB of music on hard drive for only \$9,995 delivered. For details, check [scottstudios.com](http://scottstudios.com) or [axs3.com](http://axs3.com) or call 800 SCOTT-77.

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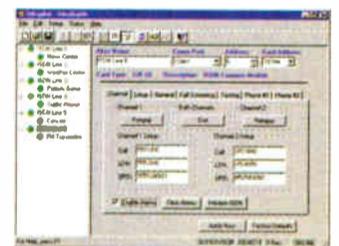
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World Radio History

# GM Journal



Web Watch  
See Page 34

Radio World

Resource for Business, Programming & Sales

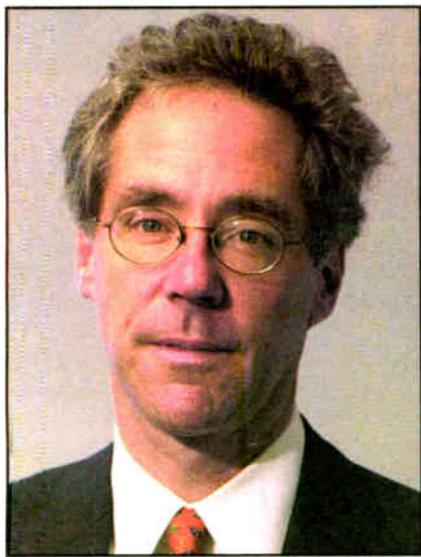
September 27, 2000

## News You Can Use ... And Can't

Ken R.

People in radio often kid that "Rip N. Read," a mythical character whose name signifies that no original content was developed by the station, delivers their newscasts.

WSPD(AM) in Toledo, Ohio, isn't laughing anymore.



Fritz Byers

Last Sept. 29, The Toledo Blade, a local newspaper, filed suit against the station, which was then owned by Jacor Communications.

The action, filed in Lucas County Common Pleas Court, claimed that WSPD(AM) and its morning host, Mark Standriff, were using information

See BLADE, page 42 ▶

## MORE POSTCARDS FROM RADIO HELL

The GM Journal "Managers From Hell" article by Ken R. (RW, June 21) generated many letters from readers who lived to tell of their hellish encounters with malignant radio bosses.

Radio World is always interested in your horror stories about working in radio. Send them to [radioworld@imaspub.com](mailto:radioworld@imaspub.com)

Here are a few of those letters that we received on Ken R.'s story.

Dear RW,

I was sure that Ken R. must have worked for some of the same stations I have worked for.

Right out of the Air Force in 1957, I went to work for a station at Great Falls, Mo.

This was about the time modern top-40 radio was getting started and the GM played us a few air checks from other stations, explaining how he wanted us to "tighten up" our air work, and, although we were a middle-of-the road music station, we needed to "sound" top 40 in our production and on-air performance.

At the same time, he announced he felt the announcers were "becoming too enamored with themselves" and he banned the use of *headphones!*

Lotsa luck! This guy hadn't been on the air since about 1938 and knew nothing about "modern" radio. Needless to say, the station sounded "like hell!"

And then there was the time in the '70s when I was chief engineer for an FM in Minneapolis. The GM, who had just taken over for a new ownership, decided to purchase a new FM transmitter.

Two other stations were co-located in our transmitter room and both used the Collins 830, which was state-of-the-art for the time.

I suggested we purchase an 830, partly because parts and equipment knowledge would be common with the other stations and because we knew the 830 would fit

in the transmitter room, located in the basement of the studio-office building.

The "old know-it-all" GM insisted we purchase a Gates transmitter — a great unit — but it was too tall to fit in the cramped basement. I noted that we would need to cut a hole in the ceiling of the basement to accommodate the Gates, but nothing would stop his determination. I was terminated because of my "un-cooperative attitude."

**He felt the announcers were 'becoming too enamored with themselves' so he banned the use of headphones!**

— Howard McDonald

When the Gates was delivered, the first thing they had to do was cut a hole in ceiling of the basement in order to install the transmitter.

This was the same guy who took a "beautiful music station with pizzazz" that consistently came in fourth in the Minneapolis-St. Paul area ratings and reduced it to a footnote in the Twin Cities' Arbitron.

Howard McDonald  
Production Director,  
Money Talk  
KSBN(AM)  
Spokane, Wash.

Dear RW,

Every now and then, a GM gets the walking papers.

About 25 years ago, I made a move to an eastern North Carolina radio sta-

tion, which at the time was owned by what is now one of the top-25 radio chains. The chain had not owned the property for very long.

The country FM outlet had an annual local contest with about 20-25 area sponsors that they had run for many years.

The prize was a weekend trip to Nashville, Tenn., I think one couple per sponsor. Listeners were invited to enter the contest by filling out entry forms at

the sponsor locations. On the surface, it seemed to be an up-and-up contest.

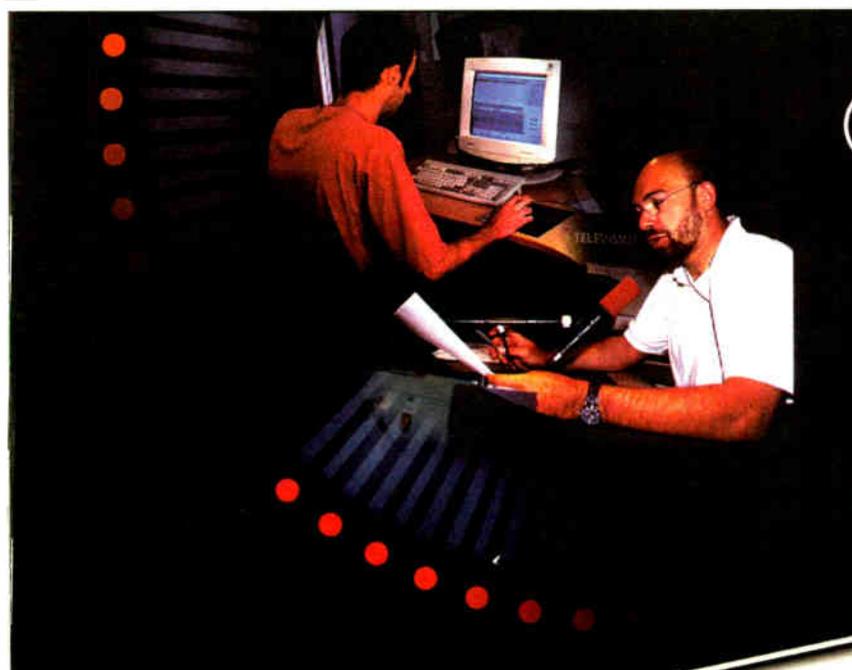
One day, a few days before the contest was to end, I noticed a few of the entry form deposit containers were already in the sales office.

I thought this to be a bit strange, as none of the containers were full, and should still have been at the sponsor locations for more entry submissions.

As the new guy in the station, I didn't know exactly what to make of this, but I did mention it to one of the copywriters, whom I knew was not on the coziest terms with management.

After the entry drawing date, my copywriter-friend told me she thought the contest was rigged, and when I asked why, she showed me a list of the current winners and a list of the last year's winners.

See RADIO HELL, page 38 ▶



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## WEB WATCH

# The Fierce, Raw, New Frontier

Carl Lindemann

Web Watch is a roundup of all things radio and the Web. Send your news and tips to LD@imaspub.com

## 2B or not 2B?

This isn't even the question for those scrambling to tap the enormous potential of online business-to-business transactions. To take on this new frontier, numerous companies are forming strategic alliances to market media time more effectively.

MeasureCast Inc.'s new "Streaming Audience Measurement Service" SAMS data is as fast as a Nielsen overnight for TV — and promises to be far more accurate.

As it is, it takes Arbitron months to get its online radio ratings out.

Meanwhile, the upstart has signed its first client: BroadcastAmerica.com.

John Brier, BroadcastAmerica's CEO, sees this as a major turning point.

"The streaming industry desperately needs a credible third-party measurement service that gives advertisers the information and the confidence to make critical online buying decisions," he said.

Without third-party measurement, getting a handle on what ad time is worth on BroadcastAmerica's 600 radio stations is more about faith than finance.

Whatever becomes the standard for streaming media ratings service, it will have to be virtually instantaneous to feed the speed demanded by B2B media buyers and sellers. Anything less will be a tough sell.

Meanwhile, MusicBooth and Interep will be working together to sell targeted advertising on MusicBooth's AdAcoustics Network.

This partnership is Interep's foray into the ad insertion mania that will soon dominate Webcasting. (Watch for in-depth coverage on ad insertion in RW.)

EMadison, an online venue for traditional media sales, and technology vendor Video Communications Inc. are partnering up to create what they described as "totally seamless negotiation and transaction processing combined with state-of-the-art sales and traffic management."

What all this means is that the promised advantages of online media are

coming true. Accurate, instantaneous understanding of who is listening to what, coupled with the ability for media buyers to respond accordingly, will make today's broadcast business model seem woefully inadequate.

Imagine being able to make an instantaneous "buy" on, say, "Imus." What if a particular guest draws in a certain target demographic in the first hour of the show?

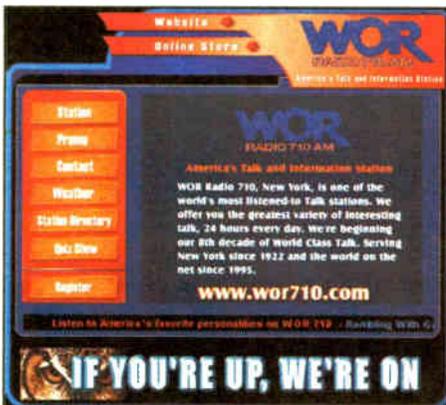
Buyers might want to grab time on the next spot set...even before the guest is off the air. Compared to such targeting techniques, today's mass media is like using an H-Bomb to swat a single West Nile Virus mosquito.

## Winners

The field of companies providing streaming services for terrestrial radio is winnowing out like "Survivor" contestants.

Survivors GlobalMedia and BroadcastAmerica continue their race for dominance. GlobalMedia has announced the acquisition of Magnitude Network from iCast Corp. for \$6 million in stock.

This brings an additional 100 radio stations across North America into the GlobalMedia fold and follows on the heels of the company's purchase of 212 contractual agreements from OnRadio.com in June.



WOR Player

Also, GlobalMedia announced that it had landed New York icon WOR(AM) as a client. Bob Bruno, WOR's GM, sees this as a key strategy to extend the WOR brand.

GlobalMedia's custom branded WOR player will likely be appearing on desktops near you soon.

Though the combination of Web and radio has caught on faster than a "controlled burn" turns into a wildfire, there's still a huge untapped market, according to NetMedia Convergence President and CEO Birendra Roy.



His company's "Easy/Link" program aims to set the virgin territory smoking.

"There are more than 11,000 stations and only 3,000 existing broadcast Web sites," he said.



Birendra M. Roy

Roy promises that his service can painlessly put even the smallest station on a par with the largest through a custom-designed site and "cybermall."

He claims nobody else does this at the moment.

Perhaps. We'll let you know if and when their clients catch fire or decide it's a smoke and mirrors show.

## Action!

Something to consider: Be Here Corp.'s 360-degree Internet video offered online "viewers" the opportunity to roam around the Staples Center during the Democratic convention.

Unlike static Webcams, "Be Here" technology realizes some of the interactive potential promised by New Media promoters.

Expect this to set the standard for live events — especially sports. (and even live concert events) broadcast by online radio stations.

Andrew Thau was appointed the com-

pany's CEO last month. Thau comes to Be Here (so to speak) from FOX Sports International TV, where he was senior vice president of operations and network development. Thau joins the ranks of the many traditional broadcasters who have moved into the online space.



Andrew Thau

And Be Here is just one of many in the race to add interactive elements to Web sites, (even radio's). One of its competitors might be the new "Ask the Experts" launch on the KCBS.com site.

The feature, a partnership between Broad Daylight and KCBS(AM), offers listeners better access to advertisers.

Broad Daylight's "Broad Mind" application gives inquiring individuals the ability to connect with advertiser's company representatives who can give more substance to advertising pitches.

According to Broad Daylight CEO Louise Kirkbride, the real value-add "Broad Mind" brings is the ability to do this without overwhelming advertisers with questions.



Louise Kirkbride

The system was tested on Sen. John McCain's Web site during the New Hampshire primary.

"Much of this is just common sense — the 80/20 rule in action." i.e., by paying attention to the 20 percent of the listeners with questions, you answer for 80 percent.

"People ask standard questions. So if you make it easy to post answers to these, you head off most of it," Kirkbride said.

In some ways, the Broad Daylight approach is a powerful new way to customize Web sites to audiences. It also promises to give stations immediate feedback when audience interests shift.

Other contenders in the Interactive free-for-all include SeeItFirst.com and Livecast who have announced a partnership to create "Livecast Video." The new service gives "click-through" connections to enhance Webcasts.

Its hot links are something like high-tech footnotes. The online audience can investigate different aspects of a live event. The first test of the service was in backstage interviews planned for the

See WEB WATCH page 40 ▶

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World Radio History

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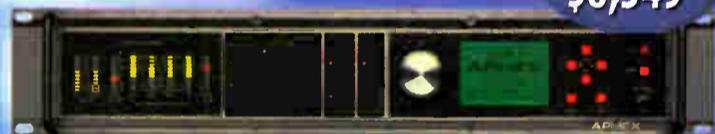
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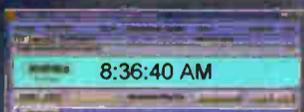


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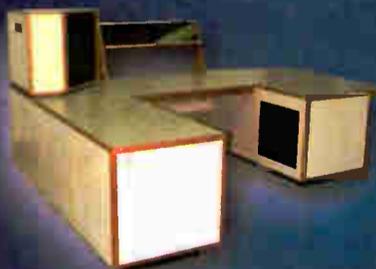
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If you've got the Matrix, you've got options, because this 1500-line codec allows for easy conversion to ISDN operation using Line Interface Modules (LIMs) for GSM wireless phones operation. These conversions simply slide-in modules. Features include: 15 kHz full duplex audio; 15 kHz line; 2 mic inputs (one is mic/line switchable); headphone output; line level output on XLR; -10 dBu tape input.

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# RADIO HELL

► Continued from page 33

Strangely, there were far too many duplicates between the two year's lists of winners to be coincidence, and as we studied the lists, the duplicated names all turned out to be folks associated with the contest sponsors, although they were listed as winning names drawn at other sponsor locations. It is a bit hazy for my recollection, but I'd say only about one quarter of the winners were legit.

We mentioned this finding to the sales manager, who immediately contacted the corporate management. The station manager was gone in a few days, and a new set of winners was drawn. This contest sleight of hand apparently had been run over the years by the same manager, under the former ownership, and to the credit of the chain owners, they immediately rectified the situation.

*Name Withheld*

Dear RW,

I roared at Ken R's "GM From Hell" piece. Change the names and I could swear I have worked for some of them.

Back in the mid-'70s I was in Colorado doing a full-time gig as chief at the popular adult AM, did a talk show and was chief at a small FM rocker on the side. The FM was a *killer* in the market overnight, attracted great talent and had a great mix — but the owner/GM was a bozo.

He had no experience in radio. We had no real equipment to work with, and Mr. X would only make promises. He would order equipment then cancel the order and not tell anyone for weeks at a time. It all came to a head when the production room board caught fire.

The power supply was completely burned up and it took most of the rest of the console with it, there was nothing left to fix. The jocks were screaming, the sales department was at wits' end and I had had it. I told Mr. X we needed a new board *now* or he would be out of business. Mr. X said he had a friend in Florida who sold used equipment.

I countered with "fine, but let me order and choose what we were going to buy." Mr. X agreed and I got on the phone. I ordered a used Autogram console, and

some ITC cart machines as a package.

Fine, but X got on the extension and all of a sudden, he and his friend were countermanding my choices with a homemade board (much cheaper though) and some cart machines I had never heard of.

That was it! I packed my tools, and

**The GM saw the gun on the PD's desk, thought it was a novelty cigarette lighter and 'lit' it. The slug lodged itself in the station's front door metal frame.**

headed out the door. That afternoon, Mr. X called. I was on the air at my other station as he alternately threatened me with bodily harm, then apologized at least six times. Each time I told him I would never work for him again. (at least my last check had cleared).

This was on a Wednesday. The next day went down in our local radio history as "black Thursday."

Starting about 8 a.m., the entire staff quit, one at a time, and headed to every station in town. By noon, Mr. X had no jocks, no sales department and no receptionist. (He hit on the female staff members in alphabetical order on a daily basis but that's another story.)

In two days the only air staff were high school kids. Mr. X disappeared a week later, just ahead of a lot of creditors, and everyone else found new jobs.

He lost the station but it survived and prospers again.

Some day I will tell you about the Christian station that went down, and the family owners who prayed around the transmitter. It came back on the air before I got there, and I never figured out how. That's one I think about but will never question.

*Dan Thomas,  
GM, CE  
KKPC(AM)*

*Pueblo Community College  
Pueblo, Colo.*

Dear RW,

At a station in Salt Lake City, our owner was the third largest landowner in the state, behind the U.S. government and the Latter Day Saints Church.

At the same time his holdings included a collection of large shopping malls in almost every western state, trucking com-

allowed by the CFR to offer engineering assistance to translator operators.

What I wasn't aware of at the time was that the owner of the translators, a dentist from Texas, had passed away years earlier and his translators had been operated illegally without any sort of authorization since his death.

Following an FCC inspection, the translators were shut down after an FCC inspection. What a strange way to increase listenership for the sales department's statistics!

And then there was the time that a GM phoned around midnight and asked me to help him align his new satellite receiver at his residence since he was really having a tough time with it.

He told me that he wasn't sure if the problem was in the dish, the receiver or possibly *sunfade* or sunspots.

I gently declined the assistance, referring him to the dealer that sold the system to him. The dealer, a good friend of mine, called me the next afternoon and told me that the GM had been scanning the northern sky for a signal.

And my favorite story is completely bizarre. A PD was an avid gun collector and marksman. A handgun had been left on the corner of the PD's desk.

The GM entered the office and saw the gun, thinking it was a novelty cigarette lighter. He picked it up and "lit" it as the PD jumped out of his chair! The slug found way through the PD's office wall and lodged itself in the station's front door metal frame.

The damage from the blast has never been repaired!

*Anthony Garza  
Chief Operator  
KRBL-FM  
Lubbock, Texas*

— Anthony Garza

panies and the huge business park that the station was located in.

His stations, radio and TV, were profitable.

For Christmas in 1988 he sent over a plastic cup, (it was about the size of a medium drink at Burger King.) It had three layers of colored popcorn and a card that read "to staff."

*Dale Nelson  
Cedar City, Utah*

Dear RW,

I was told by a New Mexico GM that part of my engineering duty was to inspect three translator facilities on a monthly basis just to make sure they were in good operating condition.

I was aware that our station was

## STATION SERVICES

### Carr Makes Broadway Debut

ABC Radio Networks' Howie Carr broadcast a special edition of his national radio show from Times Square in Manhattan in August.



Howie Carr

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"Howie Carr, Talk Radio" is broadcast to affiliates across the United States from WRKO(AM) in Boston. He is an award-winning columnist for the Boston Herald and an Emmy Award nominee.

For more information, contact affiliate relations at (212) 735-1111 or visit the Web site at [www.abcradio.com](http://www.abcradio.com), keyword "Howie Carr."

### 'HealthTalk' Adds Web Site

"HealthTalk" is a nationally syndicated weekly radio program that focuses on health and wellness. The show recently announced a Web site link to [GreenAcre.com](http://GreenAcre.com), where users can hear "HealthTalk," shop for books and products featured on the show as well research the 10,000 page Web site filled with health, nutrition and wellness information.



Matt Murray, Shannon Hoffman, Mike Lamb

HealthTalk airs on more than 50 stations and reaches 90 cities. Guests have included Dr. Dean Ornish, Dr. Robert Atkins and Art Ulene.

Shannon Hoffman co-hosts the show with Mike Lamb and Matt Murray while her mother Barbara Hoffmann is producer.

For more information, contact Margo Kane at (920) 498-2522 in Wisconsin or visit the Web site at [www.HealthTalk.net](http://www.HealthTalk.net)

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# Xenote iTag Is Two-Way Radio

**Bill Mann**

The iTag could be the answer to one of the oldest listener complaints: What was the name of that song you just played?

It happens all the time. People listen to the radio as they drive, hear a great song and then forget the name of the track and artist. Or the station just doesn't announce what they played.

Or, listeners hear an ad and don't have a pen and paper to write down the phone number or Web address and they just hope the radio station will run the ad again ... soon.

But will the iTag "click" with both stations and listeners?

The first two stations to beta-test the iTag, KKSF-FM and Houston's hit music KRBE-FM report that about a third of trial participants listen to more radio because of the iTag.

On average, according to Xenote, listeners used their iTags an average of seven times per week — and 20 percent of the tags created were for ads.

**Beta test**

RW found the same enthusiasm for the attractive little device from the sta-

In seconds, the song and ad tags are transmitted to Xenote, which then links to the stations' playlist automation systems or through a playlist tracking service.

The listener then receives the song's title, CD title and label, the artist and the ability to buy the CD after listening to sound clips. All are displayed on the listener's personalized, password-protected Web page.

There are links to Amazon.com and CD-Now. The iTag user can even get an artist bio or an album review. The iTag can store up to 40 tags between uploads.

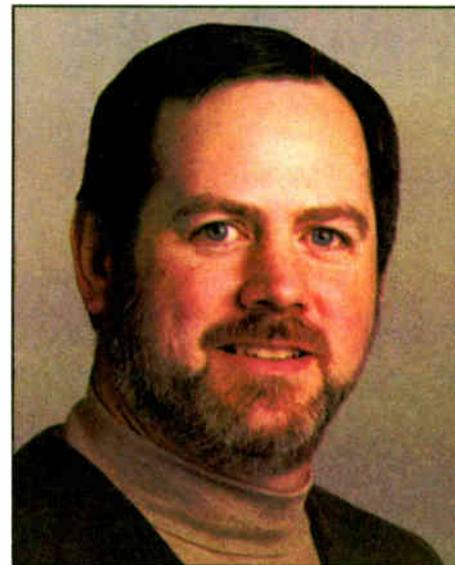
If the listener tags a commercial with the one-ounce iTag (which resembles a keyless-entry clicker), they'll get the following information from their computer: the name of the advertiser, a link to the advertiser's Web site and/or other purchase information.

Broadcasters using iTag can share specific response data with their advertisers and provide opportunities for supplemental, Web-based offers.

**Okay, but ...**

Why couldn't the user just go to the station's Web site instead of plugging in the iTag?

"I'm not in front of my PC all day, nor I am in the car listening to the radio all



Mark Kaufman

day," said Mark Kaufman, Xenote's CEO and co-founder of Xenote. "This allows you to time-shift when you want to be interactive with the station. This is largely about listener convenience."

Doug Sterne, manager of San Francisco's AMFM-owned KKSF(FM), said of the device, "We're pleased with the early results. It's reaching our super-serious core audience. And in smooth jazz, our artists are less well known, so we're a good place to try this first. We're also using it for station promotions."

Kaufman said, "PDs can use this as one more way: to keep listeners in tune with

See ITAG, page 40 ▶

**How many listeners can you get to click on, say, a Mercedes ad before that advertiser pays us a premium?**

— Doug Sterne

The iTag is a keychain-sized device that allows radio listeners to recover program information and buy music with just a click. Xenote Inc., a San Mateo, Calif., start-up located in Silicon Valley, makes the device.

KKSF-FM, a smooth jazz station owned by AMFM Inc. in San Francisco, was one of the first stations to beta test the iTag. In June, KKSF-FM became the first station to commercially launch the device.

Several of the initial eight FM stations that tested the device in its "beta" phase report that initial results are positive for the computerized clicker. Stations in four more markets have since begun tests.

tions that participated in its beta test.

The iTag, which is distributed free to listeners who call an 800 number and request it, allows someone listening to a radio station who doesn't know the name of a song to click a button on the iTag, get a happy chirp that signals a "tag" hit and digitally store the date and time. The iTag also tags commercials and/or station promotions.

At the listener's convenience, he or she goes to a computer, connects the iTag to the PC's serial port using a free cable Xenote provides, and uploads his or her tags at Xenote's Web site.



The Xenote iTag

configuration, every time a new song or ad goes on the air, the automation system will send the appropriate string to the XPC that will in turn upload it to a Xenote server and make it available to iTag users.

"We have interfaced to automation systems from Prophet Systems, Broadcast Electronics, Scott Studios, Enco and MediaTouch."

For more information, contact Tarbouriech at (650) 345-2777 x246 or via e-mail to [philippe@xenote.com](mailto:philippe@xenote.com)

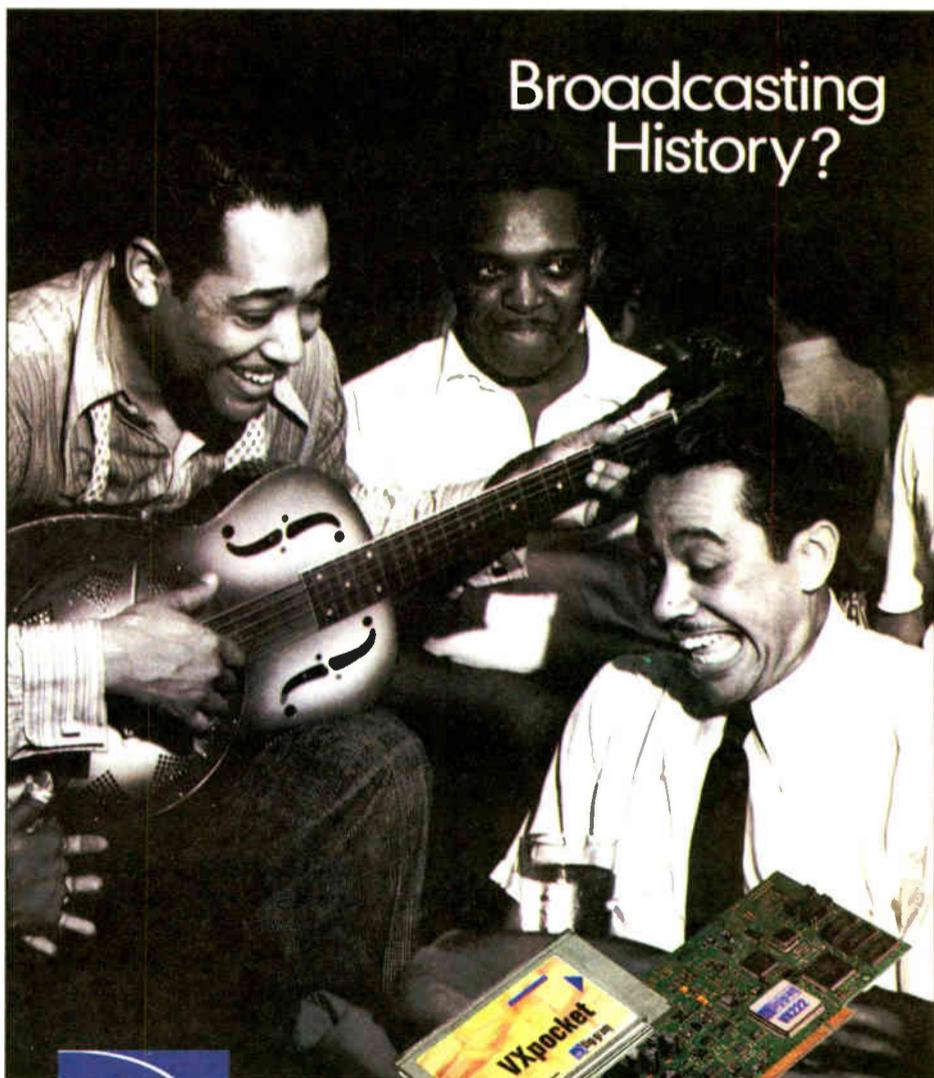
## Nothing to It: iTag Installation

How does iTag work? We asked Philippe Tarbouriech, vice president of engineering for Xenote Inc.

"The only requirement for a radio station to enable its listeners to use iTags and the Xenote service is that Xenote obtain, as close to real-time as possible, the playlist of that station," he replied. "We use the Internet to upload the information, using the same protocol as a Web browser (port 80, http) to one of Xenote's servers."

"If the radio station uses digital automation systems capable of directing the playlist stream to a server, Xenote can interpret any format."

"If not, Xenote will install a small rack-mounted server, the Xenote Playlist Cache (XPC) that will connect to the serial port of the automation system. With the appropriate



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# iTag

► Continued from page 39

station promotions, such as concerts.”

Sterne said “People we’re giving them to really like them,” he said of the “clickers,” which chirp when a tag is recorded and emit another sound when the device is full and needs to be uploaded. A third, bird-whistle sound tells you when your device has been successfully uploaded on your PC.

“They could become a research tool for us,” said Sterne. “It’s a great opportunity for a high degree of interactivity for core listeners. We pay hundreds of thousands of dollars to do auditorium tests. With the iTag, you’re not just relying on 100 listeners. Our station is all digitally encoded, and that makes accessing this information easy. But not all stations are encoded yet, of course.”

Sterne said 2,000 listeners have called the KKSF Xenote 800 number to request the free “bookmark” devices. Xenote handles the distribution of the iTags.

## NTR potential

A revenue-sharing agreement with Xenote, Sterne said, is down the road.

“We want to see if we can distribute it to a critical mass — say, 30,000. How many listeners can you get to click on, say, a Mercedes ad before that advertiser pays us a premium? We don’t know that yet.”

Mark Shecterle, marketing director of KRBE-FM in Houston, a top 40 outlet, said, “This service can give us nearly instant listener preference reports, which helps in our programming and research. By looking at the number of tags on specific songs and commercials, we’re getting a window into audience opinions we’ve never had before.”

## This service can give us nearly instant listener preference reports.

— Mark Shecterle

Shecterle said his station has experienced a phenomenal response.

“A lot of listeners like it. All the e-mail I see on it is positive. My wife’s not a big music fan, but she thinks it’s great. And she’s not a big PC user, but she has no trouble using it to upload.”

“My only regret is that the device is a little too big,” he said.

Shecterle noted that Xenote had pulled its ads off his Texas station while awaiting the merger with another company.

It appears that venture capital funding, not a merger, may be what lies ahead for Xenote.

Kaufman said in late summer, “We continue to have discussions with several potential financial partners. I can’t give out any more information, other than to say I’m confident we’ll move forward.”

But Kaufman assured RW that the iTag is not in any danger.

Media analyst Van Baker, vice-president for Consumer Platform Research at e-Market Intelligence, is familiar with the Xenote device and gave this upbeat assessment on the iTag:

“The technology seems to work as described, and it does offer clear value to any customer who has suffered the frustration of hearing a song that they like, only to find that they don’t know what the title or artist is for the song.

The iTag is cheap enough to give away at radio promotions and provide a differentiator to stations. The challenge for Xenote is to get the major radio players in the fold.”

SMOOTH JAZZ  
KKSF 103.7

Marge Arnold is directing of marketing and promotion for Infinity Broadcasting’s WXRT(FM) in Chicago, which broadcasts an AAA music format. Arnold said her station’s experiment with the iTag is working well.

“They feed us data. It hasn’t even been promoted or advertised over the air, only in our listener magazine, and we’ve probably had 800 to 1,000 requests for iTags.”

“Normally you have to pay for access to this kind of database marketing information,” Arnold said.

## Limitations

While only one station per market could participate in the beta tests, Xenote’s Kaufman said that the iTag can be used for more than one station in each market.

Kaufman said that the newest-generation iTag can include four presets for different stations.

“You simply set up which four stations you listen to on your personalized Xenote Web page. Then, when you want to tag a specific station with the iTag, you click

the button once for the first station, twice for the second station, etc.,” said Kaufman.

Another problem with these beta models is that they can only upload through a PC, but Xenote promises a Mac-compatible iTag soon.

Kaufman said Xenote recently added four more markets for a total of 12.

“We’re expanding,” he said, “and in total, users can now sign up for over 50 different radio stations in the country. We have four ‘multiple-station’ markets, with 12 stations in L.A., 10 in New York, 15 in San Francisco and 10 in Seattle.”

“The future of the iTag is a positive one,” said the company’s co-founder and newly appointed CEO. “We’re preparing to build more devices and we’ll be adding additional multi-market stations in the future.”

He said Xenote’s plan is to “develop a relationship with eight to 12 radio stations per market.”

Some who have requested the iTag haven’t been getting theirs quickly enough. Kaufman confirms that there’s

been a backup in production for the devices while the company’s new manufacturing plant comes online.

“We’ll be keeping up with demand as our new plant in Asia kicks in,” he said. “That should clear things up quickly, and we expect to fill all our back orders soon.”

Kaufman said the company sent out 6,000 iTags originally, and has received requests for another 3,000.

Kaufman said, “People are using it more than we expected they would. And we’ve had double the number of tags for ads we thought we would — we’re finding 20 percent of our tags are for ads.”

David Layer of the NAB’s Science and Technology department has been following the iTag experiments and wrote about it in an NAB technical newsletter.

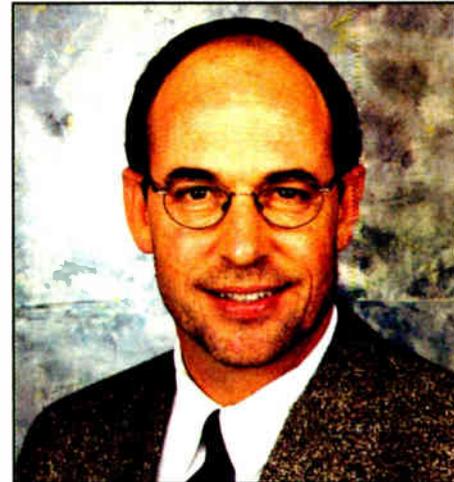
“I signed up through WQXR,” he said, “and a month later, I’m still waiting for mine. It’s an interesting idea. It could be the Holy Grail — if it works, it would link broadcasters to the sales of music, the listener and to advertisers.”

Layer said widespread availability of the iTag is expected in the third quarter of this year. He called the iTag “an exciting new Internet-based technology.”

A version that will synch with the Palm operating system is reportedly in development, as well as one that will work through cell phones.

As far as how the company is promoting and marketing the device with its client stations, Kaufman, a former radio program director, said, “We’re really flexible with stations. On KKSF, for example, we were buying ads and doing co-promotions.”

Kaufman said that the higher listener-ship reported in early results means participating stations “are keeping their core listeners even more closely in touch with



Doug Sterne

programming.”

Charles Morgan, Susquehanna Radio Corp. vice president and chairman of the National Radio Systems Committee said, “Great engineering concepts go nowhere unless there’s a market for them. The iTag is a great engineering concept.

“The process for uploading and downloading does seem a bit cumbersome,” he said. “Information about a song or advertising has to be instantaneous for maximum effectiveness,” he said.

“Technically, this should work,” Morgan said, noting the demise of such similar earlier experiments as radio coupons and RDS.

“The question is: Is there a market for it? I don’t see any. Only market-driven ideas succeed. Does the listener want this? That’s what we’re finding out right now.”

Managers and engineers can get more information on the iTag at the company’s Web site: [www.xenote.com](http://www.xenote.com)

■■■

Bill Mann is a free-lance writer based in San Francisco.

## Web Watch

► Continued from page 34

first annual Latin American Grammy Awards this month in Los Angeles.

Speaking of smoldering, the RIAA seems to have settled into a silent rage after the courts allowed the recording industry group’s all-purpose **Figure of Evil** (and what a foe they have in **Napster**) to continue operations until the trial date.

In anticipation of the upcoming showdown, various outfits are looking for ways to transform this **cultural phenomenon** — what some see as an outburst of **moral turpitude** amongst amoral college students — into something like a business.

Software provider **Topical Networks** and **FairTunes.com** have joined together to create **NapsterFreedom.com**. The notion is to create a transition strategy from Napster’s **devil-may-care freebie** to what I would call a “**feebie**” (any suggestions as to how I can protect my coinage before someone else steals it?).

At first, **people trading songs can voluntarily contribute money** for the music. **Matt Miszewski**, co-founder of Topical Networks, said this may evolve “to a more complex system which mandates payments to artists, record companies or performing rights societies,” depending on the outcome of the court case in California.

The irony is that **NapsterFreedom.com** is likely to get a lot of visibility by “bor-

rowing” its name and Web site address from the aforesaid foe of **intellectual property rights**. (No word as to if they will be making a “voluntary contribution” for taking this “liberty.”)



Matt Miszewski

The leadership by example here is reminiscent of our **presidential candidates** and their positions on **illicit substances**. Put *that* in your pipe and smoke it....

Oh, and a closing reminder to those offering inside info for this column. We discourage disinformation about competitors as well as anything resembling stock tips.

If you insist, please make them humorous. This will help differentiate them from **press releases that are unintentionally funny**. Rest assured that your **secrets will be as safe as laptops at the Pentagon** — and even safer than hard drives at the Department of Energy.

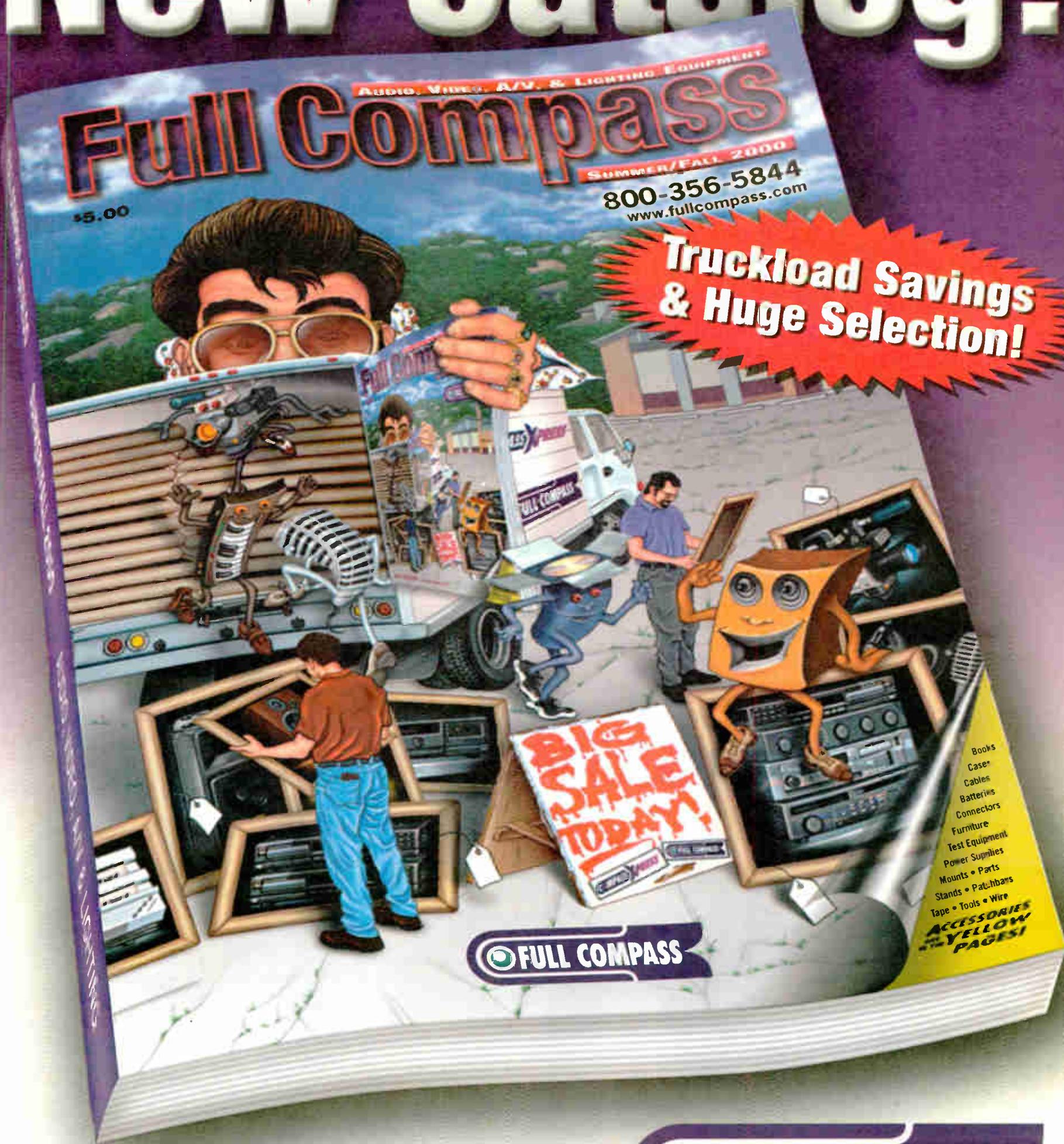
Send them along with four proof-of-purchase labels from any IMAS publication to [webwatch@cyberscene.com](mailto:webwatch@cyberscene.com)

■■■

Carl Lindemann has worked in radio as a field reporter and production director. He consults on radio/new media projects and writes extensively on these subjects. He also is political correspondent for the PRI program “Beyond Computers.”

Reach him at [carl@cyberscene.com](mailto:carl@cyberscene.com)

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# Blade

► Continued from page 33  
from the newspaper without giving appropriate credit.

In August, according to The Blade, Judge Ronald Bowman signed a consent decree agreed to by both the Toledo Blade and WSPD(AM). The order states, in part, that it is "improper for a news organization to misrepresent as its own, a story produced by another news operation."

WSPD(AM) agreed henceforth to provide proper attribution when using any Blade material on the air.

"I'm pleased that we managed to reach an amicable solution to what was a lawsuit that had 'nuisance' written all over it," Standriff said. "I'm disappointed but not surprised by how The Blade handled it."

Standriff said that there is nothing in the agreement that will prevent him from doing what he has been doing for years, other than the condition that he cite his sources.

While the practice of airing stolen news without proper attribution has been resolved in Toledo, it's impossible to determine how widespread this phenomenon is across the rest of the country. However a former San Francisco broadcaster who now works for a major traffic news service claims to have heard "word-for-word" stories from the local newspapers on several stations.

Since he took to the airwaves several years ago, WSPD's Standriff has used the slogan "I read The Blade so you don't have to." Standriff claims that the motto is not an attempt to deceive anyone or to prevent anyone from reading the paper.



Mark Standriff

The settlement requires that each time he uses this slogan on the air, Standriff must also include verbiage to indicate that he uses Blade stories as material to comment upon, but that The Blade produced the articles.

"I don't harbor any ill will," said Standriff. "It's really like David vs. Goliath. We shook hands and agreed to disagree."

Fritz Byers is general counsel for Block Communications, owner of The

Blade as well as the Pittsburgh Post-Gazette newspaper, a handful of TV stations, cable service providers and a stake in the Pittsburgh Pirates baseball team. Byers was pleased by the agreement.

"We accomplished what we set out to do," said Byers. "From the very start of this case our concern was to establish rules that we believe are sound legally and journalistically."

The First Amendment was clearly not under attack in The Blade's suit, according to Beyers.

"The Blade made it clear that it had no interest in stifling free speech or limiting what air personalities say for the purposes of entertainment," Beyers said.



Barbara Cochran

nates them over their wire service.

"But this one is a no-brainer," said Mercer. "Attribution is a basic rule of broadcast journalism, if for no other reason than to protect yourself from being held responsible for inaccurate information."

Radio Television News Directors Association President Barbara Cochran has overseen the revision of the RTNDA code of ethics, which touches on this point. Cochran said the code is unequivocal on attribution of "repurposed" news stories.

"Professional electronic journalists will make clear the origin of news reports' is how the unofficial revision states it," Cochran said.

Cochran said that this ethic is upheld throughout the industry already.

"I think most news directors already agree with this," said Cochran. "I have seen quotes from lawyers alleging radio stations steal news all the time, but I don't believe that's the case."

Cochran believes that talk shows as well as newscasts should reflect these professional ethics.

"The relationship between the talk host and the audience depends on integrity and attribution is important to preserve that relationship," said Cochran.

Harry Cole, principal in the broadcast law firm Bechtel and Cole and a contributor to *RW*, said it is important to recognize that the facts of a story are distinct from the report generated around them. The latter is proprietary product, while the former reside for the taking in open domain.

"If a policeman was found in bed with a boy scout, that's just an event," said Cole. "But the language, the reporting, is what the paper owns."

Cole said the fact that The Blade was willing to settle rather than go to court indicates they were not in this for the money.

"They just wanted to fire a shot across the bow of the radio station," Cole said.

Cole believes the practice of radio stations grabbing news from the local paper without attribution is a common one.

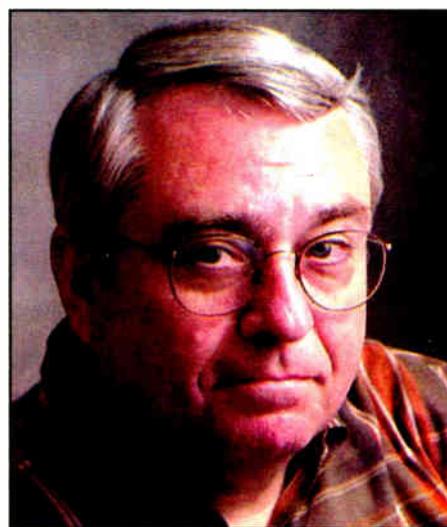
"Every time I drive I hear people on the air talking about stories from the paper, and I don't think it's a coincidence," said Cole.

Ed Cavagnaro, news and program director of all-news KCBS(AM), San Francisco also follows the policy of crediting sources.

"We had a story just this morning that had to do with a survey on gambling," said Cavagnaro. "The survey was taken by the San Jose Mercury News. We used parts of it and credited the paper."

Cavagnaro's station is a member of the Associated Press, so his original stories often appear there after they are aired.

"Attribution is always our station policy," said Cavagnaro.



Jim Farley

Byers said that to his knowledge, this is the first time a court order has been set forth that assigned a value and property rights to news reports.

"And in that regard," said Byers, "this is significant."

The Toledo Blade vs. Jacor case may or may not have broken legal ground, but it certainly sends a clear signal to broadcasters across the country.

Jim Farley, news director for Bonneville's Washington all-news station, WTOP-AM-FM, agrees with the consent decree.

"It's proper to attribute, it's wrong to steal," said Farley. "Does it make any difference whether the source is another radio station, a TV station or a paper? No. Stealing is stealing."

Farley said that when his station attributes a story to another source, it does not diminish the reputation of WTOP.

Even though his policy is a long-standing one, it is not codified into a formal written agreement.

"The papers also give attribution to us when they use a story we originate," said Farley.

"In fact," said Farley, "in this age when people are so busy, it makes them realize that we let them know what's being reported in many different media."

Farley said that his station always gives the important news, whether the story is generated internally or externally.

"WTOP has about 42 people on staff. The Washington Post has about 800," said Farley. "So they are going to get some stuff we are not able to."

Bob Mercer, corporate operations manager of Delmarva Broadcasting in Wilmington, Del., agrees with Farley.

"Anything we take from another source, we attribute," said Mercer. "But the blur comes in if you're an Associated Press member and the story from that source is also printed in a local paper."

Mercer said the AP often appropriates stories from its members and disseminates

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# Studio Sessions

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See Page 46

Radio World

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September 27, 2000

PRODUCER PROFILE

## Pomann Sound: Integrated Audio

Ken R.

"Sometimes scripts come in and they need a little help. I try to make sense out of them and create a picture in sound so we can sell their message."

The words are those of Bob Pomann, president of Pomann Sound in New York City. His studio employs 26 people who work in six rooms in the Big Apple.

Paying dues

Bob Pomann began his career at age 17 as a high school intern at Wendell Craig Inc. in New York City.

that stage of his career.

"Our equipment was pretty basic. We had a couple of four-track Scullys and a few two-track machines," said Pomann. "For the movie spots we received music, effects and dialogue on separate reels. It was my job to create a story line and make those spots exciting."

Pomann often wrote the commercials in addition to assembling them.

"We tried to do more than just 'announcer/sound clip/announcer.' We dealt directly with the movie companies, including Paramount, United Artists and MGM. There was no

my own business about 17 years ago, my main client was a radio syndicator, MJI Broadcasting," said Pomann. "They would take a bunch of people who weren't stars yet like Glenn Close and Gregory Hines and try to build a play around a song. The idea for the show 'Lyric Theater' never really caught on."

'Rock Quiz'

He next worked on a project called "Rock Quiz," which was a more successful radio feature. Commercials for Warner and Ballantine Books followed.

"There is a lot more recording studio competition now, which is why we have diversified into cartoon soundtracks," said Pomann. "We handled audio for all the 'Doug' cartoons when they were in production and now we're working on the new Bill Cosby cartoon series called 'Little Bill.' We also do the mixing for 'Courage, the Cowardly Dog' and a new one called 'Sheep in the Big City.'"

But where does one go to find those unique, goofy sound effects?

"We make a lot of our own and save them," Pomann said. "And we bought the entire Ross/Gaffney reel-to-reel collection."

Pomann Sound uses mSoft Inc., a huge database that stores all of the effects and accesses them online with key words.

"I don't think you can just look up the sound of a kid being squished into a barrel. We have to be creative," said Pomann.

"We have a casting director on staff for our commercials and also a full-time musical searcher. This guy knows all the libraries inside and out."

"We don't do too many movie promos now because those companies moved to Los Angeles and the people like to use studios out there. But we're very involved with projects for Intel, Universal Studios, Fosters Beer and Trojan," Pomann said.

See POMANN, page 47 ▶

## Engineers Descend on Steel City

Alan R. Peterson

Take a trip to the moon and all you will come back with is a pile of rocks. However, take a trip to Mars and you will come back a better engineer.



A dozen or so miles north of Pittsburgh, the Sheraton Inn Pittsburgh North in Warrendale, Pa. — near Mars, Pa. — is where Chapter 20 of the Society of Broadcast Engineers will congregate for the combined 2000 Pittsburgh Regional Convention and SBE National Meeting, scheduled for Oct. 3-4.

The event features exhibitors showing new products and services available to the broadcaster, and a series of talks and workshops for both television and radio engineers (see sidebar). The SBE National Board to meet and discuss business.

"The agenda has not been completely

See SBE, page 52 ▶



Bob Pomann in one of his studios

"Among the first couple of jobs they threw at me were the spots for the movies 'King Kong' and 'Marathon Man.' I was also involved with 'National Lampoon's Radio Hour.'"

While he was earning a rather modest \$100 a week as an intern, he was more interested in production than in money at

agency back then," said Pomann.

He stayed at Wendell Craig about five years before moving to J.C. Productions, an eight-track room in New York.

"At J.C. I began to make a lot of agency connections," Pomann said. "After about a year and a half, I decided to open my own place." "When I started

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## PRODUCT EVALUATION

# TerraSonde Toolbox: No 'GameBoy'

Alan R. Peterson

The Tricorder, The GameBoy, The Barney Box, The Welder's Mask — call it whatever you want. The folks at TerraSonde have heard it all.

This Boulder, Colo., company is responsible for an innovative audio diagnostic device: The Audio Toolbox, an all-in-one analyzer that puts a rack-and-a-half of test gear into a portable unit.

The cutesy names began when the TerraSonde Audio Toolbox was introduced at the 1998 AES Convention. This little-audio-analyzer-that-could, originally packaged in a dinosaur-purple plastic

case, caused convention traffic to stop and take a look. It was an alien-looking device with a glowing green display and a mushroom-y knob.

## Wow!

Folks were wowed by its capabilities, but later could only remember "that purple box that looked like a Tricorder, a GameBoy ..."

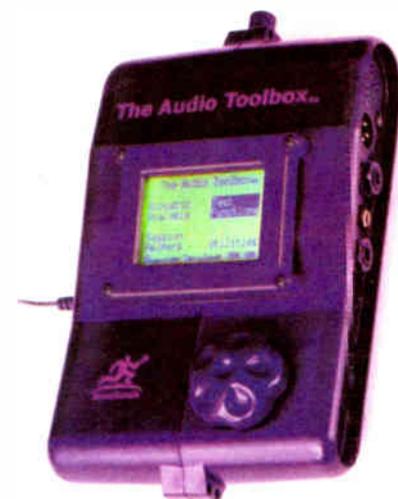
It did not stay anonymous for long. At the spring NAB show in 1999, The Audio Toolbox won several prominent awards, including the **RW** "Cool Stuff" trophy. Audio pros and engineers discovered there was a lot going on behind the funny

monikers and plastic case.

To begin with, the current-day unit is no longer purple. The unit I tested is in a black plastic case, but the company is scheduled to show the new Plus version of the Audio Toolbox at the 2000 AES convention that has an aluminum and steel chassis. Also, the small, backlit LCD screen has twice the area on the Plus version.

A single control knob/button is still the only interface used. The simplicity of the interface misrepresents the power of this device.

The Audio Toolbox combines a signal generator, distortion meter, sample oscil-



loscope, real-time analyzer, reverb decay time meter and a pile of other must-have diagnostic devices into a hand-held case. There is even a rackmount version of the Plus available.

A few extras are thrown in, such as a cable tester, MIDI data viewer and transmitter and an instrument tuner. The Plus version comes with the "Contractor's version" of the software, which is sold as a \$150 option for the Standard version.

An integrated electret condenser mic and a mini speaker are built in to the Standard version I tested and the Plus version has a detachable measurement mic.

Flanking the sides are all the in/out connections. Neutrik combo XLR and 1/4-inch connectors achieve saving space on the case. There is also a set of RCA plugs to check out unbalanced -10 dB sources. If you need 1/8-inch inputs, Radio Shack adapters will work. A trio of MIDI I/O jacks and a 1/4-inch headphone jack round out the connectors.

Also on one side are two screw-down posts that appear to be terminals for bare wires. They are actually mounting studs for an external battery pack that connected to the power jack and held on by those posts.

The unit requires 6 VDC to operate, provided by either an AC adapter or a set of four batteries. The construction of the original Standard version did not have room for a battery compartment. Now the Plus version solved that problem by adding an internal rechargeable battery system.

On the version I tested, the battery pack made the case awkward. Also, the thumbscrews are easy to lose and the knobs to secure the battery case lid vanish even easier.

TerraSonde will soon have an optional rechargeable battery pack for the Standard version that will snap on the back. I am glad the folks at TerraSonde heard this cry and fixed that problem.

## Dial it up

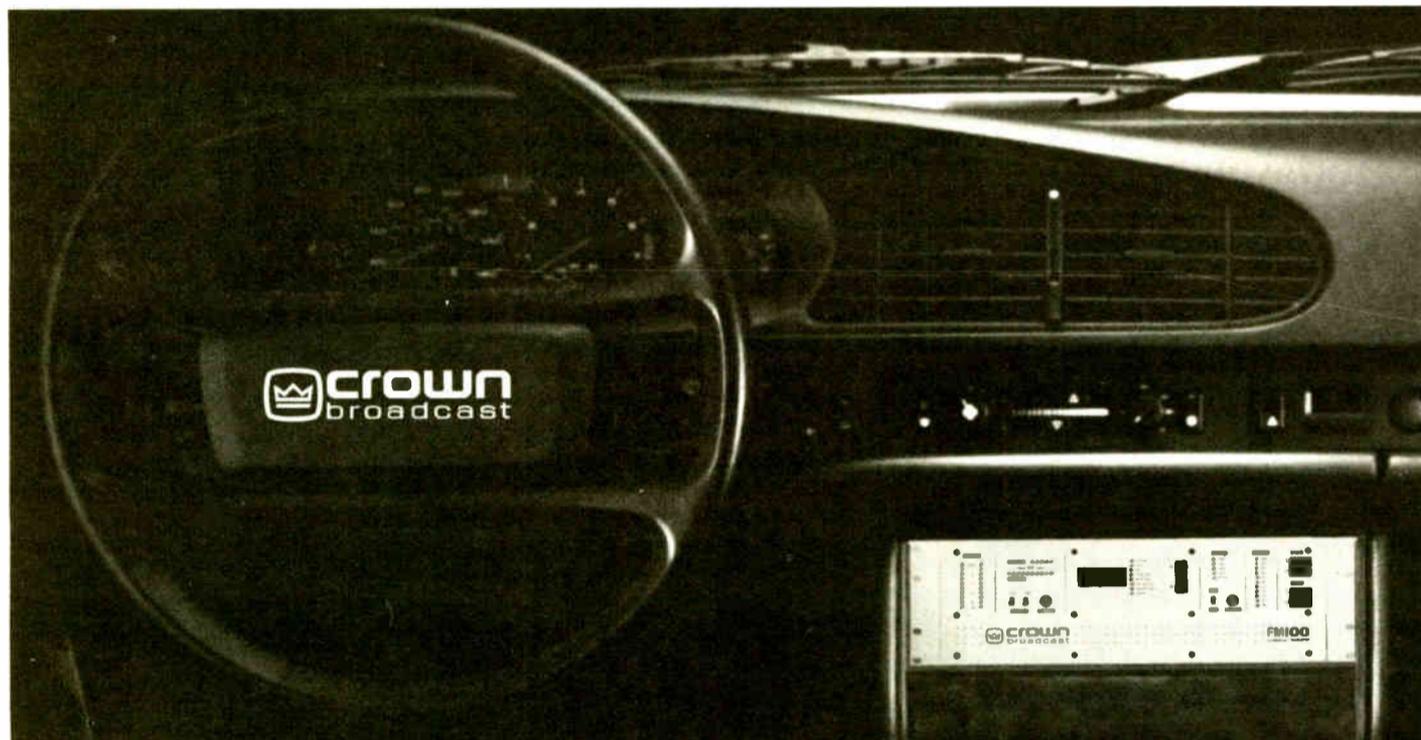
When power is applied, the display lights up and shows the unit's serial number and version of the software. The small speaker pops twice and then it is ready to use.

Page one of the menu shows four sub-menus. Depending on the model, the display shows Acoustic Analysis, Test Functions, Session Helpers and Utilities.

The large knob is spun to select a sub-menu, then pressed to enter it. This opens yet another sub-menu for the actual audio tools.

Beginning with the Acoustic Analysis menu, the unit offers a sound level meter. Large numerals fill the readout, showing levels read by the mic and expressed in dB. There are four weighting curves to choose from (A-Wtd, B-Wtd, C-Wtd and

See TOOLBOX, page 45 ►



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So when making your decision on a new exciter, RF driver or low power transmitter, reliability should be at the top of your list. Crown Broadcast builds reliable transmitters from 1 watt to 2 kilowatts.

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# Toolbox

► Continued from page 44

Flat), a resettable threshold and ANSI averaging modes of Slow, Fast, Impulse or Peak response.

A fifth selection, LEQ, performs equal weighting over a selected length of time. It can examine the exposure in an acoustic space over 24 hours.

I should mention that the type of tool selected is shown in abbreviated form in the upper left corner of the display. This is helpful when getting lost in the menus and forgetting what tool is currently used.

Next up, the Real Time Analyzer shows a bargraph representation of the spectrum read by the mic. It can show full bandwidth or lows only, and can show the decay time from one second to 60 seconds. Then the unit can store the profiles in one of 40 memory locations.

The Reverb Decay Time analyzer may not be useful in a studio environment, but it gives an idea of what is happening inside a large venue where you may be broadcasting.

Other useful tools under Acoustic Analysis include Energy-Time Graph, Polarity Tester and Noise Criteria.

## Testing 1, 2

Under Test Functions, the Audio Toolbox shines. The Signal Generator gives stable sine and square waves, pink noise and white noise. The test signals are given in large octave chunks (1 kHz, 2 kHz, 4 kHz *et al*), 1/3 octaves or in 2-Hz increments, 1 Hz in the low frequencies. Range is from 10 Hz to 22 kHz.

Sweep the line with the Sweeps function. Go from 20 Hz to 20 kHz in one to 99 seconds and view the response in increments as small as 1/12 octave. Chart the impedance of an unknown load and see the results displayed on a two-axis graph shown in the display.

Pull up the Level/Frequency Counter to check those unknown signals. Round out the Test Functions with an S/N Ratio analyzer, a Sample Scope (a nifty audio bandwidth oscilloscope and X-Y mode/phase display) and Distortion Meter.

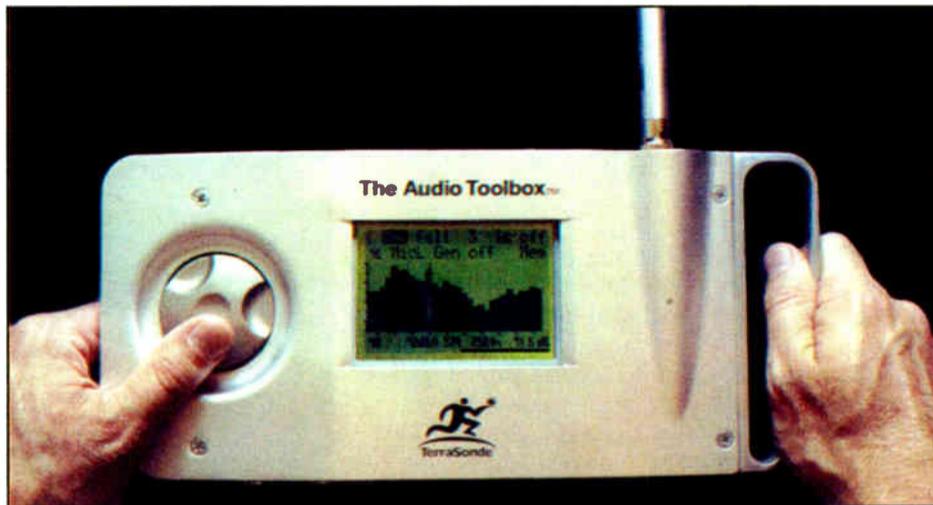
plays it. It monitors all channels, reads and displays the hexadecimal code, can re-map channels to two separate MIDI outputs like a patchbay and even test MIDI cables.

A Tempo Computer clocks the BPMs and offsets MIDI drum commands to get everything lined up.

A Hum Canceller lifts the noise out of a shabby guitar signal, but only when the AC adapter is used.

## Low-tech stuff

Lastly, the Utilities menu is where one finds the low-tech but necessary tools.



The TerraSonde Toolbox Plus Version

Monitor Amplifier turns the unit into a mini-amplifier to trace stereo or mono-left signals on the XLR or RCA lines. It even functions as a guitar player's headphone amp with effects.

The Cable Tester checks balanced and unbalanced cables. The unit can conduct digital and analog tests and a soft relay click indicates that a continuity check is underway.

Suspect the phantom power has gone down? This unit shows whether or not phantom power is on an XLR cable. With nothing connected, the display shows about 1 V. Not to worry; this is a DC offset that is placed on the console's mic input by the device.

It even self-tracks its own battery level and tells how much time is left.

Other Utility features include a setup

tings in case it is to be too light. If the user wishes to alter the setting, it requires disassembly of the case and adding a resistor to the PC board. Remember, you will be working around surface-mount components, so be sure you have a very steady hand.

However, this is the only gripe I have about the TerraSonde Audio Toolbox. The company even fixed this problem on the Plus version.

I personally would like to see the oscilloscope go beyond the audio range, but my needs are not typical. I may someday get my wish.

## Product Capsule: TerraSonde Audio Toolbox



### Thumbs Up

- ✓ Comprehensive audio diagnostic tools
- ✓ Easy-to-navigate menu
- ✓ Portable
- ✓ Field upgradeable



### Thumbs Down

- ✓ Difficult to adjust contrast on standard model
- ✓ Battery pack awkward on the standard model

For more information call TerraSonde in Colorado in (303) 545-5848 or visit the Web site at [www.terrasonde.com](http://www.terrasonde.com)

Design, the maker of high-end mic pre-amps and Symborg Labs, specializing in motion control and animatronic robots.

With the standard model at \$999 and the Plus version, either handheld at \$1,699 list or the rackmount at \$1,785, TerraSonde has a hands-down success going for it. This is a tool that belongs on test benches and in engineer's survival kits everywhere. It is versatile, simple to use and replaces a lot of equipment that would otherwise have to wheel down the hall to do the job — even if it does look like a welder's mask.



Alan Peterson is a technical adviser to RW. Reach him via e-mail at [alan.peterson@earthlink.net](mailto:alan.peterson@earthlink.net)



The rackmount model of the Plus

You may not have a huge need for the Session Helpers menu, but you might like what is there.

As mentioned earlier, the first item is an instrument tuner for guitar, bass, violin, viola and cello. It will take a cabled input from an electrified instrument or an acoustic signal from the mic. The reference frequency, normally 440 Hz, can be finessed down to 400 or up to 480 Hz.

The MIDI utilities are helpful if maintaining a MIDI rig. The MIDI Transmitter sends almost any command, from single notes to controller messages. Just dial in what is needed and press the knob/button to transmit the data.

The MIDI Helper reads whatever MIDI data is passed on a line and dis-

and calibration menu item and the all-important "About" item with the company's telephone numbers, Web site and firmware version.

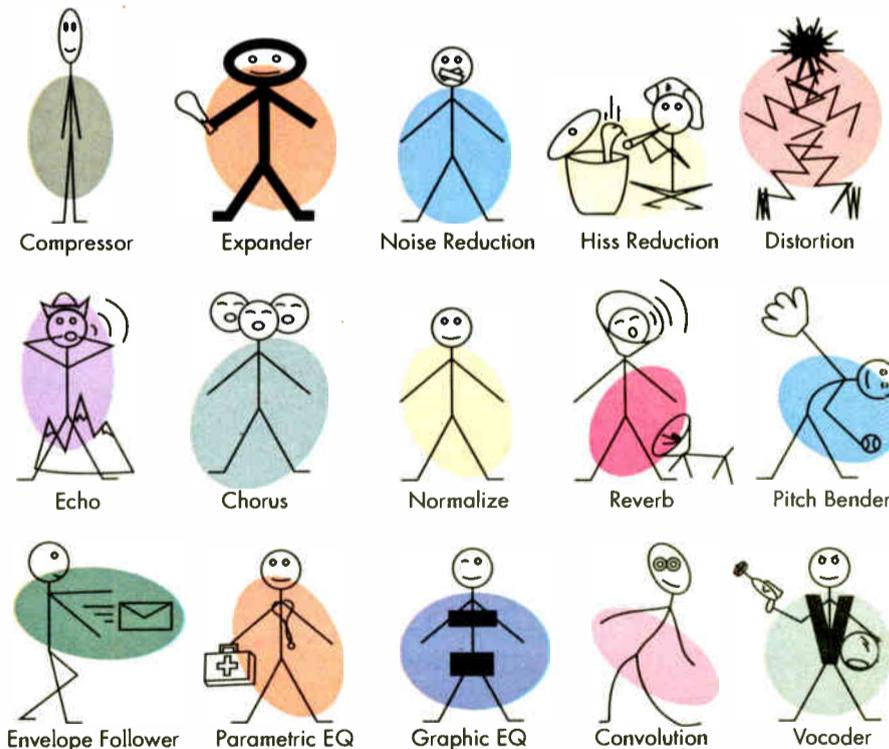
Curious thought: If the unit does not turn on, you cannot see the "About" information. So, be sure to write down all of the information shown in the display and glue it to the back or put it into your Rolodex.

Software upgrades are easy. Download the new Toolbox software from TerraSonde using a Mac or PC, and then transfer it into the device through its built-in MIDI port.

The only problem remaining is the fixed contrast level on the LCD display. There is no trimmer pot to tweak the set-

The company's Web site (see Product Capsule) lists all the capabilities of the unit and credits all the people who contributed to its design. Interestingly, design contributions came from Grace

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\*No stick-figures were hurt in the making of this advertisement.

## PRODUCT EVALUATION

# Promise Maxes HD Performance

Read G. Burgan

You have upgraded to a zillion GHz processor with a multiple MHz bus and your computer's really flying. So why are you not experiencing an increase in the processing time of your applications?

Like it or not, the hard drive plays a major role in many software processes. The hard drive may be the weak link that is dragging everything else down with it.

Nearly every IDE hard drive currently sold uses the ATA/66 specification.

The ATA/66 protocol increases the burst data rate of a hard drive. In other words, it increases the rate at which data is transferred between the hard drive buffer and the memory of the computer.

## Getting up to speed

In 1994, DMA Mode 2 increased the burst rate to 16.6 MB/s. Ultra ATA/33 increased the rate to 33.3 MB/s in 1997. With the implementation of ATA/66 in 1999, the burst rate again doubled to 66.6 MB/s.

In theory this means that a new hard drive should run faster than the older one. But will it?

Under certain conditions, an ATA/66 drive may run slower than your current hard drive or not at all. Here is why.

First, the new ATA/66 drives use a different interface cable. At first glance, the

new cable looks like the old 40-pin IDE cable, but it is not. Although the ATA/66 cable still sports 40-pins, it is actually an 80-conductor cable.

The 40 additional conductors are shields — one for each conductor. With the ATA protocol, timing signals happen twice as fast and the old 40-conductor cable cannot handle the shorter cycle time.

To run an ATA/66 hard drive at its maximum transfer rate, a motherboard is needed with a chip set that will support the ATA/66 transfer rate and has an IDE controller with 40-pin, 80-conductor connectors.

What if you do not have the latest motherboard? The good news is that the pin configuration for the ATA/66 drives is compatible with the old 40-conductor interface cable. Due to this, ATA/66 drives can be installed on most older computers.

The bad news is that using an ATA/66 in your old computer with a conventional 40-conductor cable will not perform any faster than the older ATA/33 drives. The drive detects the presence or absence of the 80-conductor cable, and thus will only transfer at the 66.6 MB/s rate if it detects the 80-conductor cable.

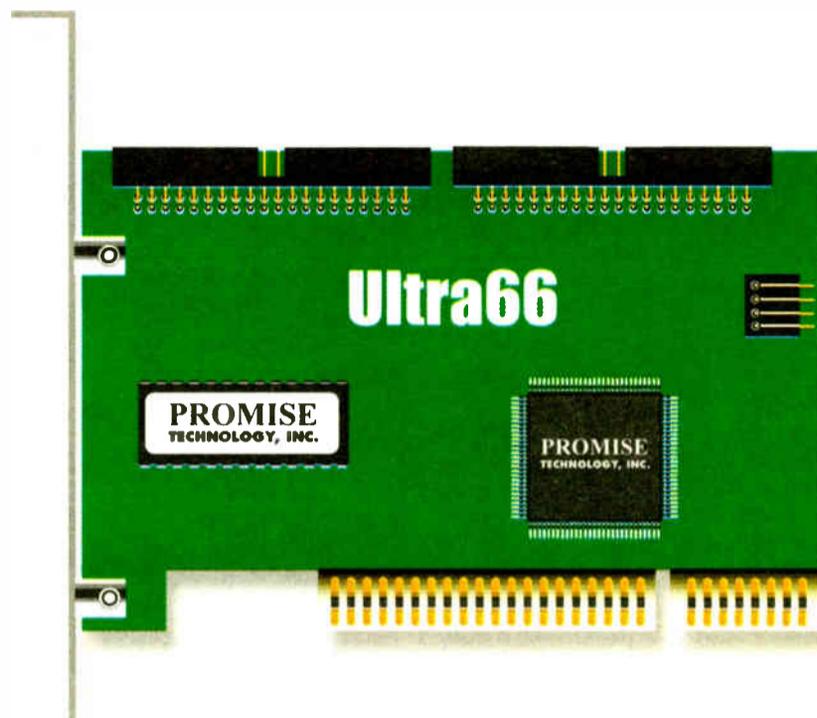
While this is not necessarily terrible news, as you can use the new drives on your old computer, there is worse news for some users.

On some older computers, when the BIOS detects that the hard drive supports ATA/66 transfer rates, it incorrectly instructs the hard drive to transfer at that rate, even though the computer does not support the ATA/66 transfer rate.

take advantage of the full 66 MB/s transfer rate? You have at least two options.

One is to install a new motherboard that supports the 66 MB/s transfer rate and the required 80-conductor cables. This ensures that everything is compatible to take advantage of the maximum transfer rate of the hard drive.

Another is to use a separate IDE PCI controller card that supports the ATA/66 protocol. I am using the Promise Technology Inc. Ultra66 card.



This can lead to a variety of problems, the worst being that the computer hangs up while booting, and the computer is unable to reboot without first removing the hard drive.

Fortunately, this problem is uncommon. I have installed ATA/66 hard drives in three computers that do not support ATA/66, without a hitch. In each case, the hard drives function fine but only at the ATA/33 transfer rate. What if you want to

The Ultra66 plugs into a PCI slot, has two IDE connectors and includes the requisite 40-pin, 80-conductor IDE interface cable along with a 3 1/2-inch diskette for installing the drivers.

With two IDE connectors, the Ultra66 can support up to four hard drives in the traditional master/slave configuration. It co-exists with the motherboard's onboard IDE controller increasing the ATA device

See PROMISE, page 47 ►

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## Route 66 Gives Way

The next step beyond ATA/66 will be ATA/100, already available in products from Seagate Technology, Maxtor, Western Digital and Quantum. These companies offer hard drives and interface cards compliant with the new specifications.

Quantum developed and patented the technology and licenses the ATA/100 specification to other hard-drive manufacturers. According to information provided by Quantum, current ATA/66 interface cards can handle hard drives with a top internal data transfer rate of around 56 MB/s.

ATA/100 hard drives support *burst* transfer rates up to 100 MB/s, although the actual sustained transfer rate is lower. It is backward-compatible with previous ATA interface products made over the last 15 years and uses the 80-conductor cable now standard for ATA/66.

Forty ground lines that are tied together to the existing ground pins in the 40-pin connector accomplish the reliability of the 80-conductor, 40-pin cable. Crosstalk and electromagnetic noise interference are heavily attenuated while plug compatibility with existing drives and systems remains intact.

Seagate Technology now ships the Ultra ATA/100 interface on its Barracuda ATA II line of disk drives to OEM customers. Seagate also introduced Ultra ATA/100 technology on its U Series 5 disk drives.

Maxtor, one of the earliest manufacturers out of the gate using ATA/100 technology, is shipping drives with capacities up to 60 GB.

Promise Technology also has the Ultra100 card, which provides your computer with similar advantages as the Ultra66 card for ATA/100 hard drives.

Today's ATA/66 drives are more than capable for most audio applications, so higher-speed drives are more likely to find homes in graphics and video applications, where unusually large files and massive rendering are the norm.

But, new products waiting in the wings — such as the new SAWStudio expected from Innovative Quality Software — will place new demands on computers used as recording and editing devices. The ATA/100 standard offers some breathing room for that what is inevitable.

— Alan R. Peterson

# Promise

► Continued from page 46  
support to eight.

Installing the card was elemental. After inserting it in an open PCI slot and connecting the interface cable between the card and the hard drive, I was ready to boot up my computer.

Windows 95 immediately recognized the new hardware and asked for the installation disk. As soon as the driver was installed and the operating system rebooted, the hard drive was ready for use. In this case, I used a

Quantum CX series ATA/66, 20.4 GB hard drive.

Can you boot from a drive connected to the Ultra66? My first attempts failed. I assumed that my BIOS should be set to boot from the second IDE drive.

## Flawless performance

After browsing the FAQ on Promise's Web site, I learned that the Ultra66 is treated as an SCSI device. After changing the BIOS to boot first from an SCSI device, I was able to successfully boot to Windows 95. The hard drive performed flawlessly from the beginning.

Was it faster than my older drives?

Bob Pomann realized early on that he would have to be able to put the sounds he created with video.

"I took my life savings, about \$15,000, and bought an Adam Smith synchronizer back in 1982. It was able to link a 3/4-inch video deck with an Otari 1-inch 16-track reel-to-reel. Almost 20 years later, audio for video uses more sophisticated tools and Pomann Sound has the latest and greatest.

"The new thing is Surround 5.1. It's great! I went to an NAB seminar and learned everything I could," said Pomann. "We have an Omnimix and I have my own ideas about 5.1. I try to talk some of our cartoon producers into using it, but cost is always an issue."

Pomann Sound is working on expanding its Web page, [www.pomannsound.com](http://www.pomannsound.com)

"We want to show people what you can do with audio," said Pomann. "Right now we use the Internet for e-mail in connection with our casting efforts and that works great."

Bob Pomann's most important management philosophies are teamwork and promoting from within.

"You gotta have everyone working together. All our people know how to operate everything in every studio here," said Pomann. "Everyone that is an engineer here started as an intern."

# Pomann

► Continued from page 43

He still helps with the scripts when necessary and still likes to mix commercials himself.

"If a client asks for me on a project, I'll be happy to do it," said Pomann.

He loves hearing funny or interesting spots, whether they are created at his own studio or elsewhere.

"But some of the spots out there today try to be too clever. They're hard to follow," said Pomann. "If I only have 30 seconds, I'd rather leave out the cute stuff and get the client's name in there again."

He believes many national advertisers make a mistake when they try to put in too many details.

"There's usually a ton of copy with everything read over some music bed. People can't understand a spot like that and phone numbers in spots are ridiculous," Pomann said.

His studios are equipped with SSL Screensound and DSP workstations. One room also uses a SADiE system. The microphones of choice are Neumann TLM 170s and U87s.

"All the studios will soon be networked using our new DSP system. ProTools doesn't allow networking," said Pomann.

## Pomann: the Demo CD

When listening to the Pomann Sound demo, one wonders — is it library music or is it sound design?

The effects are so seamlessly integrated into the copy that one assumes the music was created especially to match the voiceovers. If it was stock, someone did an amazing job.

There is the familiar Australian didgeridoo droning away in the Fosters Beer spot. There is an AT&T spot in which all the synthesized sounds perfectly accentuate the copy and paint a vivid picture as the announcer describes the wonders of the service.

The jingles on the demo are not the traditional retailer "donuts" heard on local radio stations across the country; they pop-up at random times to punctuate the verbiage.

Humorous sound effects greatly enhance a commercial for National Tires in which four obese women rush out of their Waist Watchers meeting and cram themselves into a car. As they squeeze in the listener hears some cartoon stretching and squishing noises, followed by four pops and whooshes as the tires explode and expel air. Then the announcer intones, "Need tires?"

Unlike many locally produced radio spots, the Pomann Sound spots do not dump a 60-second instrumental under the announcer. Each little note and each sound has an important reason for being where it is.

Other examples of excellent production skills are heard in a spot for Barron's. A female announcer creates a visual scenario describing all the ways to get information and then introduces this publication as a better alternative.

Unfortunately local stations often do not have the luxury of time, top announcer talent or customized sound designers. However, demos like this one certainly provide some ideas for what spots could sound like with a little imagination.

To test its speed, I decided to use applications I normally use in my day-to-day work. Using identical sound files that I placed on my older mode-2 IDE drive and the new ATA/66, I ran through several digital audio sound processes using Sound Forge 4.5e.

Opening a file on the ATA/66 took seven seconds, as opposed to 25 seconds on the older drive. Normalizing the same file took 19 seconds on the ATA/66 and 49 seconds on the older drive. Running a noise reduction process took 1 minute 51 seconds on the ATA/66 and 2 minutes 10 seconds on the older drive.

In the above cases, there is little doubt but that the new ATA/66 drive running at full transfer speed is considerably faster than its older counterpart in two out of three functions — more than three times as fast in opening the file and more than twice as fast in normalizing the same file.

## Transfer speed

Having gone this far, I was curious as to what degree the hard drive's transfer speed would be affected if it were running off the computer's built-in IDE controller using only the old 40-conductor cable and BIOS limited to a maximum of 33.3 MB/s.

After swapping the cables around and rebooting the computer, I again ran the aforementioned tests.

The results? Opening the file took six seconds, normalizing it took 22 seconds. Applying noise reduction took 1 minute and 56 seconds. As

## Product Capsule:

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Ultra66 Card



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### Thumbs Down

- ✓ Marginal speed gain in some applications

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demonstrated, the difference between running the hard drive at 33.3 MB/s and 66.6 MB/s are marginal. Of course, other applications and processes might produce more significant differences.

Nonetheless, if you want to run an ATA/66 hard drive at its maximum capacity, at \$29 list, the Promise Ultra66 PCI card is a great way to do it. It installs easily and works flawlessly, allowing a hard drive to hum along at its maximum rate.

■ ■ ■

Read Burgan is a free-lance writer and a former public radio station manager. Reach him at (906) 296-0652 or by e-mail at [rgb@bresnanlink.net](mailto:rgb@bresnanlink.net).

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# Grid-Dip Meters Tune Circuits

Tom Vernon

After being dazed by the latest releases of computer-based test gear, it is easy to overlook the value of simplicity in test equipment. Yet simple devices like grid-dip meters have numerous applications in an RF test environment and often are overlooked.

Grid-dip meters are simple devices. From the name, you can surmise that their origins are from the vacuum tube days. They are one of the earliest items of RF test equipment. Basically, such a device is not much more than an oscillator with a meter for measuring grid current.

Solid-state devices meter base or gate current. Figure 1 shows a modern FET-based meter. These devices typically are battery-powered with plug-in coils for overlapping frequency bands. The dial of the variable capacitor is calibrated in kHz or MHz, with bands that match the range of the plug-in coils.

The principle of operation of these solid-state devices also is simple. Oscillator current dips when the coil is in the presence of an external resonant circuit at the oscillator's frequency. This is due to a certain amount of the oscillator's energy being absorbed by an external resonant circuit.

The sharpness of the meter's dip depends on the tightness of coupling to the external circuit as well as the Q of that circuit. This relationship is illustrated in Figure 2.

## Determining frequency

One of the most common applications of grid-dip meters is to determine the resonant frequency of tuned circuits in transmitters and other RF devices.

The coil of the grid-dip meter is placed close to the circuit that is being evaluated and the tuning dial is adjusted for a dip in the meter. The frequency is then read off the calibrated dial.

Care must be taken when using this technique to get just enough coupling between the meter and device under test to see a dip in the meter. Too much cou-

This dip is the point where the transmission line is a quarter wavelength long.

In a similar manner, the resonant frequency of antennas may be determined. Simply connect a loop from the antenna to ground, loosely couple the meter and adjust for a null.

The resonant frequency of RF components may be checked easily. For coils, place the unit close to the meter and tune for a dip. It is that simple.

Capacitors are a little more involved. Connect the unknown capacitor across a coil of known inductance. Measure the resonant frequency of the circuit and solve for  $C_x$  in the formula:

$$C_x = 25,400 / (F^2L)$$

where C is capacitance in picofarads, L represents inductance measured in microhenrys and F is the frequency in megahertz.

You can find the inductance of a coil using the same procedure but with a known capacitor value. In this case, solve the above formula for L instead of C.

## Numerous uses

Broadcast applications for the grid-dip meter are numerous. One is optimizing transmitters for maximum efficiency. However, often factory tuning is good enough to make minimum efficiency specs.

Also, when a transmitter is sold and the frequency is changed in the field, adjustments may be haphazard. With a grid-dip meter in hand, you can work your way through the resonant circuits in a transmitter and make sure they are all on frequency.

For example, a transmitter operating at 1,400 kHz may have a tank circuit that is actually resonant at 1420 kHz.

This may not be off by enough to trip overload circuits, but such inefficiency can cause excess heating and add to the electric bill.

I once spent a frustrating afternoon retuning an older AM transmitter to a new frequency. Although I had followed

sequent call to the manufacturer revealed that there were errors in the tuning charts.

## Correct operation

Remote pick-up coils for modulation monitors and RFI suppression circuits and other miscellaneous LC circuits often are home-brewed from junk box parts. A grid dip meter can be used to confirm correct operation.

Because the grid-dip meter radiates RF, it also can be used as a signal generator, as well as a beat frequency oscillator (BFO) and Q multiplier for a communi-

eters are intended for the military, HF communications and amateur markets, and do not include coils for frequencies below about 1.8 MHz.

If you do most of your work on the AM band or below, check out the plans for test equipment in the AARL Handbook for Radio Amateurs, available at the National Association for Amateur Radio's Web site ([www.aarl.com](http://www.aarl.com)).

While the schematics include construction details for plug-in coils for amateur frequencies, formulas are included to make it fairly simple to roll your own coils for the broadcast band.

Although the grid-dip meter gives an accurate indication of resonant frequency, it is not as razor-sharp as a frequency counter and should not be used for FCC-

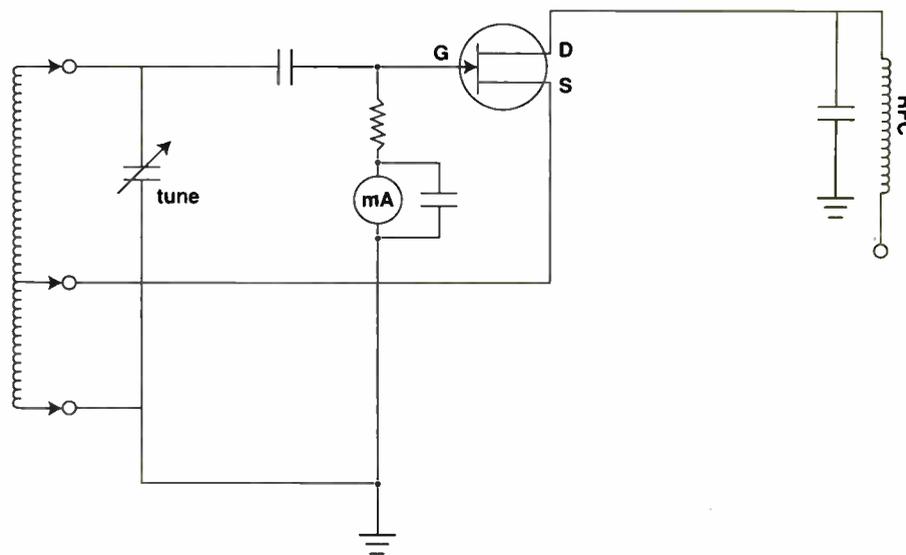


Fig. 1: Diagram of a basic FET grid-dip motor

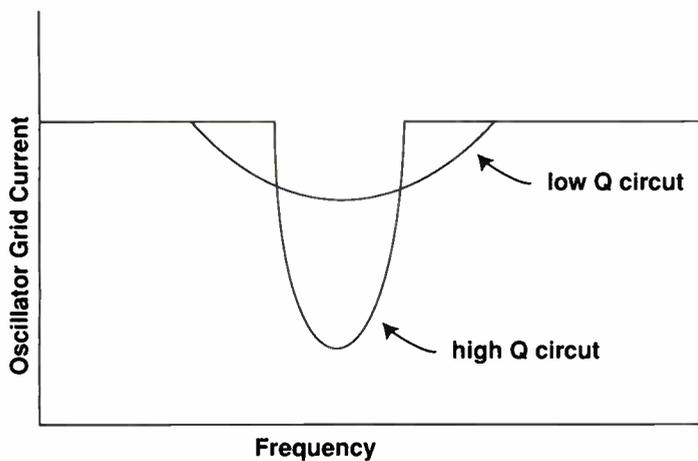


Fig. 2: The tighter the coupling between the oscillator and load, the greater the dip in grid current. High Q load circuits show the greatest dip.

pling will cause the oscillator to be pulled off frequency resulting in erroneous measurements.

The electrical length of the transmission lines may be determined by opening the far end and putting a loop of wire on the other end. Next, tune the meter to the lowest frequency where a dip is located.

the tuning charts in the instruction book, overload circuits tripped as soon as plate voltage was applied.

I returned the next day with a grid-dip meter in hand and found the final tank circuit to be way off frequency. Following readjustment of coil taps with the meter, the transmitter ran fine. A sub-

stations receiver.

By noting dips at places other than the resonant frequency, the grid-dip meter is useful for tracking down spurious radiation. Checks of crystals and filters are also possible with this device.

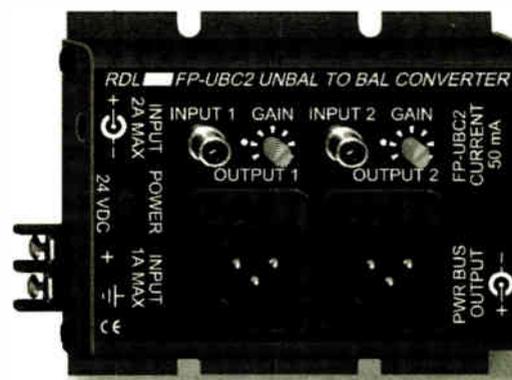
These devices often show up at ham-fests and in government surplus catalogs at affordable prices. Sadly, most of these

required measurements and adjustments. Its real advantage is that it can give you information that cannot be easily obtained in any other way.

Tom Vernon is a multimedia consultant in Philadelphia.

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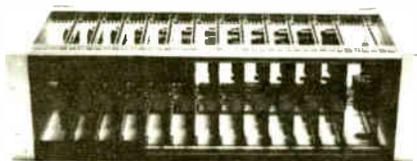
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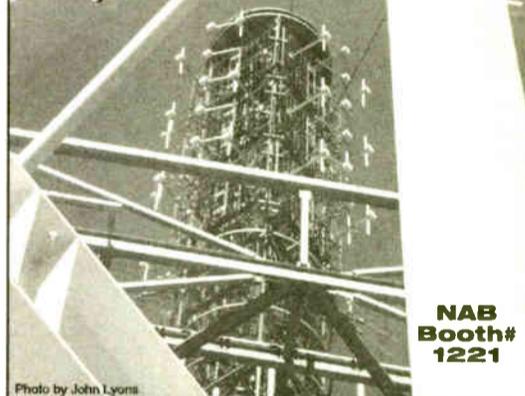
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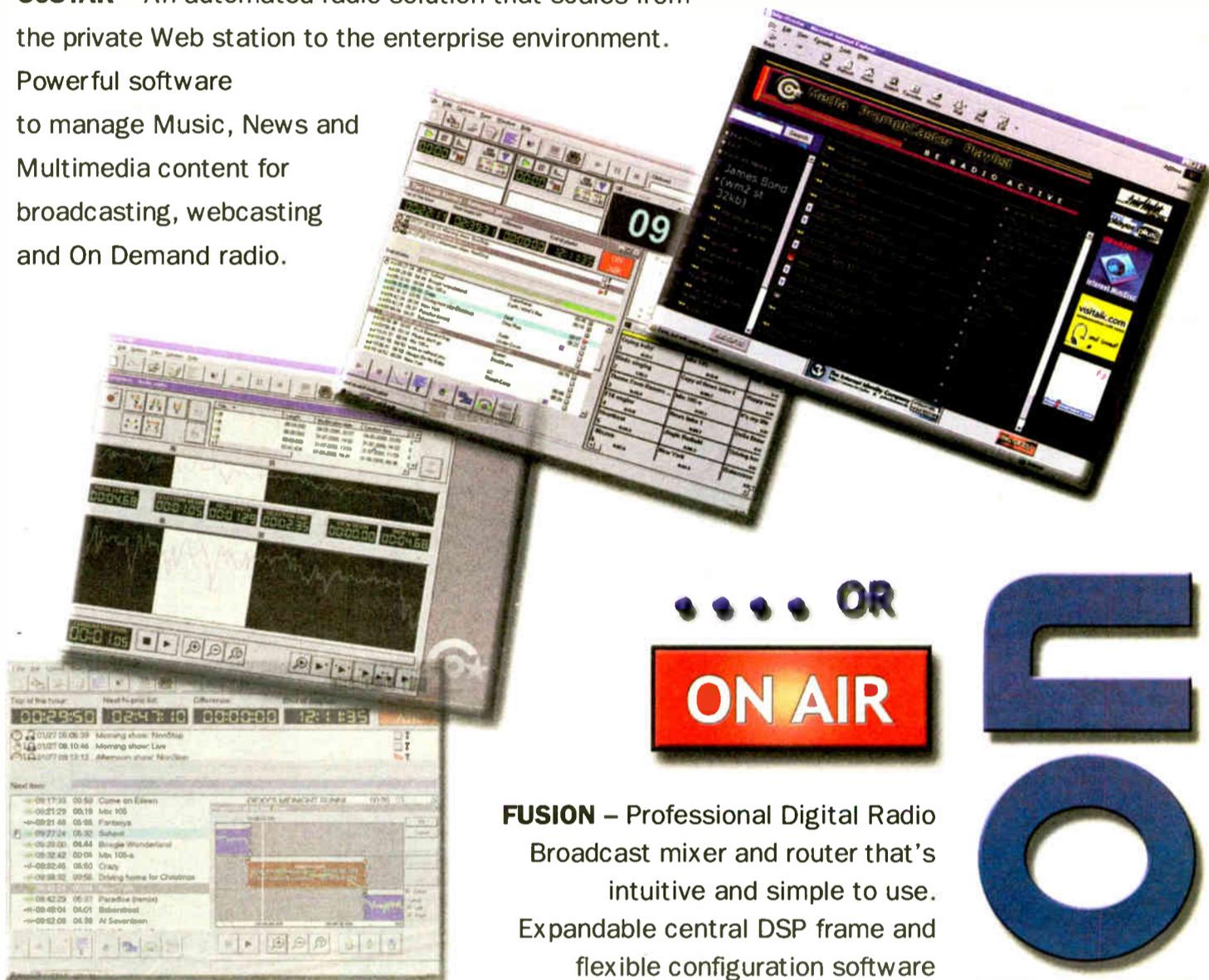
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World Radio History

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Fred Baumgartner, CPBE, works with the National Digital Television Center in Denver. His accomplishments include authoring more than 100 technical articles and several books. He has been active in various local SBE chapters, twice served as a member of the SBE National Board of Directors and is trustee of the Ennes Educational Foundation Trust.

James T. Bernier Jr., CSTE, is the director of operations and engineering for WGCL(TV) in Atlanta. He chairs the SBE Electronic Communication Committee.

Edward J. Miller, CPBE, is the vice president of engineering for ProVideo Systems in Perrysburg, Ohio. He is the immediate past national president of SBE, having served two terms from 1997 to 1999.

These members will be recognized at the SBE National Awards Dinner on Wednesday Oct. 4.

— Paul Cogan

# SBE

► Continued from page 43  
firmed up yet," said John Poray, executive director of the SBE.

Since the 1996 disbanding of the World Media Expo partnership, which consisted of combined conferences of the SBE, NAB, RTNDA and SMTPE, national meetings of the SBE have been held in conjunction with conferences and conventions chaired by regional SBE chapters.

Chapters in Syracuse, N.Y., Seattle and Madison, Wis., have hosted the national meeting. This year's host is SBE Chapter 20 in Pittsburgh.

National business will commence on Tuesday, Oct. 3, with the gathering of the board of directors.

"There is a lot to discuss," said Poray. "One topic is educational programming."

SBE is concerned about sources of new broadcast engineers and in recent years began to emphasize technical training and leadership seminars. This year, the society looks to expand upon its work.

"We try to partner with higher education institutions and other organizations in broadcasting," said Poray. "We are looking for more growth in educational programming."

SBE helped spearhead the creation and adoption of the Emergency Alert System several years ago. The latest developments will be discussed at the conference, courtesy of Clay Freinwald, national EAS chairman for the SBE.

The SBE also has introduced a new

certification classification: Certified Broadcast Networking Technologist. Concentrating mostly on hardware aspects rather than software, the certification represents a decision by the SBE to certify engineers in regard to computer-based audio systems.

Part of the board meeting will be devoted to the discussion of this new classification.

Also to be discussed is the location of the 2001 meeting. Originally it was scheduled to coincide with the Texas Association of Broadcasters regional

convention, but a shift in dates and availability caused a conflict.

"We have 'verbal invitations' from Syracuse and Seattle," said Poray. "We'll decide in Pittsburgh."

The national meeting will continue throughout the two days with the Fellows Breakfast, the annual membership meeting to usher in newly elected SBE officials, and the annual Awards Reception and Dinner. The SBE Engineer of the Year, Educator of the Year and SBE Fellows presentations will be recognized at the event.

## SBE Chapter 20 Convention Program

All presentations are scheduled for Wednesday, Oct. 4, at the Sheraton Inn Pittsburgh North.

### Room 1:

"UHF Antenna Choices," Robert A. Surette, Shively Labs, 8 a.m.

"COFDM Fundamentals," Michael Simon, Rhoads & Schwarz Inc., 9 a.m.

"Joint Broadcast Facility Operations," John A. Luff, Synergistic Technologies, 10 a.m.

"Eight Advantages of COFDM Techniques for Electronic Newsgathering," David Glidden, MRC Broadcast, 11 a.m.

"Computer Networking in the Television Infrastructure," Phil Livingston, Barry Gostomski, Tom McDonough, Michael Jones,

Panasonic Broadcast and Marconi Communications, 1 p.m.

"Modulation Independent TV Transmitters," Mark A. Aitken, Acrodyne Industries, 2 p.m.

### Room 2:

"How Star Quad Audio Cable Works," Steve Lampen, Belden Electronics Division, 9 a.m.

"Diamond Audio Presentation," Neil S. Karsh, Leitch Inc., 10 a.m.

"DTV in a Box," Jerry Berger, Agilevision, 11 a.m.

"Introduction to Cross-Coupling in RF Filter Design and How It Relates to IBOC," Robert A. Surette, Shively Labs, 1 p.m.

"Issues Faced in DTV Upconversion," Scott Ackerman, TeraNex Inc., 2 p.m.

# One Question, Three Answers

An actual email thread, June 8-11, 2000 on broadcast.net

Thursday, June 8, 2000  
To: bsi-i@broadcast.net  
Subject: BSI Experiences?

We are a small AM station considering implementing BSI software to automate our station. It seems to have all the functionality that we would need. Is this a good solution? Thanks for your input.

- John

Sent: Sunday, June 11, 2000  
To: bsi-i@broadcast.net  
Subject: Re: BSI Experiences?

John,  
We started using WaveStation in January and are extremely pleased with it. It's been running glitch free.

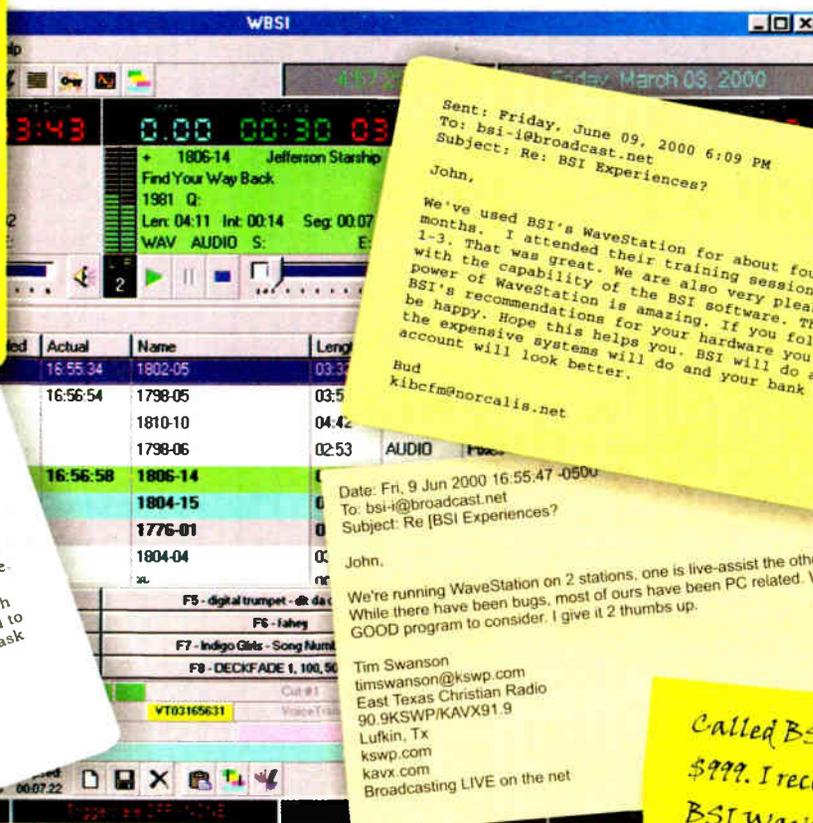
We use it weekdays in live assist to play our spots, PSA's, etc. and on weekends in full-automation. At 1 p.m. both days, we lock the door and leave. WaveStation plays programs recorded earlier, picks up some programs live from satellite. Joins news live at the top of the hour...records a couple of sports updates for playback a few minutes later...fades programs out...runs fill music...fades fill music, etc.

We currently have only one computer set up for WaveStation. We will probably purchase a second one in the not too distant future.

Perhaps it's a sad commentary on life, but WaveStation is much more reliable and dependable than the human beings we used to use...and "Wave Station," as we call the system here, doesn't ask for vacations or pay raises.

By the way, we are a small town AM station also.

Bob Ketchersid  
WYXI, Athens, TN



Sent: Friday, June 09, 2000 6:09 PM  
To: bsi-i@broadcast.net  
Subject: Re: BSI Experiences?

John,

We've used BSI's WaveStation for about four months. I attended their training session June 1-3. That was great. We are also very pleased with the capability of the BSI software. The power of WaveStation is amazing. The BSI's recommendations for your hardware will be happy. Hope this helps you. BSI will do all the expensive systems will do and your bank account will look better.

Bob  
kibcfm@norcalis.net

Date: Fri, 9 Jun 2000 16:55:47 -0500  
To: bsi-i@broadcast.net  
Subject: Re: BSI Experiences?

John,

We're running WaveStation on 2 stations, one is live-assist the other fully auto. While there have been bugs, most of ours have been PC related. WaveStation is a GOOD program to consider. I give it 2 thumbs up.

Tim Swanson  
timswanson@kswp.com  
East Texas Christian Radio  
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Called BSI... it's only \$999. I recommend we get BSI WaveStation. Plus their tech support is free!

JS



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# Buyer's Guide

Tech  
Updates

Inside



Radio World

Codecs, Telcos & Hybrids

September 27, 2000

USER REPORT

## Telco, Radio: Past Meets Future

by Alan R. Peterson

Radio and telephone technology have coexisted and grown together since the infancy of electronic communications. Much of what was done in radio's earliest days was accomplished with the aid of telephony.

Carbon button mics and telco loops for remote broadcasts are relics of another time. But radio still depends heavily on telephone technology to get the message across, whether it is a simple transformer coupler to send program audio down the line, a digitally driven hybrid for multiple callers on talk radio or a high-quality T1/E1 digital transmission package.

With cellular and personal communications services connections becoming faster and more dependable, the next few years will introduce us to a new genera-

tion of telephone codecs and other products to make the broadcaster's life easier.

In the meantime, here is what we have to look forward to now in telephone system product developments: simpler-to-use devices that sound great and will be ready to adapt to the changes of the telephone industry, especially with what may be coming down the cellular path.

### Hook up and go

There will always be a need for simple "bring 'em back alive" boxes to hook plain ol' phone lines and consoles together.

Devices like the HA-1 hybrid adapter from Excalibur Electronics depend on time-tested transformer/capacitor circuits. Other units such as the HC-3 autocoupler from CircuitWerkes combine a rudimentary hybrid with a limiter to tame levels and the ability to answer the phone automatically.

Improvements and refinements to a product extend its usefulness. One example is the RemoteMix Sport from JK Audio. The original product, the RemoteMix, combined a mixer, a DTMF dialpad and hybrid in a black metal brick that could fit in your hand. It went under the knife several times in the past four years to add a meter, extra inputs, additional headphone jacks and more. The latest addition based on customer request: a "redial" button.

operators that Comrex products have been made easy to operate, and decidedly non-tech in appearance.

"By designing the product to be attractive, maybe they will try it. I just hope the engineers will bear with us."

The Matrix is the latest Comrex product to garner attention. Compatible with earlier Vector and HotLine codecs, the Matrix features modular construction that allows the use of ISDN, GSM (see sidebar) or POTS connections.

A common complaint from users has been, "Why can't I use my POTS codec on a cellular phone?"

Put simply, the data rates are not there. A typical digital cellular phone



Telos TWOx12 talk-show system

Even though POTS hybrids are the simplest and most direct way to get a phone on the air, it is not the best-sounding. While listeners are forgiving of brief lapses in audio quality, 3 kHz response (or worse) will not hold them very long.

Art Constantine, vice president of business development for Musicam USA, said, "Listeners today expect pro audio quality. And unless it is a telephone call-in talk show, about 15 seconds is about all they will stand for."

Which is what brings us around to the digital codec: arguably the most visible example of digital telephone technology used in the field.

At one time, a broadcast remote was a complicated affair. It involved ordering a line from the phone company weeks in advance, testing and balancing the line the day before the broadcast, then hoping the gear would work the next morning.

Today, a codec and a simple dial-up line offer dependability, unprecedented frequency response and immunity to hum — the digital data stream is unaffected. Successful products in recent years include the Marti Smarti; the Musicam USA product line including the FieldFoneII POTS codec and the Prima ISDN devices; the Telos Zephyr; and Vector and Matrix codecs from Comrex Corp.

Kris Bobo, vice president of marketing and sales for Comrex, says the primary trend in telephone remote codecs is simplicity.

"Technical talent is becoming rare, and the non-technical people will be running the gear," she said. "The panel has to be simple. Lots of talent actually pride themselves in how little they know technically." It is because of those non-technical

can dish up 9.6 kilobit per second (kbps) — below what many codecs need to see for decent bandwidth.

But new cellular technology is coming. According to Jim Godfrey, president of Marti Electronics, watch for what he calls, "The promise of 3G."

The term 3G means "third-generation" See TRENDS, page 59 ▶

USER REPORT

## Talking Pictures With Gentner, the Sequel

by Jim Gilmore  
Audio Maintenance Engineer  
TNN/CMT

NASHVILLE, Tenn. It is interesting to watch the evolution of a process and the equipment that is developed in

tioned some of the early methods and devices used for extracting POTS (Plain Old Telephone Service) audio; by today's standards, we were using paper cups and string — maybe a little chewing gum, too.

Current equipment such as the



Teresa Harris working the TS612 at TNN

response to needs within that process.

Talk shows and telephone interface requirements have spawned some innovative and sometimes extremely complex systems for extracting, manipulating and airing telephone audio for integration into broadcast and audio production elements.

In a 1998 article for RW, I men-

Gentner TS612 and the DH30 digital hybrid have simplified and refined an important part of our broadcast and production environment.

We purchased one of the early TS612 systems. The first time it was used, the operators commented on the simplicity and quality of the unit.

Over time, features were enhanced, See GENTNER, page 59 ▶

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## USER REPORT

# Primo Sound From Musicam USA

by Andrew Rosenberg  
Director of Studio Engineering  
Westwind Media.com

**DENVER** Westwind Media.com is a custom content provider focusing on enabling Internet communities to add interest and depth to Web sites with high-quality audio and video content.

Headquartered in Denver, Westwind Media.com produces and optimizes broadcast content for some of the Web's largest tier-one sites, including iVillage.com, BET.com, Eritmo.com, Lycos and TheStreet.com.

We syndicate Internet audio programming enabled by our on-air and production studios and individualized content and services, including live remote-site events and concert Webcasts.

At the heart of these remote Webcasts and concerts is the Musicam USA CDQ Prima 120 codec equipped for ISDN. This technology enables our company to transmit a high-quality signal from remote sites back to our studios in Denver, then to the Web.

## Music to the ears

The primary requirement when purchasing our ISDN codec equipment was the ability of that equipment to transmit/receive a high-quality, low-delay signal from remote sites to our studios.

In addition, we needed a reliable tool

that had the features, functions, customization and technical support necessary for our company to succeed in producing its live Internet events.

We researched a variety of ISDN codec equipment. The equipment that best fulfilled our requirements was the Musicam USA CDQ Prima 120.

Unlike the other audio codecs that we tested, the microprocessor-controlled Prima is equipped with powerful programming functions. Using the Prima Logic Language one can program the Prima to perform a wide range of useful functions.

The unit is an audio codec that encodes and decodes audio for transmission over a digital facility such as ISDN, dedicated data service or satellite phone. Along with its audio compression capabilities, the CDQ Prima 120 has a rich set of monitor and control features made possible by a powerful on-board control processor and special command language.

For concise level metering, the unit has LED average and peak VU meters, left/right correlation and stereo image displays for both encoding and decoding signals.

It is controlled by a 12-key alphanu-

meric keypad on the front of the unit or with a PC connected through a RS232 port on the rear. A Windows setup and control program allows for friendly, point-and-click configuration and control of both local and far-end units.

Also located on the front are LCD navigation arrows, four menu shortcut



CDQPrima 120 in use at Westwind Media.com

keys — used to quickly move to one of the four main branches of the menu tree — headphone control keys and four Cue buttons which can control two user-programmed on/off switches.

The keypad also has an internal keypad beeper, which gives a short beep each time a key is pressed, giving positive feedback for each button pressed. We've found this feature handy due to the small size and the close proximity of the buttons.

The front of the CDQ Prima 120 contains a two-line, 16 character-per-line LCD display. The display is used for responses to front-panel user commands as well as spontaneous messages such as incoming call connect messages.

The top line of the display is for information such as current menu branch, encoder and decoder status, prompts and error messages. The bottom line is for menu navigation and other information. We've found the display to be a little small for the large menu tree that is needed for all of the powerful functions.

But because the CDQ Prima 120 is packaged in a one-rackmount unit, the size of the buttons and the display are a happy trade-off for rack real estate. As with any menu tree-based piece of equipment, once we used it for a while, the size of the keys and display became transparent.

## Sorting out the innards

The Prima is also equipped with a quiet, thermostatically controlled cooling fan for thermal protection. We are a global company and this is a sure way to know that when doing remotes near the equator, the equipment will come back in working order.

As for power, the unit contains an international power supply that does not need any jumper or switch setting adjustments for voltage or frequency changes.

The connection to the transmission line is made through an easily changeable Terminal Adapter card. With the removal of two screws on the rear of the unit, the North American TA301 can be replaced with the European TA201 without any software changes.

With the combination of the universal power supply and the quick changeable terminal adapter, doing last-minute

remotes from anywhere in the world is significantly less troublesome.

The CDQ Prima 120 now comes with 24-bit A/D and D/A converters for high-quality, low-noise and low-distortion audio conversions through gold-plated XLR connectors on the rear panel. For digital audio I/O the Prima 120 supports AES/EBU and S/PDIF formats through gold plated DB9 connectors. The larger two rack unit models have XLR connectors for AES input, output and sync.

The audio compression algorithms available in the CDQ Prima 120 are the industry standards MPEG Layer III, MPEG Layer II and G.722 for encoding and decoding. But Westwind's algorithm of choice is the CCS/Musicam-enhanced MPEG Layer II or Musicam.

By using Musicam-enhanced MPEG II, we can transmit and receive the highest quality audio while not being subjected to the substantially longer delays and negative cascading artifacts of MPEG Layer III.

In the CDQ Prima, the low-delay MPEG Layer II decoder yields 50-percent lower delay at any bit and sample rate. This is important when we do remotes using the Prima and an ISDN satellite phone. The higher the quality and the shorter the delay, the better our signal and the more satisfied our clients and their listeners will be.

## Getting down to logic

With the CDQ Prima 100 Series, you can easily send 10 kHz monaural audio up to two far-end locations and up to six with the 200 Series. The return audio from any one of the two remote locations can be selectively monitored.

This is useful when you need to send mono audio to multiple locations simultaneously on one ISDN line. It also gives you the ability to send two different monaural audio channels to two locations. Independent mono can be used to send the left-channel audio input to one location while sending the right-channel audio input to the other location (up to six locations with the 200 Series CDQPrima codecs).

Using the CDQ Prima's powerful yet easy-to-program Prima Logic Language, you can configure the CDQPrima to establish a connection automatically as soon as audio is present. In addition, the CDQ Prima will hang up after a predetermined period of silence.

These features are useful when sending and receiving audio to and from an unattended location. The system can also be programmed to automatically determine the incoming algorithm, bit rate, algorithm mode and line format.

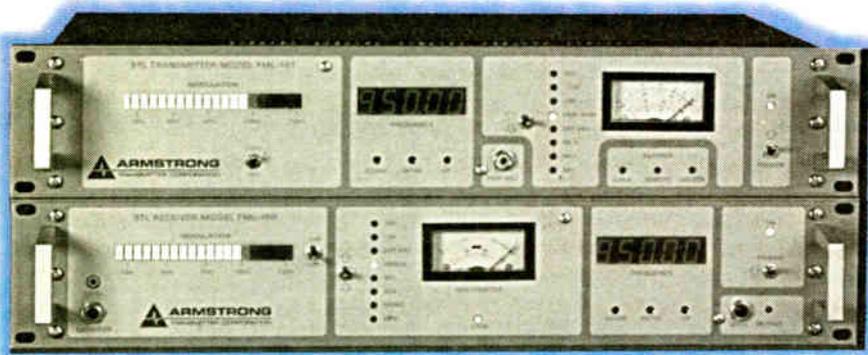
We all know how imperfect the telco companies are around the world, so to combat those unexpected line dropouts, you can program the CDQ Prima to automatically fall back to a single ISDN B channel and a lower bit rate should a line fail when using Layer 3.

Some other Layer 2 codecs that we have tried sensed when there was a line failure and would automatically drop back to a lower bit rate and bandwidth, but the CDQ Prima is the only one that can do it when using Layer 3.

The CDQ Prima's ability to transmit and receive asynchronous ancillary data to and from a remote location along with the audio signal has proven to be highly useful. The ancillary data is used for the remote control of peripheral equipment at the remote end.

See MUSICAM, page 61 ►

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## USER REPORT

# AIVOX Implements ISYS Pro

by Charles Nove  
Chief Executive  
AIVOX Limited

**LONDON** AIVOX is a sound facility based in London's Soho district, which has, for many years, been a center of excellence for audio and video production and post-production.

The company offers studio facilities and makes programs for the BBC and other broadcasters, makes commercials for independent broadcasters and also

runs an in-house voice-over team.

AIVOX has been in existence for approximately two and a half years and has a regular staff team of about 12 very busy people, working with companies and producers worldwide.

When we first set up AIVOX, we knew we'd be sending high volumes of audio traffic all over the world. We'd have to be fast and able to deliver in the highest quality. It soon became apparent that we'd be doing this primarily via ISDN.

We had a fair amount of experience with the well-known systems and had inherited an old CDQ 2000 unit from a small studio that I owned previously.

We needed three codecs, based on the client base that had already signed up to use us. According to our business plan, we could afford two.

## Price point

The ISYS Pro system from ISDNAudio.com had just been released in the UK and came in at a significantly lower price point than equivalent systems, including two competing codecs that we considered closely.

ISYS Pro is a PC-based system. We were a bit wary of PCs in terms of reliability but the cost was tempting. We were also promised that it would be much easier to use so that we could cut down on the requirement for studio engineers.

We'd already made the decision that we wanted at least one voice booth that could be used effectively in DJ mode, with no engineering or operator support; the talent was going to have to do all that themselves.

Originally, we bought one ISYS Pro system and installed it in a stand-alone voicing booth. Also in the booth: a small Behringer mixing desk, an Audio Technica ATM4033a microphone, a Beyer DT100 headphones, and MD, DAT and cassette.

This ISYS Pro has a touchscreen

installed, so there's no keyboard or mouse. The talent loved the system because it worked. I loved it because as one of the qualified engineers here, I didn't keep getting dragged away from my desk every five minutes.

That may seem a strange thing to say, but anyone who has used ISDN codecs knows that although the various systems should be compatible with each other, getting them to connect can be a nightmare.

In a nutshell, this system detects the type of codec that you dial out to or receive a call from and auto-configures everything.

In the past, we had spent many "happy" hours crawling around in rack-rooms, fiddling with dipswitches trying to get codecs to talk to each other. The fact that this system worked without any of this was unbelievable.

To dial out, all the voices have to do is touch the name of the studio they need to connect to and the system does the rest. Seconds later, the screen lights-up "On-Air" and they're ready to go.

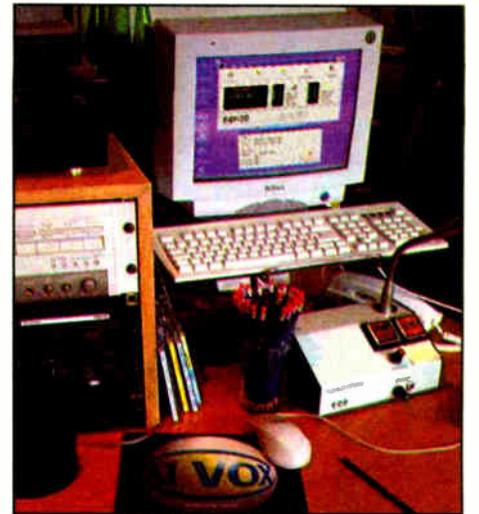
Our other main studios spend a lot of their time connected to the United States, Europe and Ireland.

Again, with mix of systems that we have to connect to — particularly in the United States with Telos and Musicam codecs — we needed a system that was quick and reliable and didn't leave us fumbling around in front of clients.

We bought a second ISYS Pro system, which is shared between two studios. The system can be controlled from either studio across our office PC network.

The phonebook is a real plus. It stores an unlimited number of entries, which are sorted by name. We have a large number of clients and visiting engineers, so it's great to enter the details once and know they're saved forever.

We've recently started doing live transmissions from these studios and people seem to notice the shorter delay



ISYS Pro at AIVOX Limited

from us. The ISYS system is quoted at less than 100 ms, which is quick for ISDN, though we haven't measured it ourselves.

Our international business has grown with our reputation over the years and because of time differences around the world, we often have to take in audio after close of business in the U.K.

We have the main studio ISYS Pro system set up so that it will automatically receive and record incoming audio. This too works like a dream.

Three mornings a week, we come in to a full audio inbox (which looks a bit like an e-mail inbox) on the system with commercials, voice-overs and other cuts that have been sent to us over ISDN overnight. We play these out through the desk, or import the audio cuts into our SADIe editor.

We've found our two systems to be robust. The quality is great. Over the past two years we've rediscovered our faith in ISDN systems. The ISYS Pro just feels like it's been designed by people who actually work in studios, rather than by technicians.

■ ■ ■

For information contact Mo Dutta at ISDNAudio.com in England at +44 121-248-0200 (GMT), fax +44 121-248-5109 or visit [www.isdnaudio.com](http://www.isdnaudio.com)

## USER REPORT

## Aeta Scoops Concerts

by Glen Jones  
Producer and Chief Engineer  
WFMU(FM)

**JERSEY CITY, N.J.** Pulling off a live radio remote is not an easy task when producing a rock and roll show on a public station. There is no budget for such things and one must pull it off with little or no staff support.

This summer I had a crazy idea that I would produce a series of live programs, touring the summer resorts that surround the listening area of WFMU(FM) radio. This task would involve a whole lot of work.

The tour was planned one stop at a time. Amusement parks and boardwalks were the chosen setting. At all these events I used a three-line Comrex frequency extender.

It did the trick but with some difficulty. It is not easy finding a suitable venue with three standard telephone lines. With summer quickly fading, I frantically tried to find a venue in the most popular of summer locations, Seaside Heights, N.J.

However, boardwalk venues generally don't have three phone lines and I couldn't find a suitable location.

It was time to update the equipment and make this remote happen. After researching the many codecs available on the market I settled on and secured Aeta Audio's Scoop Reporter II.

The unit is portable and allows for a remote broadcast using little more than the unit itself and a couple of mics. After setting up, it couldn't have taken more than five minutes to establish continuity to the station. The return line allowed me to confirm the integrity of the broadcast.

The broadcast itself sounded crisp and clear. To the untrained ear we sounded good enough that we could have been in the studio.

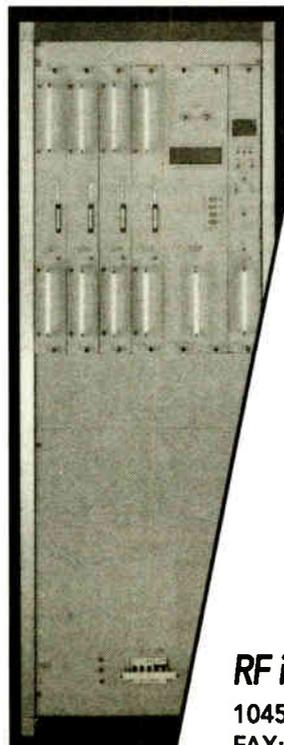
Technology has improved greatly since WFMU first purchased the three-line system, and the Scoop Reporter II is quite representative of those improvements. The broadcast was a big success. A huge crowd and best of all the easy setup allowed me to relax and do what I do best, which is broadcast.

For information contact Aeta Audio at (973) 659-0555 or visit the Web site at [www.aetausa.com](http://www.aetausa.com)

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## USER REPORT

# Zephyr Goes Live for Two L.A. Shows

by Craig Robbins  
Craig D. Robbins Associates

**LOS ANGELES** When the Democratic Convention came to Los Angeles, it was a sure bet that local radio stations would be eager to broadcast live remotes.

In fact, several stations gave over entire portions of their programming day to cover the convention — not only as breaking news, but also on talk shows and even some “unconventional” convention coverage.

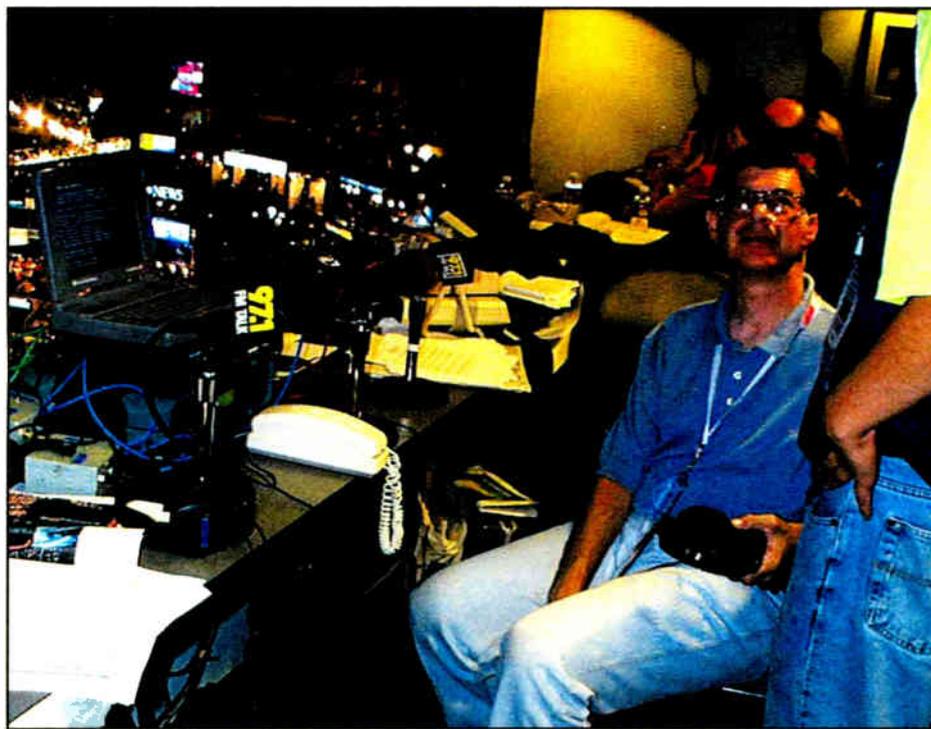
Two stations, KRLA(AM), known as “L.A.’s Talk” radio station, as well as KLSX(FM) whose format is FM Talk, approached me to set up their remotes. I run my own free-lance remote broadcast business in Los Angeles and have become known as a person who can supply both equipment and know-how, especially for ISDN set-ups, which have pretty much become the mainstay of my business.

ISDN is widely available, and is easier and cheaper than the 15 kHz broadcast lines that were once used. With the Telos Zephyr, which is the only ISDN codec I own, the quality is better and the operation is easier, too.

## Talk Show Row

For the convention remotes, I actually used two Zephyrs, my own for KRLA and a borrowed Zephyr Express for KLSX. I needed two because the stations’ remotes were located in separate areas of the convention, each with its own ISDN lines and each with distinct needs.

KRLA was broadcasting well-known talk show host Michael Jackson’s program all four days of the convention. He was set up at the convention center itself in “Talk Show Row” — one huge row of table after table of talk show remotes. KRLA had secured a position right near the entrance, so Jackson was



Craig Robbins and his Zephyr on the job at the Democratic National Convention. The codec is at the bottom of the stack, under the laptop.

able to get the first interview for many of the dignitaries who made the rounds each morning.

I set up my Zephyr at this prime spot along with a Mackie 1402 mixer, two RE20 mics and headphones. With the Zephyr, Jackson was able to do his entire show from the convention center and he had “push-button” control of everything, including callers who called during the show.

Our send signal was Layer 3 and our receive signal was set to G.722 to minimize delay for Jackson’s headphones. Zephyr broadcast all 12 hours of Jackson’s show over the four days without a hitch — but that’s not all it did for KRLA.

The station had ordered a feed from the podium where the main speeches

were taking place so the KRLA news team could record the speeches and use them in coverage throughout the day. But they never got what they had asked for.

Instead, I took the pool feed into the Zephyr, which allowed the station to call into the Zephyr and record the audio for their use whenever they wanted it. In effect, Zephyr allowed them to maintain continuous monitoring of the convention without actually being there and I think the news team was really glad they could count on it.

**I took the ‘pool’ feed into the Zephyr, which allowed the station to call into it and record the audio for their use.**

For KLSX, the set-up was a bit different. The plan was to broadcast the “Conway & Steckler Show,” Tim Conway Jr. and Doug Steckler, who do an irreverent afternoon show from 7-10 p.m., on the last two days of the convention.

They were set up live in the Staples Center, where most of the other press covering the convention were. It was a crowded area, with network and local news reporters right next to each other during the important evening speeches. Conway and Steckler braved some icy looks as they made fun of the news the others were taking so seriously, but it didn’t stop them.

Because space in this area was so limited, the capabilities of the Zephyr Express were ideal. I didn’t need to use a separate mixer, instead I used two Shure SM 58 mics plugged into the two mic inputs, headphone sets plugged into the phone outputs and that’s all there was to it.

The Zephyr Express worked as flaw-

lessly at the Zephyr. It’s great for this type of application, where space is tight and the equipment has to serve double-duty.

Conway and Steckler took a podium feed into the Zephyr Express, which they felt free to pot down when a joke or comment was called for. And with a laptop PC set up, they were able to get information on call-ins their producer back at the station had screened.

## Reliable and versatile

Four days of politics, 18 hours of broadcast plus audio feeds throughout the day — the Zephyr and Zephyr Express were put through their paces but worked with no problems. I can’t say I’m surprised.

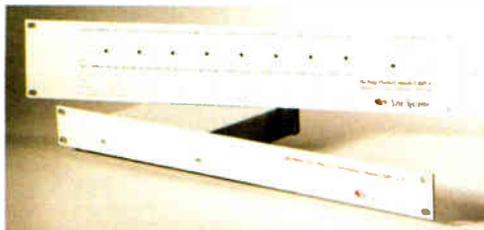
I’ve carried my Zephyr for remotes from Hawaii to the east coast, mostly for UCLA football and basketball, which is my main remote broadcast client and I’ve never had any problem to speak of. The set-up is easy and loading the parameters is simple, as is storing the auto-dials. You just press a few buttons and you are connected for reliable, good quality broadcast audio.

I’ve tried the other codecs on the market for comparison but it was the Zephyr that I bought. It’s much more versatile and can run full stereo in both directions, which is great for remotes featuring live bands where the music is important.

One additional quality I appreciate about Zephyr is the way it can reconnect you to a call you originated. That comes in handy for another remote broadcast I handle, KIIS-FM’s weekend party on the Bud Party Boat.

ISDN is brought into the boat from an outside line and with the crowds partying, it wasn’t hard for someone to accidentally kick out the line and interrupt things recently. Fortunately, it was

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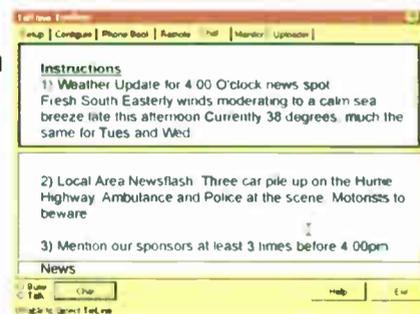
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16.8kbps	7kHz		
19.2kbps	7kHz	<b>ISDN MODE</b>	
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# Trends

► Continued from page 53

cellular," which, when perfected, will afford users up to two Megabits per second (Mbps) data transfer.

"I am not sure if the cellular instrument will be as it is now," said Godfrey, "but it is promising. With a 28.8 connec-

tion, it is now possible to pass 7.5 kHz response; with 2 Mbps, you could send out full stereo."

Marti offers the Cellcast, combining a cellular phone and a remote mixer in one unit. As the Cellcast is generally an analog unit, it passes telephone-quality audio back to the studio.

Given our present technology, nothing moves faster than a T1 line. Stations take advantage of this by using digital transmis-

sion systems to move audio and transmitter telemetry back and forth on T1 lines.

Some stations use such a device in addition to RF STLs, while others use it as the sole means of delivering digital audio to the transmitter site. One such device is the Moseley Starlink 9003T1, which allows uncompressed 16-bit, Apt-X or MPEG audio to be delivered to a decoder at the transmitter.

So efficient and flexible is this system that iBiquity Digital, the new IBOC proponent formed by USA Digital Radio and Lucent Digital Radio, selected it to help in the latest round of DAB testing in San Francisco.

The Internet offers possibilities, but not necessarily for real-time audio. Sprint PCS uses Internet-like protocols for data transfer, which means data over a wireless telephone could possibly be subject to the same slowdowns that happen when you surf at home.

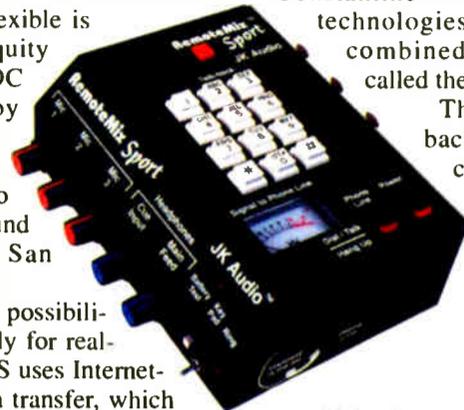
Because many radio automation com-

Comrex products to call up servers and feed new audio for storage and playback, but that is over conventional phone lines.

But the Net may yet prove useful. Constantine said Musicam USA might have a way to bypass part of the previous procedure and move audio directly into computers. The company is "marrying three different worlds," according to Constantine — ISDN, information technologies and audio will be combined into one package called the Superlink.

The SuperLink is a backplane product that can accommodate numerous modules, depending on configuration and needs.

The modules can be changed when phonelines speed up and the technology changes. One plug-in is an Ethernet port for streaming audio or connection to the house LAN.



JK Audio  
Remote Mix Sport

streaming audio or connection to the house LAN.

## Acronym Review

A few years ago, a phone was a phone and that was it. Given today's digital infrastructure and the market penetration of cellular telephones, there are a number of acronyms that you may be hearing about but don't yet know.

Below are several terms that help explain a few things, courtesy of Comrex.

**PCS:** Personal Communications Services. An all-encompassing term that broadly defines wireless telephone service, incorporating CDMA, GSM or TDMA technologies as defined below.

**CDMA:** Code Division Multiple Access. Used by Sprint PCS and regional wireless carriers. Sends audio as circuit-switched data, usually up to 14.4 kbps.

**GSM:** Group System Mobile. A wireless technology that is used by only a few companies in the United States, but is the predominant wireless technology outside of North America. Sends audio as circuit-switched data, but at 9.6 kbps.

**G:** Generation, referred to as 1G, 2G and 3G. The analog cellular reign was known as 1G (first-generation), the current PCS technology is 2G, with 3G just

over the horizon. The specifications on 3G are still being worked on, but very high data rates will be possible by the middle of the decade; up to 384 kbps in a mobile environment and as high as 2 megabits per second (Mbps) in stable stationary fixtures.

**Packet Data Services:** When data is switched in this manner (see TDMA below), it is steered by route and destination information within each *packet*, or block of data. On the other hand, data that is *circuit-switched* is routed from end to end by switches all the way.

**TDMA:** Time Division Multiple Access. The technology already in place on the AT&T wireless network and used by other companies with existing large analog networks. Using the infrastructure already in place means lower deployment costs. Uses packet data services, rather than circuit-switched data services. The two services are not interchangeable.

*Adapted from "Wireless PCS Remotes: How and When?" by Tom Harnett, vice president of engineering, Comrex Corp. Used with permission.*

## Gentner

► Continued from page 53

many through user requests. Accordingly, we brought our units up-to-date, making sure that all were at the same revision level, so that the operator always has the same features available on all units. This becomes important as personnel move from one environment to another.

At TNN and CMT, we use the TS612 primarily for media tour situations, in which we are dealing with TV affiliates doing interviews with artists for inclusion into the affiliates' news and/or magazine shows.

### Two places at once

Sometimes these are live, sometimes pre-taped, but always, on our end, the interviews are back-to-back with little room for error. It goes without saying that the operator of the phone system must be alert and have predictable, intuitive equipment.

The TS612 meets these requirements. We use the TS612 in a split-studio mode, using one section for the caller audio that goes from the affiliate interviewer to the talent's IFB headset.

The other section of the TS612 is available for a separate IFB feed or for use as a PL interface. In cases that require both sections of the TS612 for IFB, a separate digital hybrid such as the DH30 is available.

TNN/CMT has TS612 units permanently installed in the tech centers of

both Studio A and Studio B. And, in order to give maximum flexibility to both our production people and outside clients, control cables for screener and studio control consoles have been installed in multiple locations. We keep a TS612 available in a portable case for use on any of our uplink or production trucks.

Screenwair, Gentner's original call-screening software, was purchased when it became available and has been a valuable addition in many situations, especially when the producer wants the information available in the video monitor wall.

It provides the necessary information in one place and lets the producer know the status of all lines at a glance, so she or he can alert the talent appropriately.

Screenwair recently has been succeeded by ScreenWin, a Windows-based software that added features, including multiple languages and a "face" icon for alerting the viewer as to the disposition of the caller. The TS612 cannot determine the caller's disposition by itself — that's up to the person screening the calls.

Our relationship with Gentner has been excellent. They have always been responsive to requests for technical assistance and have been receptive, even solicitous, of suggestions for improving the performance to the TS612.

*For more information contact Gentner Communications in Utah at (800) 945-7730, fax (801) 997-0087 or visit the Web site at www.gentner.com*

**Today, a codec and a simple dial-up line offer dependability, unprecedented frequency response and immunity to hum. The digital data stream is unaffected.**

panies use the Net for delivering voice-track files for sequenced playback, a tempting thought occurs: Would a realtime codec that can transfer a jock's voice *over the Net* from a remote site be feasible?

Bobo responded, "Why would you want to do that? It's one extra step. Yes, the Net is wonderful if it doesn't have to be in real time, but otherwise, the phone line is right there. Use that."

Bobo said a lot of dot-coms use

"With it, you can take a call over ISDN, and right away squirt the audio into the network," he said.

So where does that leave the modern day broadcaster? In good shape, actually — the Internet is going to get faster and mature 3G cellular technologies will be here in a couple of years. Until then, the choices offered to the broadcaster for moving audio over phone lines, whether analog or digital, remain robust.

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6X1G

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3X2B

Active crosspoint switcher with 3 stereo inputs and 2 stereo outputs.



SS 3.1

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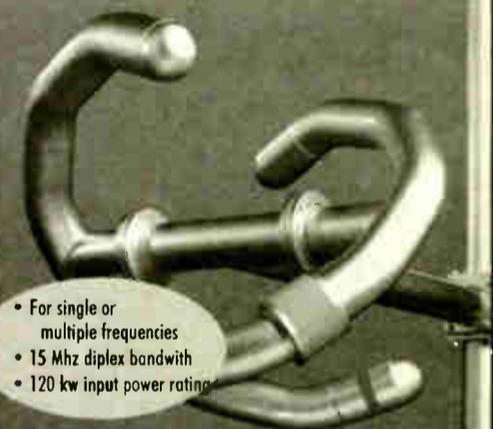
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**TECH UPDATES**

**MDO Brings PC-Based R/C to CDQPrima**

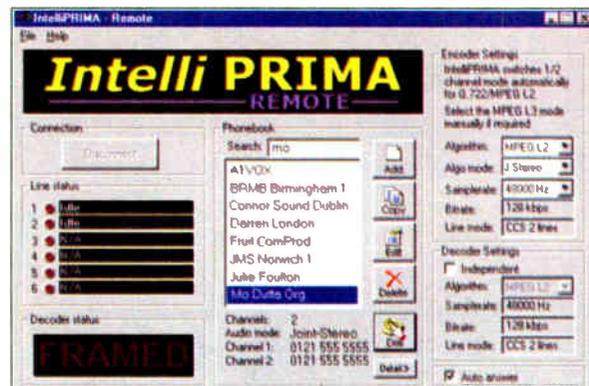
MDO's *IntelliPRIMA Remote* is PC-based Windows software, designed to ease the operation and use of the CDQPrima range of ISDN audio codecs manufactured by Musicam USA.

*IntelliPRIMA* features a set of controls for broadcasters and pro-audio users who need immediate access to their CDQPrima devices. Any Windows PC can be connected via serial port to the codec device.

The system also is designed for installations where the codec device is installed in the racks or another area, but the control interface must be in the on-air or production booths.

A searchable on-screen phonebook allows for an

unlimited number of entries and is able to import existing speed-dials direct from the codec. The phonebook combines connection settings with dialing information



with a two-click-connect capability.

Direct access to codec settings, such as bit-rate, cod-

ing algorithm and mode, is available when required. When this extra panel is not being used, it can be tucked away.

Phonebooks are stored as simple and compact data files. They can be copied to floppy disk, e-mailed to colleagues or centrally compiled and distributed within an organization to make sure each studio has up-to-date information.

The software provides configurable audio/visual alerts of incoming ISDN connections — which include a red and white flashing screen.

*IntelliPRIMA Remote* is priced at around \$150 and is available for download at [www.intelliprima.com](http://www.intelliprima.com)

Also available at the site is a demonstration version, which allows for a 30-day evaluation of the product.

For information contact *Mo Dutta* at MDO in England at +44-121-248-0200 (GMT), fax +44 121 248 5109 or visit the Web site at [www.intelliprima.com](http://www.intelliprima.com)

**TieLine POTS and POTS/ISDN Codecs**

The *TieLine* codecs feature 15 kHz two-way audio for remote broadcast over a regular phone line. The units also deliver audio at connect rates as low as 24 kbps with a 100 ms audio coding delay.

The units display the quality of the modem connection. When connecting, *TieLine's* modem adjusts to each line, re-equalizing it for optimum bit rate and stability to avoid dropouts.

The systems' software is upgradeable. Updates can download from the *TieLine* Web site. Users can upgrade the POTS codec for ISDN with the optional card and software or can purchase the *Commander POTS/ISDN* codec.

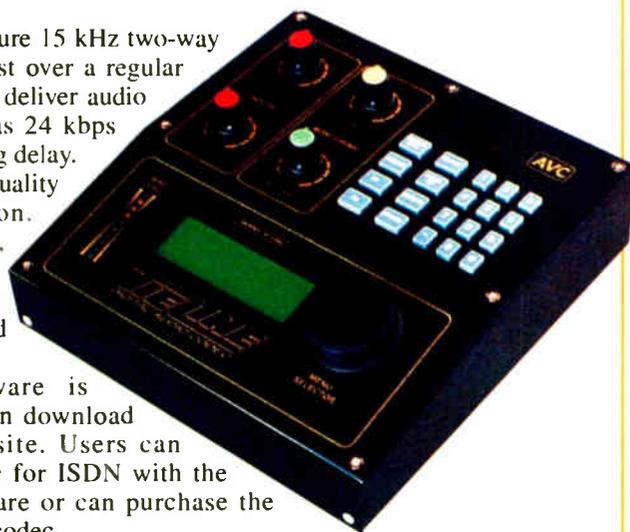
The units can remote control audio input levels as well as most other functions from either end. A built-in telephone coupler allows connection in analog mode. Users can store 50 phone numbers by name in the software's telephone book. A 10-LED bar display shows peak audio level transmitted by *TieLine*.

*TieLine's* free software package allows users to type and send messages between talent and production. With this software, it is possible to remote-control all functions of the *TieLine* from a PC, upgrade the unit, upload/download phone numbers or settings and monitor connection quality on a graph display.

Each unit comes with two XLR inputs that accept unbalanced as well as balanced line inputs or mic inputs (selectable through the menu), one balanced output and two volume-controlled headphone outputs.

Two CMOS contact closures standard with each *TieLine* with the option of adding six dry relay closures with the rackmount unit for a total of eight.

For more information contact *TieLine America* in Indiana at (317) 334-9390 or visit the Web site at [www.buytieline.com](http://www.buytieline.com)



**Musicam**

► Continued from page 54

We use the data to start and stop DAT machines, set off audio and visual alarms and control audio routing on our fiber-optic network. Unlike other codecs that support ancillary data, all data is split evenly between left and right channels for equal fidelity.

We also use our CDQPrima for real-time teleprompting when doing remote talk shows or interviews. Using the RS232 port, a PC at the studio and one at the remote location is all we need to have two-way, real-time data communication.

This comes in handy when program channels and IFB channels are all being used and the talent needs to know who's on the next line.

Recently, Westwind used the CDQPrima 120 to stream live audio cov-

erage from the Republican and Democratic National Conventions. The CDQPrima provided us with a remote signal from Philadelphia and Los Angeles that, in our opinion and in the opinion of our clients, was of higher quality when compared to other Internet broadcasters on site.

We experienced no dropouts in our eight days of broadcasting both conventions.

We have used the 120 to stream live concerts and music festivals from across the United States. The 120 performed flawlessly.

The Musicam USA CDQPrima 120's features have given Westwind's engineering department great confidence when broadcasting from remote locations.

For information contact *Musicam USA* at (732) 767-5600, fax (732) 739-1818 or visit [www.musicamusa.com](http://www.musicamusa.com)

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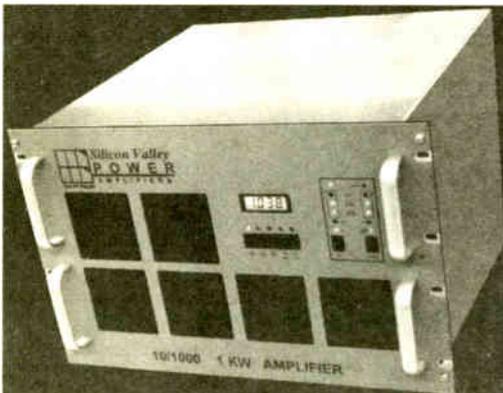
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## TECH UPDATES

## Sonifex Courier

The Courier from Sonifex Ltd. is a portable hard-disk or flashcard recorder. The ISDN version of the Courier provides the features of the standard unit but brings it up to the level of a portable ISDN codec. It can carry out a live broadcast or can be used as an ISDN modem to send audio back to the studio as data.

For live audio, MPEG-2 compression is used to send and receive audio over a single 64-kbps circuit. The unit can be configured for 56 kbps audio for use with certain telecom switches in the United States. The system can use the left mic/line input to broadcast or play back cuts from the disk.

Audio can be sampled at 24 kHz, 32 kHz or 48 kHz. An option allows the user to mix both the inputs to mono before sending. There is a send and return level indicator and levels can be adjusted using the record level knob and the headphone volume adjustment with the return feed being sent to the headphones.

Using the Courier as an ISDN modem, the user can connect directly to an ISDN line and send data files back to the studio using the z-modem protocol.

There are two types of ISDN options available: CO-ISDN-S version uses the Euro-ISDN protocol and is used in Europe and Asia. CO-ISDN-U version uses the AT&T, Bellcore and DMS100 protocols and is for use in the United States and Canada. A CO-ISDN-S unit can be used in the United States with a separate NT-1 adapter.

Courier is compatible with CCS CDQ Prima and CDQ1000, Telos Zephyr, Dialog 4 MusicTaxi and Prodys Pronto 2 codecs.

For information contact Independent Audio at (207) 773-2424, fax (207) 773-2422 or visit the Web Site at [www.independentaudio.com](http://www.independentaudio.com) or [www.sonifex.co.uk](http://www.sonifex.co.uk)



## Audio Processing Technology

Audio Processing Technology's BCF384 Broadcast Communications Frame can be used as a full-duplex codec, incorporating apt-X 4:1 data compression technology. It operates in either X21 or ISDN configurations.

In the codec-to-ISDN mode, two BCF384s will communicate at bit rates up to a max of 256 kbps and delivering 15 kHz stereo or 22 kHz mono audio.

The apt-X coded data interfaces with the ISDN via an integral proprietary four-channel I-MUX module supported by a locally approved TA.

The unit is backwards-compatible with previous APT ISDN or X21 based products. Set in CLEAR mode — i.e. no I-MUX — the BCF384 will exchange 7.5 kHz mono audio with any OEM apt-X based equipment.

An onboard directory will store the calling and set up information associated with 20 regularly used locations. This facilitates automatic, short-code speed dialing and in the case of the first two locations, one-touch fast dialing.

Additionally, a call-grouping facility enables the unit to be configured to only accept calls from nominated directory locations.

In X21 mode the BCF384 will operate at bit rates up to a maximum of 384 kbps delivering 22 kHz stereo audio.

The DTE configured data port connects with any temporary or leased digital telco circuit via an external Network Terminating Unit. The NTU will provide valid clock and indicate signals to allow data to flow in the network. Supporting this is the onboard "autoSync" mode.

With X21 to ISDN, the unit can be used as a simple data communications device, bypassing the internal apt-X processes.

The main port, now reconfigured in DCE mode, can accept, from other equipment, any X21 formatted data up to 256 kbps. This data is routed to the IMUX and TA modules to be restructured for transmission via the ISDN network.

For more information contact Audio Processing Technology in Belfast, Northern Ireland at 44-1232-371-110, fax 44-1232-371-137 or visit the Web site at [www.aptx.com](http://www.aptx.com)

## JK Audio Gets New Innkeeper

JK Audio's Innkeeper 1x digital hybrid is the next version of the Innkeeper 1 (RW, July 19). This release includes three new features — caller AGC, caller ducking and a 1 kHz tone generator.



Caller Automatic Gain Control is designed to lift the caller's voice without boosting noise between words. It suppresses loud callers and boosts quiet callers without adding artifacts.

Caller Ducking drops the caller's voice by 9 dB when the talent is

talking. This allows the host to overpower the caller during the conversation but not mute the caller.

The 1 kHz tone generator is a three-state button. One press sends the tone down the phone line at full level. A second press sends the tone out the caller XLR jacks. A third press turns the generator off.

The tone generator is designed for setting levels on recording equipment. Innkeeper digital hybrids use the actual transmit signal to auto-null to the phone line; no tones or noise bursts are

sent down the line.

Innkeeper 1x has a suggested list price of \$875 in a desktop unit or \$950 in a rackmount unit.

For more information contact JK Audio in Illinois at (800) 552-8346, fax (815) 786-8502 or visit the Web site at [www.jkaudio.com](http://www.jkaudio.com)

## Mayah Centauri

The Centauri codec from Mayah functions as an audio gateway via ISDN to LAN, IP to X.21, ISDN to Internet; conventional ISDN/X.21 audio codec; coding toolbox and an eight-channel digital audio ADAT interface with multichannel coding features.

As an audio gateway codec, it can receive audio from another codec via ISDN while providing this audio with IP to the LAN or streaming to the Internet. Centauri serves as a streaming device and provides server and trans-coding capabilities.

The unit is a compatible ISDN/X.21 device supporting more than 10 proprietary inverse multiplexing schemes to be compatible to ISDN codecs such as Telos Zephyr, Dialog4 MusicTaxi, CCS CDQ Prima and others.

It supports the J.52 IMUX standard at up to six B-channels. Users only need to know the destination numbers; the format in use is detected automatically.

Centauri offers G.711, G.722, Layer 2, Layer 3 (MP3) and MPEG 2/4 AAC as well as linear coding formats.

For more information contact Mayah Communications in Germany at +49-811-5517-0, fax +49-811-5517-55 or visit the Web site at [www.mayah.com](http://www.mayah.com)

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## TECH UPDATES

## Comrex Matrix Codec

The Matrix from Comrex delivers 15 kHz full-duplex audio on a plain telephone line, or on ISDN with an optional module. A different module allows operation on GSM wireless services for remote broadcast.

In its base form, the unit is compatible with the Comrex Vector and HotLine POTS codecs. The audio interface comprises two mic inputs, one headphone output and one line-level output.

The system also features a -10 dBu tape input for connection to a MiniDisc or DAT player.

The optional ISDN module transforms the Matrix into an ISDN codec. Three algorithms, ISO/MPEG Layer III, G.722 and TURBO G.722, are included for industry compatibility. The optional GSM accessory, with its PCMCIA slot, connects to the modem on a GSM wireless phone for audio over a cellular circuit.

A battery kit, consisting of a NiMH battery and mounting bracket, is available for the Matrix.

The battery provides approximately seven hours of power and serves as a backup or even primary power source.

The unit also features store-and-forward capability. This feature is available in the base unit or with the optional GSM module and allows almost 10 minutes worth of 15 kHz audio cuts to be sent in non-real time.

The Matrix ships this month and the optional accessories — ISDN module, GSM module and battery kit — will be available by the end of the year.

For more information contact Comrex in Massachusetts at (800) 237-1776, fax (978) 635-0401 or visit the Web site at [www.comrex.com](http://www.comrex.com)



## CircuitWerkes DR-10

The DR-10 from CircuitWerkes is a microprocessor-based remote control that operates a station's equipment through a phone connection.



The unit includes an auto-answering telephone coupler with active, balanced audio in and out.

After it answers, the user has DTMF control of 10 relay closures. A user defined security password prevents tampering.

Relays can be programmed individually for momentary, latching or interlocked operation. Each can be programmed to decode any of the 16 DTMF tones. A beep acknowledges the tone telling the user when an output is activated.

The DR-10 includes a two-tone sequence mode and an anti-falsifying delay mode that prevent accidental contact closures when remote broadcasting. The unit can be set to close relays after a tone is released, allowing the user to start automation without the tones reaching air.

The unit has four logic level inputs that can cause the system to automatically activate any relay and/or call a pager or other function. Options include the CP-1 call progress decoder and the Silencer, which removes DTMF tones from the audio output.

For more information contact CircuitWerkes in Florida at (352) 335-6555, fax (352) 380-0230 or visit the Web site at [www.circuitwerkes.com](http://www.circuitwerkes.com)

## Broadcast Telephone Systems

The PROtalk4 On-Air Telephone Controller from Broadcast Telephone Systems features a small-footprint housing and icon-based buttons and backlit display. Its front panel was designed for access and accuracy during high-stress situations.

The unit is structured around four independent digital hybrids and offers mix output for call recording, automatic mix-minus to caller, adjustable level controls four channel/caller conferencing and speakerphone capability.

For more information contact Broadcast Telephone Systems in British Columbia, Canada at (888) 890-7424, fax (250) 260-2871 or visit [www.broadcast-telephones.com](http://www.broadcast-telephones.com)

## Marti Updates Telco, Codecs

The Marti Electronics telco lineup includes four products: the TalkPort, Cellcast, The Smarti and the GX-500 Mixer.

The Cellcast has been updated and now weighs just over eight pounds. It is built around a three-watt analog cellphone transceiver. This unit is capable of sending a signal out of a building or a long distance from a cell site.

Although the audio is limited to 3.5 kHz, the perceived sound quality can be enhanced with the built-in frequency extender. The unit can be battery-powered or AC- or vehicle-powered. Several antenna options are available to achieve greater transmitter gain.

Another cellular option is the TalkPort remote mixer, which is a compact remote mixer that can be hooked to a handheld cellphone.

The system uses a consumer camcorder battery to power the mixer and one of several available analog cellphones. It has a provision to connect with a standard POTS phone line.

The GX-500 is a four-input mixer with two phone line inputs, four XLR inputs and four headphone jacks. The rechargeable battery in the unit will power the unit up to 10 hours.

The Smarti is a telephone remote system that can send up to 7.5 kHz over a standard telephone line. Two units are required, one on each end. The system offers four inputs like the GX-500 and the Cellcast.

The Smarti features two relay contact closures and a 10-number speed dial. For more information contact Marti Electronics in Texas at (817) 645-9163, fax (817) 641-3869 or visit the Web site at [www.marti.bdcast.com](http://www.marti.bdcast.com)



Marti Cellcast

## Radio's Most Wanted

## PROFILE: Jeff Johnson

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WXIU / X-Star Radio Network  
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Hometown: Oregon, Ohio

School: Clay High, Oregon, OH  
Univ. of Cincinnati/Industrial Design

Favorite color: Chrome Yellow

Coffee: Black, Strong, Guatemalan

Favorite radio format: Classical

Favorite section in Radio World:  
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### AUDIO PRODUCTION

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Stanton 310B pre-amp, used, gd cond, \$50/BO +shpg. Bob Riukin, KPLMK/JJZ, 441 S Calle Encilia #8, Palm Springs CA 92262. 760-320-4550.

Aphex Type C aural exciters (2), excel cond, no manual but simple to use, \$100 ea. Dean Bailey, 10027 Church Rd, Dallas TX 75238. 214-343-0879.

Ramsa WU8101, (2) Panasonic board modules for Ramsa WU 8100 Series, WR8616, WU8091, brand new in box, \$100 ea/BO +shpg. Bob Riukin, KPLMK/JJZ, 441 S Calle Encilia #8, Palm Springs CA 92262. 760-320-4550.

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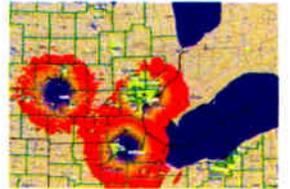
Want to Sell

Arrakis 1200-5S 5 channel stereo console w/power supply, working/gd cond, \$375. G Parmelee, Audio Tracks of Vermont, POB 5515, Essex Junction VT 05453. 802-288-1033.

Ramko Research DCSRA rack mount, 5 channel mixing console in gd cosmetic cond, may need some work, BO; Russco 505 mono 5 chnl mixing console, rack-mount or tabletop cabinet, works, BO; Shure PE68M 5 chnl microphone mixer, like new cond, BO. Joe Vilkie, Great Circle Bldg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

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Shure M267 pro portable mic mixer w/limiter, 4 input, Phantom pwr, battery/AC powered, nice, clean cond, \$350; Tascam MM1, 20 line input stereo mixer, midi mute, rack mount, treble/bass, effect sends, \$600. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

Auditronics 210 24 mixer broadcast console. Continental Communications, 800-664-4497. Email: [cont-comm@fiastl.net](mailto:cont-comm@fiastl.net).

LPB Signature 2 1982 vintage studio console, might work, has round pots, 8 channels, VU meters, \$250/BO +shpg. Bob Riukin, KPLMK/JJZ, 441 S Calle Encilia #8, Palm Springs CA 92262. 760-320-4550.

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### Want to Buy

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RCA 77's & 44's, will pay up to \$1000. Also RCA On-Air lights, will pay \$200. Larry Drago, WELI, POB 85, New Haven CT 06501. 203-230-5255.

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RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

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CELLCAST RBS-400 case power supply lighter cord, \$1500/BO. GM 1-800-791-8028.

## Want to Buy

Esoteric RE EQ; Packburn Noise 323A. J Hartt, Hartt Audio Transfers, 2418 36th Ave West, Seattle WA 98199. 206-282-0720.

Transformers: Altec/Peerless (15036, K241D, others), UTC Triad (R series), UTC (A, CG, HA, LS, O, S), WE (111C, 367A, others). Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

## MONITORS

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Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

## RECEIVERS/ TRANSCEIVERS

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Erko T-4A SCA-FM tuner, new, 67KC & 92KC, \$75. Ed Davison, 1129 Willowbrook Dr, Springfield IL 62707. 217-793-0400.

McMartin FMR-1 FM mono rackmount rcvr tuned to 103.7 FM in gd working order w/above average cosmetics, BO. Joe Vilkie, Great Circle bdcg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

## RECORDERS

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Agfa, 3M, BASF, Tascam reel-to-reel 1/4", 1/2", 1" tape, new in box-NOS. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

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Universal Audio, Urei, dbx, Collins, RCA, Gates. Tim Coffman, 858-571-5031.

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.



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University T50 horn driver or complete horn wanted. Ed Davison, 1129 Willowbrook Dr, Springfield IL 62707. 217-793-0400.

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DAP mdl 310 (2), in excel cond, \$1500/BO/trade. Gene Kirchner, WRDN, 114 West Main St, Durand WI 54736. 715-672-8989 or fax 715-672-4622.

Orban Optimod 8000A, completely recapped 2 months ago, still in service, avail immediately, excel cond, \$1500 +shpg. Gene Kirchner, WRDN, 114 West Main St, Durand WI 54736. 715-672-8989 or fax 715-672-4622.

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Ampex 350/351 electronics. J Hartt, Hartt Audio Transfers, 2418 36th Ave West, Seattle WA 98199. 206-282-0720.

Tube recorder electronics. Mark Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

### REMOTE & MICROWAVE

### Want to Sell

Henry Engineering Mix-Minus Plus in like new cond, BO. Joe Vilkie, Great Circle bdctg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

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### Want to Buy

Scientific Atlanta Sedat/DAT rack mounted receiver. Jenny Ponza, Laser Light & Sound, 10719 Winner Rd, Independence MO 64052. 816-252-2808.

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300 10" reels of Drake Chenault Great American Country Music, BO +shpg. Gene Kirchner, WRDN, 114 West Main St, Durand WI 54736. 715-672-8989 or fax 715-672-4622.

Various used carts, \$.50 each, 10.5" reels, empty, \$1 ea, full \$3 ea. J Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

### TEST EQUIPMENT

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HP 201-C tone generator, continuously variable, tube type, needs work BO. Joe Vilkie, Great Circle bdctg Co, Box 397, Meadville PA 16335. 814-724-1111 x238.

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Ramsey FM-100 hobby bdct xmtr, 1W, deluxe model, \$375; Ramsey FM-25 hobby bdct xmtr, 1W stereo, \$300. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-2224.

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Company/Station \_\_\_\_\_

Address \_\_\_\_\_

City/State \_\_\_\_\_

Zip Code \_\_\_\_\_

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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.

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Find out more about Richardson Electronics at [www.rell.com](http://www.rell.com).

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# Radio World

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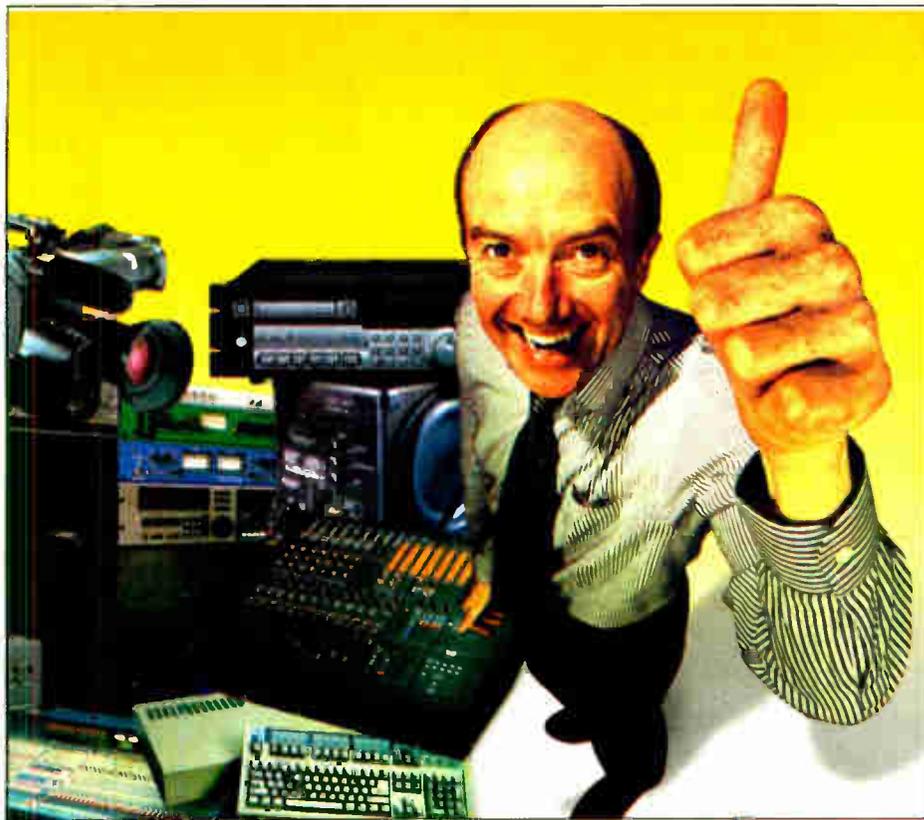
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Cart Machines	Recorders	Test Equipment
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Disco-Pro Sound Equip.	Satellite Equipment	Employment
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10-19 col inch (per inch)	\$78	76	74	70
Distributor Directory	\$120	115	110	105
Professional Card	\$90	85	80	75
Classified Line Ad	\$2.00 per word			
Blind Box Ad	\$15 additional			
Station/Studio Services	\$175			



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PAGE	ADVERTISER	WEBSITE URL
16	360 Systems	www.360systems.com
11	AETA Audio Corp	www.aetausa.com
60	Air Corp	See ad for contact information
23	Aphex	www.aphex.com
54	Armstrong Transmitters	www.armstrongtx.com
17	Arrakis	www.arrakis-systems.com
27	Arrakis	www.arrakis-systems.com
61	Arrakis	www.arrakis-systems.com
22	ATI	www.atiguys.com
2	Auditronics/Wheatstone	sales@wheatstone.com
59	Belar	www.belar.com
55	Bext	www.bext.com
50	Broadcast Data	www.broadcastdata.com
50	Broadcast Devices, Inc.	www.broadcast-devices.com
3	Broadcast Electronics	www.bdcast.com
67	Broadcast Richmond	www.broadcast-richmond.com
52	Broadcast Software Int'l (BSI)	www.bsiusa.com
50	Broadcast Technology Company	www.broadcasttech.com
60	Broadcast Tools	www.broadcasttools.com
25	BSW	www.bswusa.com
36, 37	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
50	Circuit Werkes	www.circuitwerkes.com
63	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
50	Cortana	cortana@cyberport.com
44	Crown Broadcast	www.crownbroadcast.com
39	Digigram	www.digigram.com
50	Econco	www.econco.com
60	Electronic Research Inc.	www.eriinc.com
60	Excalibur Electronics	See ad for contact information
51	Fairlight On Air Systems	www.fairlightonair.com
41	Full Compass	www.fullcompass.com
50	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
32	Harris	www.harris.com
63	Henry Engineering	www.henryeng.com
31	iBEAM Broadcasting	www.ibeam.com
10	Inovonics	www.inovon.com
20	Inovonics	www.inovon.com
63	Inovonics	www.inovon.com
53	ISDNAUDIO.COM	www.isdnaudio.com
60	J Squared Technical Service	jsquared@cdsnet.net
61	JK Audio	www.jkaudio.com
28	LPB	www.lpbinc.com
35	MediaTouch	www.mediatouch.net
8	Moseley Associates	www.moseleysb.com
48	Musicam USA	www.musicamusa.com
42	Nagra	www.nagra.com
33	Netia	www.netia.net
19	Neutrik USA	www.neutrikusa.com
63	Nott Ltd.	www.tjantenna.com
24	NSN Net	www.nsn.net
9	Omnia, a Telos Company	www.omniaaudio.com
14	Orban	www.orban.com
47	QEI	www.qei-broadcast.com
49	Radio Design Labs (RDL)	www.rdlnet.com
15	Radio Frequency System (RFS)	info@rfsbroadcast.com
5	Radio Systems	www.radiosystems.com
63	S.C.M.S., Inc.	www.scmsinc.com
30	Scott Studios	www.scottstudios.com
50	Shively Labs	www.shively.com
18	Sierra Automated Systems	www.sasaudio.com
63	Silicon Valley Power	www.svpa.com
56	Sine Systems	www.sinesystems.com
21	Sony Pro Audio	www.sony.com/proaudio
29	Susquehanna Radio Corp	See ad for contact information
43	Symetrix (Lucid) Inc.	www.symetrixaudio.com
45	Syntrillium Software	www.cooledit.com
57	Telos Systems	www.telos-systems.com
12, 13	Telos Systems	www.telos-systems.com
58	TieLine	www.buytieline.com
26	TransLanTech Sound, LLC	www.translantech.com
63	Universal Electronics	See ad for contact information
34	WARP Radio	www.warpradio.com
71	Wheatstone	www.wheatstone.com
72	Wheatstone	www.wheatstone.com

## ◆ READER'S FORUM ◆

### Shortage solutions

Dear RW,

I very much appreciated the article entitled "The New Face Of Engineering" in the Aug. 2 issue. It revealed many of the problems the broadcast engineering community is facing.

I think the solutions are obvious. The pay has *got* to get better, and there has to be a better understanding between the engineer and station owners and/or managers.

Owners and managers are reluctant to pay decent wages for work that not very many people are able to do. I work on an as-needed basis for two AM stations and one FM. I have to subsist that with any other kind of work I can find.

There's plenty of work to be done, but they don't want to get into the expense of it. This even includes work that would bring their stations into FCC compliance.

Station owners and/or managers are almost never receptive to any kind of ongoing maintenance program. I love to have my hands on the equipment, and I know how to keep everything in top shape.

This I am not permitted to do. Rather, I must wait until something breaks down to the point the station is no longer on the air. Even then I am not allowed to do *all* that is necessary, just the bare minimum required to "get us back on the air at very little expense."

While serving in the U. S. Navy, I was involved in a regular preventive maintenance program with radar equipment. We were so thoroughly familiar with the equipment, that when and if it ever did shut down, we were able to go right to the problem with an extremely small amount of down time.

The beauty of this program was that we rarely had any down time at all. The only down time we experienced was for scheduled maintenance.

Another awesome benefit of this kind of program was the training it offered to the younger and inexperienced guys. They didn't have to wait for a failure to work on the equipment; they had regular opportunities to see the equipment while in its proper operating condition. Their familiarity level was continually being enhanced with each and every session of sched-

uled maintenance.

I just think it's a shame to see all of the beautiful equipment in radio broadcasting go neglected until total emergency failures are encountered. The initial costs of regular scheduled maintenance can be high, depending on the condition of the station(s), but the long-term benefits are very economical, both in terms of equipment reliability and in avoiding unnecessary catastrophic failures.

Thanks for this venue to respond to your article on engineering.

Tom Diaz  
Independent Engineer  
Bay Springs, Miss.

### TSL decreases

Dear RW,

In reference to Ken R.'s question, "How Many Ads Decrease TSL" (RW, Aug. 2), the question could have been answered in less than a quarter page.

The answer is "one," especially if it's a stinker. Sadly, it doesn't make it that far if the talent launches into an inane, verbose, senseless (or tasteless) talk set preceding that one spot.

This goes back to spreading the responsibility for quality amongst the production, programming and sales departments to assure product air quality. The concept of spots standing their own island rather than in clusters is not new.

Seven years ago, when I took over programming responsibilities at a rather sick and cluttered KTMS(AM) — then 1250 kHz — in Santa Barbara, Calif., the very first thing I did was dump the clusters in the morning (some as long as 5 minutes!) to spread the spot load over the entire hour.

The result was something like a full three-point increase in one book. Now that I'm out of the business, I am, as a listener (sometimes an extremely pained listener) even more aware of product quality issues.

I hope the giant, all-encompassing conglomerates get a clue and make the move back to allowing their operations to localize, therefore bringing the "hometown" radio we all grew up with back where it belongs.

Dusty Baker  
Owner  
Hilltop Productions  
Enumclaw, Wash.

## U.S. Overseas Spectrum Use Hotly Debated

How do you manage spectrum in a way that gets your programming distributed over the widest possible audience, with the best signal and in the most economical way? This could be a lively discussion in any radio network, but currently, spectrum management is a topic of intense debate for U.S. broadcasting overseas.

The International Broadcasting Bureau's Board of Governors has oversight responsibility for the Voice of America, Radio Free Europe/Radio Liberty, Radio Free Asia, Radio Marti and Worldnet Television.

"We will fulfill our mission ... through a dynamic mix of broadcast media," said Acting Director, IBB, Brian Coniff, in a recent RW opinion piece.

That distribution method still includes the traditional shortwave, but has evolved to include TV and the Internet as audience research tells IBB that listeners in many strategically important countries are abandoning shortwave.

On the other side of the debate are those who believe shortwave spectrum management is getting short shrift by the IBB. Some claim that one of the basic tenets of frequency management, spectrum continuity, or the use of a single shortwave frequency for as long a period as possible by these stations, is lacking.

In a soon-to-be published opinion paper in RW, a former director of radio engineering for RFE/RL, Stanley Leinwoll, cites from this summer's schedule at least one example of what he calls poor spectrum management. He says a 1 1/2 hour Serbo-Croatian block shows one hour of the program being carried on one frequency, then, for the last half-hour, it changes to another frequency from the same transmitter site.

"The most brilliantly written program material is of little value if it cannot be heard clearly by its listeners in the intended target country," said Leinwoll.

While we'll update readers more thoroughly on this topic in the near future, we thought it worthwhile to introduce the topic now while issues are being discussed and policies still may be flexible.

There are many questions to be addressed when you're talking about moving audio — beyond distribution.

We encourage those involved in this debate to embrace new technology as part of future spectrum management planning for U.S. broadcasters overseas, and not to let long-standing bureaucracy get in the way of saving taxpayers' money.

— RW

### Offensive radio

*Ed. note: The following letter was sent to JJ Jordan, who at the time worked at KAAM(AM). JJ passed it on to RW. It may contain language offensive to some readers.*

Dear JJ,

Please pass this on to a credible broadcast publication and hopefully, someone will take notice.

I listen to you on KAAM and I heard someone mention how many stations you have programmed in the past. Hence, I thought you would be the best to write concerning the following:

Recently, I was on the way home from Fort Worth, Texas, after a business meeting. It was about 7:30 p.m. and I was flipping through the stations. I think I am a pretty liberal mom, but I was appalled when I came across a radio station with two DJs graphically discussing the use of dildos and referring crudely to genitals.

My thought at first was this would pass and they would continue with their

show. However, it became so obnoxious I got nauseated and turned the station.

What ever happened to good, decent radio where it was controlled by the FCC and you could feel safe having your children listen to the radio any hour? This was so appalling to me that I couldn't get it off my mind.

I wish you or someone could do something about this.

Kathy Hinton  
Dallas

## Write to Us

RADIO WORLD  
READER'S FORUM

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### NEXT ISSUE OF RADIO WORLD OCTOBER 11, 2000

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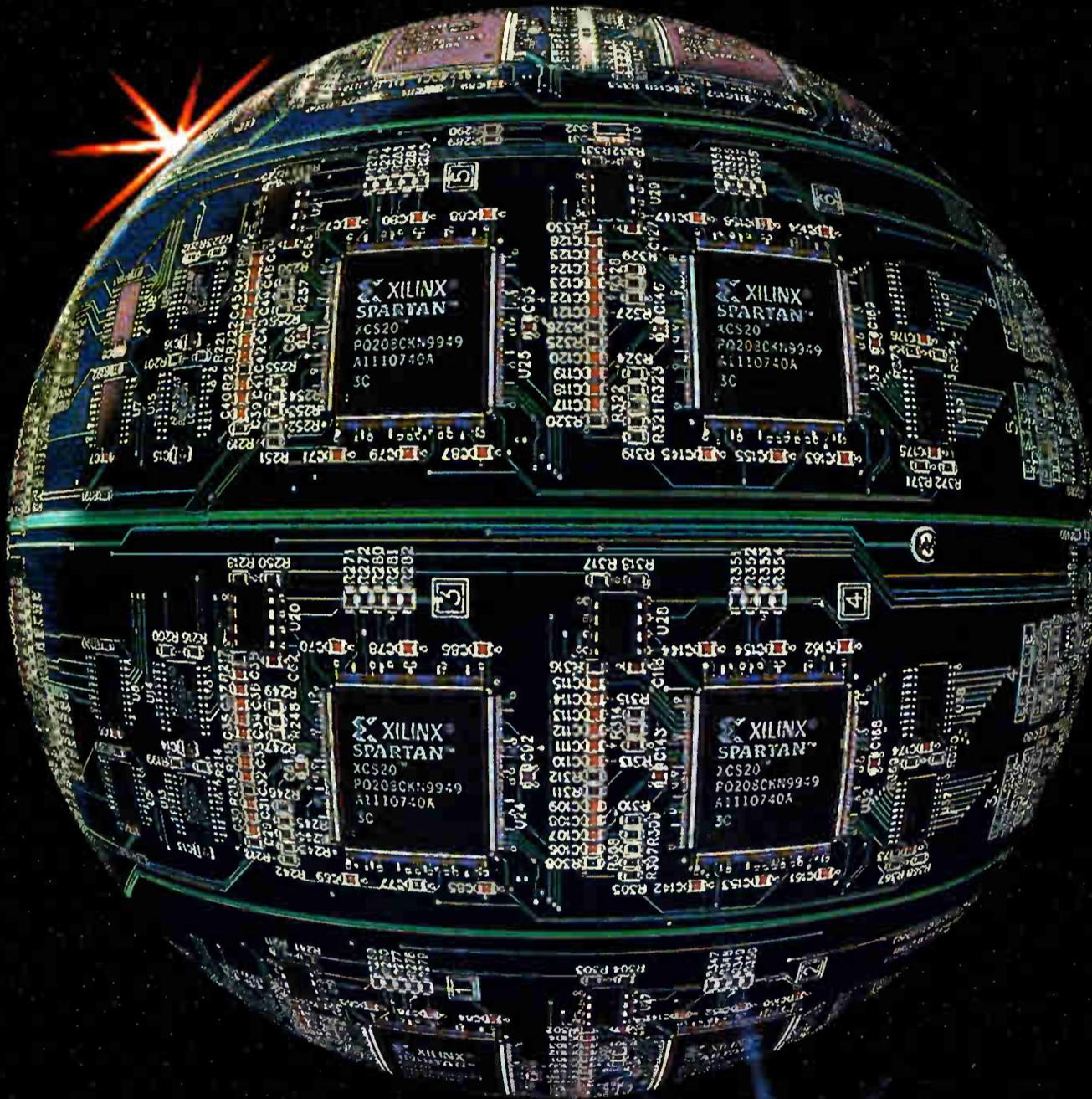
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