

*****AUTOS***3-DIGIT 857
S117298 D08 0610
TOM MILLER
ASST CHIEF ENGINEER
KTZR
2033 S AUGUSTA PL
TUCSON AZ 85710 7905

210

Art Deco in Ohio

Scott Fybush visits stations in Akron, Canton and Youngstown.

Page 18

Viable Internet Radio

AE's Wi-Fi Radio is evidence that easy-to-deploy Internet radio has arrived.

Page 16



Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

February 1, 2007

INSIDE

ENGINEERING

▼ When the wind knocks your cap off.



Page 12

▼ Comrex Access helps bring an audio drama performance to the PRSS.

Page 20

▼ Skip Pizzi says it's time for radio to accept the importance of metadata.

Page 22

GM JOURNAL

▼ Agriculture is key for WGFA, serving 'the World's Greatest Farming Area.'



Page 25

OPINION

▼ Is HD Radio suffering from a rush to judgment?

Page 36

▼ Richard Burden on the lessons of FM stereo.

Page 37



Sign up to receive
your free new
digital edition at
radioworld.com

Computer Modeling Could Aid AM DAs

Engineers Push to Update Directional Antenna Measurement Criteria

by Randy J. Stine

WASHINGTON State-of-the-art computer modeling would greatly simplify AM directional antenna verification without compromising the validity of the data collected, AM antenna experts believe. The technology also would save broadcasters thousands of dollars were it used in lieu of actual radial field measurements.

An ad hoc committee comprising some of the top AM directional consultants and broadcast engineers in the country is hoping to convince the FCC to revamp its current broadcast rules to allow Method-of-Moments (MoM) computer modeling data for proofing AM directional antenna arrays.

The committee met first in 1994 in response to an FCC Notice of Inquiry relating to performance measurements for AM DAs. The NAB has acted as facilitator in the group's study and discussion of specific issues related to AM directional antennas.

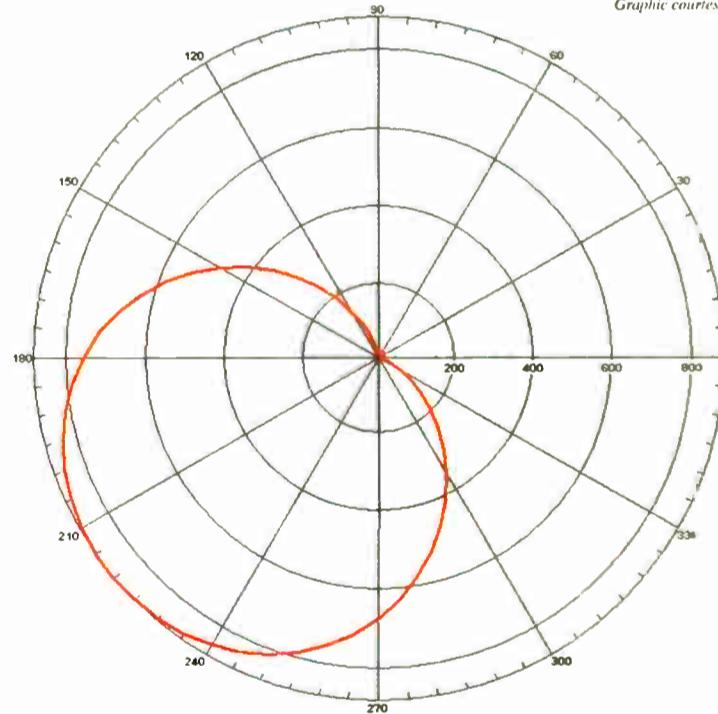
The commission overhauled AM antenna proof rules in 2001, simplifying partial proofs and making other changes, and left open the possibility of computer modeling

for AM directional proofs when it released a Further Notice of Propose Rulemaking and a Report and Order. Commission activity on the matter has slowed since then despite a high number of responses at the time of the proposal, said experts.

MoM modeling and proofing refers to computer modeling techniques based on Maxwell's equations, which relate the electrical current flowing in a tower to

See AM, page 8 ►

Graphic courtesy W.C. Alexander



A radiation pattern shot from the model using Expert MININEC Broadcast Professional version 9.2.

WHEATSTONE adds features and saves money



This G-7 is NEW and LOADED with FEATURES: event recall, automation interface, bright source displays, and EQ/Dynamics and panning, all recallable on EVERY input channel for production or mic processing—the list goes on.

With the Wheatnet™ network design you'll get a simple, reliable, low latency system with high-speed digital audio, meters and logic commands—all in Real Time. PLUS we'll assemble, test and configure the entire system right in our plant, assuring you a smooth on-time installation.

WHEATSTONE—WE MAKE THE GOOD STUFF.

www.wheatstone.com

©2007 Wheatstone Corporation

Details Emerge on Rule Changes

WASHINGTON More details are being revealed about the FCC's decision to modify how stations change communities of license and how frequencies are added to the FM table of allotments.

In updating its rules, the agency hopes to make such changes easier, as reported here Dec. 6, page 2. Subsequent details are summarized here, excerpted from a bulletin from law firm Garvey Schubert Barer.

The new rules were to take effect 30 days after publication in the Federal Register. However, the FCC said it needs to modify Form 340 used by noncom construction permit applicants and the Office

of Management and Budget must approve the new version. The requirements for noncoms wouldn't change until the new form is approved; timing was uncertain in January.

Commercial FMs will be able to change community of license by filing a minor modification application, rather than first initiating a rulemaking by seeking a change in the community of license and then, once the rulemaking is adopted, filing an application for facilities that would serve the new community. Noncoms and AMs will be able to change community of license by filing a minor mod application and will no longer need to wait for a filing window to open for major mod applications.

Those seeking new allotments must file a facilities application and a \$3,565 fee at the same time, the FCC said in the

NEWS

text of the Report and Order released in December.

Those seeking a community-of-license change must meet certain criteria on the application:

- The station must propose facilities that are mutually exclusive with its existing daytime signal.
- If the proposed transmitter site doesn't meet all the FCC's spacing requirements, an applicant must propose a real site where transmission facilities will be built and also a theoretical site that meets all spacing requirements.
- The application must include an exhibit demonstrating a service benefit to the proposed community of license. The agency usually takes into consideration whether the station would be the first local radio service for a community and the sta-

tion must show in its application that it would provide a different service benefit to the community with the additional signal, rather than providing the same service as its existing signal.

If the station is not seeking to provide the first local radio service to a community, the FCC takes into consideration whether the new community deserves the service more than the existing one. Usually it frowns on proposals to remove the sole service from a community unless there are compelling public interest reasons.

The commission stated it will scrutinize applications that propose to move a station from a sparsely populated area to a community that is part of a larger metropolitan area.

AMs that operate in the expanded band may not file minor mod applications to change their communities of license.

To prevent a situation in which an applicant files a series of mutually exclusive applications and moves great distances from its original community of license, the FCC will return applications for proposed facilities that are *not* mutually exclusive with an applicant's current facilities or its original allotment.

Sometimes, a station cannot complete a change in community of license without facilities modifications being made by other stations. The result can be a daisy chain of applications requiring multiple stations to make changes.

In order to prevent these types of situations from becoming overly complicated, the commission previously adopted a cap whereby only four contingent applications can be filed as part of a single proposal. This cap remains in place.

Although there is no cap limiting how many changes to the table of allotments may be sought within a single proposal, the agency will review any proposal seeking five or more changes to the table of allotments and possibly break the proposals into smaller proceedings or return the applications if the changes do not require changes to vacant allotments and could be filed as minor modification applications instead.

Index

NEWS	
Computer Modeling Could Aid AM DAs	1
Details Emerge on Rule Changes	2
THX, Neural Combine Surround Efforts	3
P&G, Radio Both Build Brands	3
From the Editor	4
The Rise of the Audio Network	5
Newswatch	10

FEATURES

Workbench: Winds Affect Marti, Satellite Dishes	12
AE's Internet Radio That Works	16
Art Deco Radio in Northeast Ohio	18
A Rural Remote With Little Drama	20
Radio's Royal Family Redux	22
Radio Rescues Presidents Cat	24

GM JOURNAL

WGFA Finds Niche: Agriculture Radio	25
Not Worth the Paper It's Printed on?	26
Online Too, It's All About Content	29
High Tech; High Touch; High ROI	30
People News	31

OPINION

Reader's Forum	36-38
Dick Burden: FM Stereo Revisited	37
Digital Won, Analog Zero	38



WHEATNET™ — FUTURE PROOF!

WHEATNET LETS YOU ROUTE THOUSANDS of bi-directional signals at ONCE in just 60 microseconds—all secure, virus-proof and in just 2 racks! **WHEATNET** leaps way ahead of conventional stacked router or IP-based designs, interconnecting up to 48 studios (each with its own independent mix engines and I/O resources) using just one CAT-5 wire per studio, plus providing systemwide X-Y control from one central location. You can even meter and monitor (in stereo) any signal systemwide.

REDUNDANCY? We've got that covered too: just add a second WHEATNET and CAT-5 link from each studio and have an AUTOMATIC standby interconnect for the ENTIRE system!

WHEATSTONE has a proven track record for digital networking; benefit from our experience!



48 CAT-5 PORTS with 128 audio channels (plus embedded control data) per port.
THAT'S 6144 TRAFFIC CHANNELS IN JUST TWO RACK SPACES!



GET THE POWER!

Wheatstone

tel 252-638-7000 / sales@wheatstone.com

copyright © 2005 by Wheatstone Corporation

THX, Neural Combine Surround Efforts

Sony, Yamaha, Pioneer and Onkyo Units Coming

LAS VEGAS THX Ltd. and Neural Audio Corp. are pooling their efforts to develop and market surround sound technology to the content creation community and consumer electronics manufacturers. Under the terms of the deal, Neural Audio will work with THX to develop its next-generation Neural Surround product suite to enable CE devices, broadcasters, video game developers and other new content distribution channels to deliver multi-channel surround sound presentations using existing stereo channels.

The joint THX-Neural branded technology will first appear in AV receivers by Sony, Pioneer, Yamaha and Onkyo. Prototypes were available at CES.

The consumer receivers will retail for between \$500 to a couple thousand dollars, executives told Radio World.

The companies declined to discuss financial specifics of the arrangement. Representatives for Neural and THX said the deal has been in the works for a year.

Neural Audio CEO Geir Skaaden said both companies have a common vision for where the surround sound industry is headed. "As distribution channels become more complex, we're combining the need for people who want high-end system surround with a system that protects artistic intent. THX is a good match with Neural

on those core pieces."

Movie producer George Lucas founded THX originally to develop a way to enhance movie audio; the company moved into the home audio space in the 1980s, said a spokesman. Today the company's audio technologies are used in cinema, post-video production, car audio and home entertainment.



Rick Dean, vice president of technology for THX, agreed with Skaaden that content creation for consumer products is becoming more complex. He characterized the partnership with Neural as an extension of the THX commitment to develop innovative ways to experience digital entertainment, saying the combined THX-Neural methodologies enable sound designers and mixers to better pinpoint sound effects, ambient sound and other audio elements in the surround field, "providing for more immersive entertainment experiences."

Professional versions of the THX-Neural Surround AV receivers will be

available through Harris and pro audio dealers.

THX-Neural Surround will provide a means for broadcasters to encode 5.1 content, during a live mix or post session; then transmit the content in a two-channel format to home audiences. The content is then decoded back to 5.1 by THX-Neural-enabled home AV receivers that provide consumers with surround sound while reducing the bandwidth needed for broadcasters to deliver sound content, according to executives.

Additionally, for next-generation video game titles, the THX-Neural Surround will enable the creation of 7.1 soundtracks on platforms that currently only support 5.1 channels.

Some radio and TV broadcasters, as well as CE manufacturers, have implemented Neural Surround technology. XM Satellite Radio also uses Neural Surround technology to broadcast two channels in surround. Neural executives said beginning in January, XM would perform a software upgrade to its encoder to incorporate the new THX-Neural Surround technology.

Neural expects to have 20 radio stations in major markets encoding with its surround sound technology on their primary HD Radio channels in 2007, said Skaaden.

— Leslie Stimson

27,046 products in stock at press time!

**SAVE 50%
On BSW's
Exclusive
RE20 Package
w/Shockmount
and Custom
Pop Filter!!!**



RE20PKG List \$1,022.00

LowestPrice only \$498!

**Symetrix 528E Symetrix
Broadcast Voice Processor**

- Six major functions in a single rack unit
- Enhances vocal intelligibility and increases perceived loudness
- Mic preamp, de-esser, compression/limiting
- Balanced XLR mic and line level inputs

528E List \$599.00

LowestPrice only \$499!

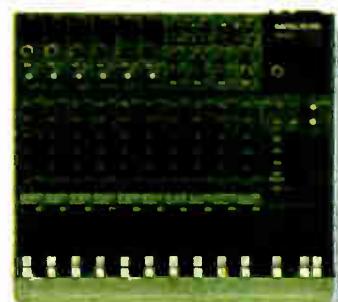
**Tascam Single TASCAM
Rack Space CD/MP3 Player**

- Rugged, professional CD player
- Balanced XLR, unbalanced RCA and S/PDIF digital I/O
- Versatile with CD and MP3 playback
- RS-232 control port for programming with AMX and Crestron systems

CD01UPRO List \$699.00

LowestPrice only \$599!

**Mackie Announces
New VLZ 3 Mixers!!**



- Broadcasters' favorite mixers just got even better
- 4 new mixers to choose from!!
- Ultra-low noise preamps
- Rugged, steel chassis as always, plus sealed rotary controls and built-in power supply

1202VLZ3 List \$389.99 \$299.99
1402VLZ3 List \$519.99 \$399.99
1642VLZ3 List \$779.99 \$599.99
1604VLZ3 List \$1,099.99 \$849.99

LowestPrice from \$299.99!

BSW

Same Day Shipping

BSW stocks a huge warehouse of products. Stock items shipped the same day. Just order by 7:00 PM Eastern Time.

Free Shipping on Most Web orders over \$189
FREE ground service delivery to the contiguous 48 states. Excludes heavy or oversized items.



BSW

Lowest Prices and Largest Inventory on EVERYTHING For Broadcast

BSWUSA.COM **800-426-8434**

P&G, Radio Both Build Brands

COLUMBIA, Md. Radio isn't the only product that has to target its customer precisely. It can learn from research methods a large company uses to market its products.

Procter & Gamble's Garth Ely, senior manager for Downy products, says in order to be effective, you have to know your target audience. That means knowing for whom your product is going to be relevant, different and important.

"It's inefficient to go after everybody. Nobody is captive anymore. Consumers opt in and opt out," said Ely told radio program consultants during a meeting at Arbitron in December. "For most consumers, your brand probably isn't relevant."

Like radio, P&G, valued by Wall Street at approximately \$150 billion according to Ely, uses focus groups to find more about their target audience.

To build a brand, you need to decide what you want your product or service to stand for in the minds of consumers, he said.



P&G spends a lot of money watching how consumers buy their products; both in stores and in customer homes. Ely did not give specific figures.

During his 14 years at P&G marketing, Ely also worked on marketing for the Swiffer Dusters product line. A typical user of that product tends to have the television on as a background experience, he said.

Reaching that customer is getting harder for several reasons. P&G is finding that brand loyalty is declining across every age group as consumers are bombarded with clutter, noise and stimuli from all directions.

P&G recently bought multiple TV ads

to reach the Gen-X audience.

Why multiple ads? P&G has found that in 1960, it took three TV spots to reach 80 percent of its customers; now the company finds it takes 117 television ads to reach that percentage.

When asked how a company can combat declining loyalty, Ely said there is no

P&G

substitute for building brand trust. "Be intentional, decisive and consistent," he said.

He also cautioned that there is no such thing as brand loyalty at any price. "At some price you eventually price yourself out of the market."

P&G has used radio to sell its Downy fabric softener and a Mr. Clean auto product because it knew customers would have the radio on in the car when they cleaned it, he said.

— Leslie Stimson

How Humans Listen (A Written Account)

New book titles that may interest RW readers continue to roll in from retailers. Let's peruse some of the latest that have landed on my desk.

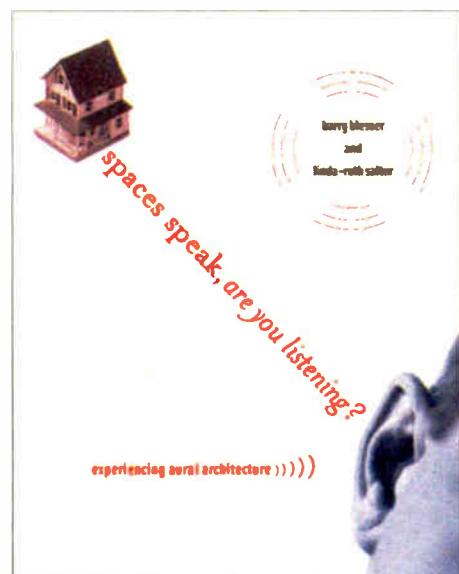
★★★

Our modern technological society tends to devalue hearing and other senses in favor of the visual. But auditory spatial awareness is a significant part of our existence.

That's one of the lessons explored by Barry Blessing and Linda-Ruth Salter, a husband-and-wife team, in "Spaces Speak, Are You Listening?" Blessing is familiar to us as the author of *The Last Word*, his column in Radio World Engineering Extra. He is a former professor at MIT; an AES Fellow and past president; the vice president/director of engineering for 25-Seven Systems; and a pioneer of digital audio, having invented the first commercial digital audio reverb system and helped to start Lexicon. Salter, an independent scholar specializing in interdisciplinary studies, provides a social science balance to Blessing's science and engineering.

Their topic in this 438-page book is "aural architecture" and how we experience space through attentive listening. "A real environment, such as an urban street, a concert hall or a dense jungle, is sonically far more complex than a single wall," they write. "The composite of numerous surfaces, objects and geometries in a complicated environment creates an *aural architecture*." Blessing calls this "the unifying concept of the aural influence of space on the social, behavioral and musical activities of the inhabitants."

The roots of this concept stretch back to primitive humans and up through modern high-tech electronic arts; Blessing and Salter devote themselves to exploring this architecture and how auditory spatial awareness has been applied to real and virtual spaces. In nine chapters they delve into topics such as aural space through history, the aural arts and musical spaces, inventing virtual spaces for music, "spatial innovators" and others.



As the authors tell us, the book will not turn a reader into an expert; it is "intended to provide a means of capturing and fusing disparate knowledge into a common framework: the human condition as seen through one particular prism." Learning to appreciate aural architecture by paying attention to auditory spatial awareness is one way to control and improve our personal environments, they argue.

Blessing is never what you'd call a "light read." He's a deep thinker and writes as you might expect a former MIT professor to write. He and his partner adopt such a tone in this book, to which Blessing devoted five years of research and writing.

Readers who can't bear the thought of cracking open another textbook in their lives can stay away. But "Spaces Speak" will intrigue theorists, educators and others who are interested in how we experience the world and how audio, psychology, history and culture interact.

Audio, mixing and sound engineers are among those targeted with this book.

Hardcover, MIT Press, \$39.95.

★★★

"The Pocket Idiot's Guide to Satellite Radio" by Damon Brown can be devoured in about the time it would take

to read one of Blessing's shorter chapters.

The book introduces a reader to the satellite concept; it promises installation guidance and "tricks for getting the most from a satellite radio subscription." But there is little here you couldn't learn by browsing online for 10 or 20 minutes; and literally half of the 168-page paperback is appendix, most of it just a list of XM and Sirius channels with brief descriptions. The book delivers such nuggets as these: "Best Buy, Circuit City and Target often have deep discounts on Sirius and XM equipment" and "XM users can depend on XM NavTraffic."

Paperback, Alpha Books/Penguin Group, \$9.95.

★★★

Radio history buffs will want to spend time with "Crosley," written by Rusty McClure with David Stern and Michael A. Banks.

The book's angle is not just radio, though, but the personal and business relationship between Powel and Lewis. The brothers — radio entrepreneurs, carmakers, innovators in direct mail and night baseball — created a business empire that "transformed the nation." Powel Crosley is depicted as the visionary, the dreamer, the front man; whereas if Powel was a sort of Walt Disney, Lewis would be Roy Disney. He's the engineer, the boy who wanted to be a farmer, the guy who hired and fired at the company, who took Powel's dreams and turned them into realities.

Americans remain fascinated with this period of our national journey, and "Crosley" aspires to provide the kind of surprising, entertaining history we enjoyed in Laura Hillenbrand's book

From the Editor

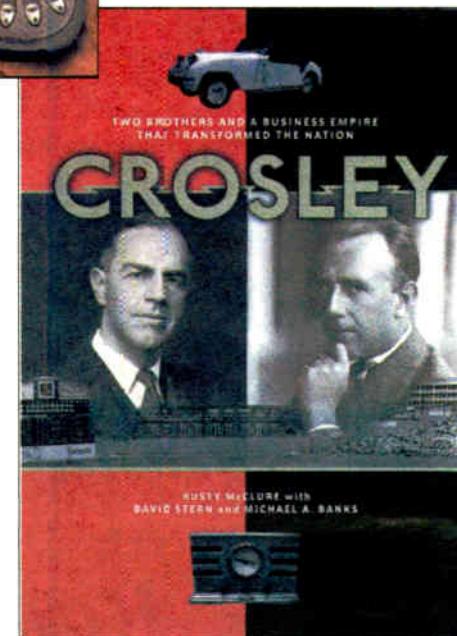
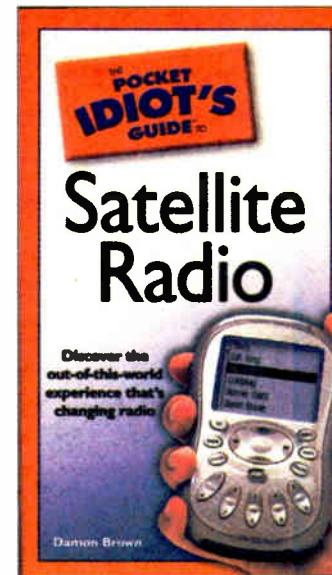


Paul J. McLane

"Seabiscuit." Unfortunately the writing is not of that quality — sentences are short to the point of terseness; clichés are common — but the book offers a great deal of historical detail and superb photographs.

You may think you know about Powel Crosley, WLW and the Crosley Pup. But if, like me, you know little else about the brothers' relationship or the history of the company, you'll enjoy "Crosley."

Hardcover, Clerisy Press, \$24.

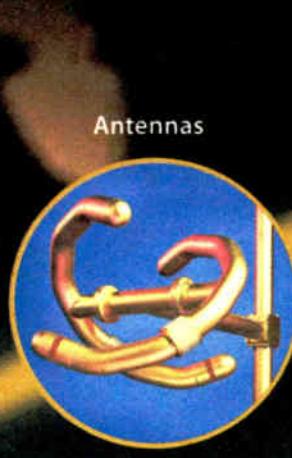


Your Best Move!

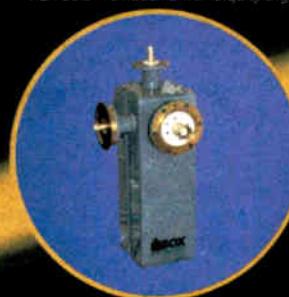


Make ERI part of your broadcast strategy.

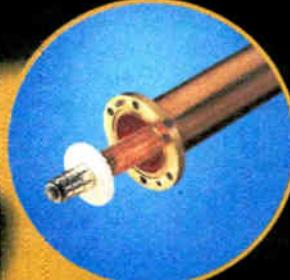
HD Radio™ Solutions
HD Radio™ is trademark of iBiquity Digital Corporation.



Antennas



Broadcast Towers
and
Structural Products



Transmission
Line



NEWS ANALYSIS

The Rise of the Audio Network

Trends at AES Also Include Importance of Computer Standards in Enabling New Audio-Specific Hardware

by Daniel Mansergh

SAN FRANCISCO Although the annual AES convention features broadcast-centric panels, workshops and events, its scope reflects the broader pro audio universe, incorporating recording, live sound, post-production, sound design, acoustics, theory and research. This makes for a unique experience that is part trade show, part academic symposium and part music festival.

The intersection of disparate disciplines makes AES a valuable opportunity for engineers to spot trends that will influence changes in broadcast technology in the years to come, especially in the areas of audio production and facility design.

Last fall, three trends emerged from the presentations, panel discussions and products on the exhibit floor and in sessions.

Audio network approach

The first of these trends is the rise of the audio network concept as a unifying approach to digital audio interconnection.

Whether applied to centralized audio distribution systems, large sound reinforcement systems, connection of geographically separated audio facilities over long distances or a multi-room production environment, the ideal of networked audio is an attractive proposition. High-quality multichannel audio with significantly simplified wiring, complete routing flexibility, distributed control and scalable redundancy — what's not to like?

ented software applications and a shift in the traditional importance of software and hardware platforms. This is perhaps best illustrated by the emergence of the audio software plug-in as a standalone product.

Plug-ins originated as a way for digital audio workstation makers to extend the signal processing capabilities of their systems while allowing marketing flexi-



Photos by Dan Mansergh

Korg announced a portable field recorder capable of recording up to 24-bit/192 kHz linear digital audio or audiophile-quality 1-bit, 2.8 MHz direct stream digital audio to its internal 20 GB hard drive, all in an iPod-sized package.

In portable recorders alone, the choices have exploded in the last two years, with more than a dozen models of flash memory recorders now available with street prices ranging from \$300 to \$2,000.

These advantages have led to the introduction of a variety of network-style broadcast consoles, routers and interconnection systems over several years, and similar developments have been occurring in the other sectors of pro audio. Digital snakes, multichannel remote-controlled mic preamps, standalone control surfaces and networkable audio streaming devices were scattered around the AES show floor.

It seems the debate among engineers has shifted from whether audio *should* be networked to how audio best *can* be networked. A corollary of this is the implicit assumption that all audio is digital; analog audio devices cannot be networked. However, the cost of quality A/D and D/A network devices for analog sources and monitoring continues to drop, making the consideration of an audio network architecture a possibility for even small operations.

Software vs. hardware

The second trend to watch is the growth in sophistication of service-oriented

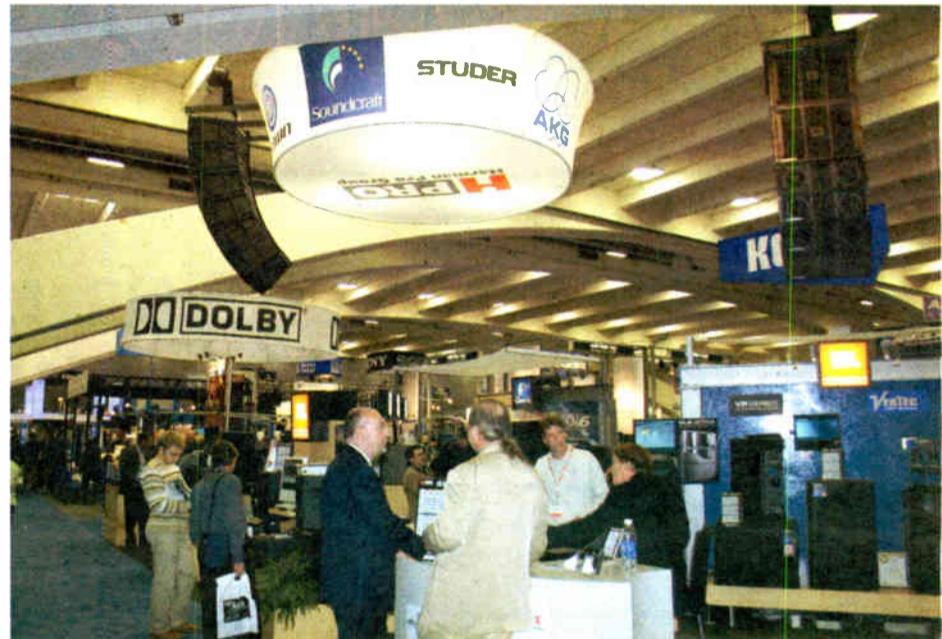
productions of classic processors, sample players and physical modeling synthesizers. What they have in common is that they do one thing well, and they take up few resources until asked to perform their function.

Ironically, a DAW is no longer required to use the plug-ins; many standalone hosts are available that serve

only as plug-in players. In effect, the platform has become of secondary importance; the capabilities of the tool are what matters.

This is an illustrative example for broadcast facility designers, who have traditionally employed a hardware-centered approach. Identifying the most appropriate task-specific tools, regardless of platform, for functional workflows within a new facility early in a design program may lead in surprising directions, especially when the requirements

See AUDIO TRENDS, page 6 ▶



Some 17,500 people attended the 121st Audio Engineering Society Convention in San Francisco's Moscone Convention Center.

NO CHARGE Digital Upgrade!



Upgrade your console to digital at no charge with our FREE DIGITAL CARD exchange policy. Here's how it works:

Purchase a Millenium-D console with any number of analog or digital input channels (even all analog input channels). Then as your complement of digital sources grow, we'll swap your analog input cards for digital input cards for the life of the console at no charge. And all console models feature 13 simultaneous analog and digital outputs.

Millenium Digital broadcast consoles from Radio Systems are the flexible way to go digital.

Contact Radio Systems or your dealer today to upgrade for FREE!



Radio Systems, Inc.

601 Heron Drive, Logan Township, NJ 08085
Phone: 856 467-8000 Fax: 856 467-3044 www.radiosystems.com

Audio Trends

► Continued from page 5
for robust metadata creation and management are considered.

The third trend to become clear at AES is the importance of computer technology standards in enabling new types of audio-specific hardware. This is in some ways a natural outgrowth of the centrality of DAWs in the audio production process over the past 15 years, but is more directly a result of the convergence view of audio as a form of multimedia along with specific developments in technology.

In particular, the FireWire and USB interfaces and flash memory technologies, coupled with the creation of new markets built around the popularity of MP3 audio, the iPod and podcasting,

have created entirely new classes of audio devices. Keyboards, analog mixers and microphones now can plug directly into a computer, rather than connecting through an audio or MIDI interface. Hardware controllers for DAWs and other audio applications are plentiful and inexpensive, where once they were rare and dear.

In portable recorders alone, the choices have exploded in the last two years, with more than a dozen models of flash memory recorders now available with street prices ranging from \$300 to \$2,000. For broadcast engineers faced with the slow decline of the MiniDisc format and the virtual disappearance of portable DAT machines from the marketplace, this couldn't have come at a better time.

But if AES is any indication, even

NEWS

more choices are coming. As a prime example of this, Korg announced a new portable field recorder at the show capable of recording up to 24-bit/192 kHz linear digital audio or audiophile-quality 1-bit, 2.8 MHz direct stream digital audio to its internal 20 GB hard drive, all in an iPod-sized package.

These three trends indicate that the long-awaited promise of convergence between audio and computer technologies may finally be taking shape: A network architecture for distribution of audio and control, the primacy of software functionality in system design and the use of standardized technology to build new audio devices. What new directions will next year's convention reveal?

For more on the 121st Audio Engineering Society Convention held in October, go to www.aes.org.

NEWS WATCH

Radio Has Been Awakened From A Sleep State'

GLENDALE, Calif. Traditional media companies will continue to struggle to maintain audiences this year. That's the opinion of Bridge Ratings, which issued a list of predictions in January.

"Consumers of media are turning to less-established sources to access news and entertainment, and anyone with a keyboard and server can distribute content," Bridge stated. "We really need to think about what it means to be in an interactive environment and have an audience that wants to communicate with us. One of the solutions is to become much more community-focused."

"Traditional radio has been awakened from a sleep state and should maintain an aggressive strategy toward making their brands relevant to the digital generation. This means expanding its reach on as many platforms as possible, including video."

The company believes TVs, computers and other digital devices will begin to morph. "The only difference between TV and your PC is the size of the screen. 2007 will see more of these convergent devices as video and audio devices bring together all of the options."

Technology will help consumers find, access and manage content; and digital video will drive the growth of online advertising. "Traditional radio should heed this development," Bridge wrote. "Just because radio has specialized in audio content for 100 years, doesn't mean it can't and shouldn't develop video to complement their brands. And with that will come a new stream of revenue. CPMs are much more lucrative with video on the net."

Will small-screen devices rule? Bridge thinks they will have limited appeal as a media platform. "Cell phones and other handheld digital devices aren't quite ready to break out as media platforms due to a lack of standards in the wireless industry and lack of interest from consumers," it stated. "It will all boil down to where people would prefer to watch their content. We know there is a personal audio experience — the iPod has proven that point. But music is not a high-focus activity — watching video is. This will likely lead to higher quality and larger hand-held screens."

Bridge believes marketers will make some mistakes as they move into new digital spaces. Talk of a merger of the satellite radio services will continue to heat up, it thinks; and digital music sales will continue to gain momentum. Finally, "the amount of money spent on Internet advertising will outstrip that of traditional radio by this time next year."



Internet remotes... there's been talk.



Live from 37,000 Feet— No kidding—Live Broadcast from a Lufthansa flight!



... successfully aired his three hour talk show from a commercial airplane [using ACCESS] at 37,000 feet on a regularly scheduled flight between Frankfurt, Germany and New York, US.

Peter Greenberg—Host of the syndicated radio program *Travel Today*

For the complete story visit:
<http://remotebroadcasts.blogspot.com>

→ Radio Free Asia—Live from the Himalayas



"The results [with ACCESS] were especially reliable considering that Dharamsala has one of most "problematic" Internet infrastructures that we have come across." — David Baden, Chief Technology Officer Radio Free Asia

For the complete story visit
<http://remotebroadcasts.blogspot.com>

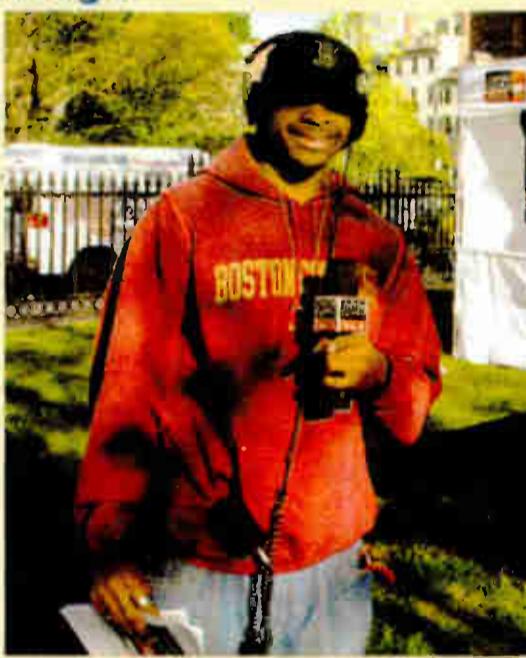
→ Ski Mountain Remote



This picture, really demonstrates what ACCESS is about. This product truly has the ability to cut the wires.

For the complete story visit
<http://remotebroadcasts.blogspot.com>

→ JAMN 94.5—Walk for Hunger



"ACCESS was used on the air exclusively for JAMN94.5 at this one. It was all over EVDO with a tremendous amount of active cell phones in the area. The ACCESS was connected to the Verizon wireless Broadband..."

For the complete story visit
<http://remotebroadcasts.blogspot.com>

Put Comrex On The Line.

COMREX

NEWS

AM

► Continued from page 1

the electric and magnetic fields around a tower. In the modeling process, the towers of an AM directional antenna system are segmented in order to provide as much accuracy as possible. The modeling, which uses Numerical Electromagnetic Code version 4 or MININEC, its light stripped-down version, takes into consideration currents and their phase relationships, tower spacing and mutual coupling in order to predict the field that is produced.

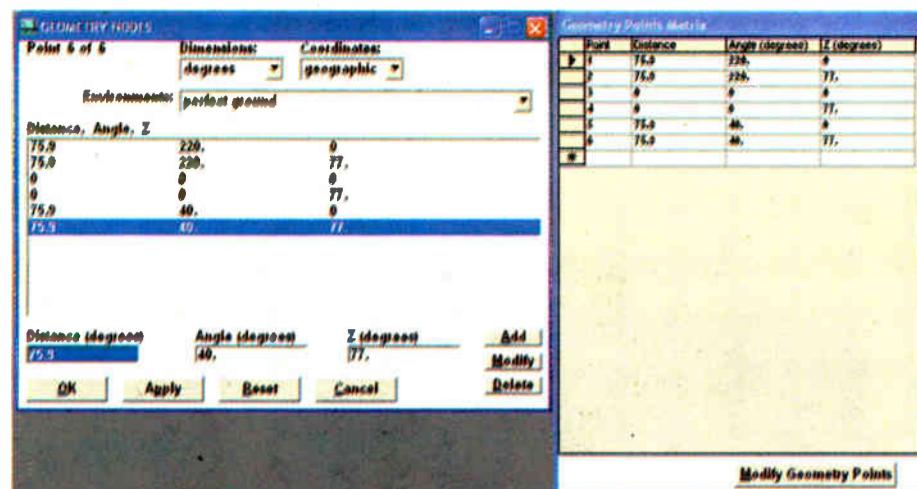
Computer modeling matures

The original NEC software was developed in the early 1980s at Lawrence Livermore Labs under contract to the U.S. Navy and later released for public use. There are many providers that use the NEC algorithms in their own software for sale.

Proponents of computer modeling believe it has matured to a point where it can help supplement radial field measurements, but not totally replace the information.

"Refinements in the computer code are ongoing, making it easier to model antenna systems. Additionally, the improvements in computer hardware and operating systems have been significant, leading more engineers to experiment with modeling software on modern PCs," said John Marino, vice president, NAB Science and Technology.

The cost savings would be significant,



The geometry input screen for the model. This depicts where the geometry of the towers, the physical part of the model, is set up.

Marino said.

"The cost of proofing an AM directional array right now can rise into the tens of thousands of dollars. Fieldwork requires days, weeks, sometimes months to collect and analyze data," said Marino.

"Computer modeling offers an efficient way to arrive at the same goal, provided specific criteria are followed in the modeling process. This also allows broadcast engineers to better utilize their time," he added.

Ben Dawson, president of Hatfield & Dawson Consulting Engineers, evaluated the rules regarding AM directional antenna performance verification and determined that if computer verification were adopted, full proof of performance cost could be as little as 10 percent of present cost.

"The cost savings in nearly all cases would be very substantial and could be that great," Dawson said. "Use of computer modeling in offshore projects, where the FCC is not the regulatory authority, has allowed us to make substantial savings and eliminated the logistics hassles of field measurements in situations where terrain, access and sometime personal safety are troublesome."

Most consulting engineers are familiar with MoM modeling and proofing, said Dawson. However, the group hopes station engineers will be able to learn and make use of the new tool to maintain the proper performance of their AM antenna arrays.

Proof sample

Discussions at a November meeting of

the ad hoc committee, organized by Dawson and Ron Rackley of du Treil, Lundin & Rackley and attended by several FCC staffers, centered on the requirements to proof a sample system and what guidelines to follow.

Several attendees said they believe the FCC is waiting on the industry to set parameters that the commission can approve before moving forward. The group does not plan to file a formal request with the FCC. However, individual members of the group and the NAB have filed comments in the past.

For its part, a commission representative said the agency is not considering any new AM directional antenna performance verification rulemaking.

"We attended the November forum by invitation of the organizers. There is no current FCC activity on this matter to report," said Susan Crawford, assistant chief in the FCC's Audio Division.

If the FCC does act, issuing a new NPRM would not be necessary since MM Docket 93-177 is still open, Crawford said.

The NAB's Marino said the ad hoc committee planned to meet again in January to settle remaining questions and possibly set eligibility parameters.

"The primary focus will remain further defining the conditions which MoM can be used with the greatest accuracy. Additionally, in order to rely on MoM modeling in the real world of AM arrays, our methods of monitoring antenna element current and phase needs to be as accurate as possible over the long term.

See AM, page 10 ►



KinStar

The first electrically short AM antenna with FCC pre-approved efficiency and radiation characteristics for full time use in the U.S. market.

KinStar Features:

- Direct replacement for a quarter wave tower with 67% reduction in height.
- Approved for non-directional Class B, C or D full-time operations.
- Land requirement: Must accommodate 120-radial quarter wave ground system.
- Requires no lights or paint.
- Input bandwidth compatible with IBOC HD Radio.
- Enhanced survivability in hurricane zone due to short height.
- Excellent, low cost auxiliary antenna.
- Suitable for installation near airports.



423.878.3141 fax 423.878.4224 Email: ktl@kintronic.com www.kintronic.com

small box **BIG ATTITUDE**



Who says you can't get big-market sound from a small box? Introducing Omnia ONE—proof-positive that superior performance and outstanding value do coexist.

Multicast Version shipping **NOW**



www.omniaaudio.com

Omnia is a registered trademark of TLS Corp. ©2006, TLS Corp. All rights reserved

◆ NEWS WATCH ◆

ContentDepot Needs Time for Debugging

WASHINGTON NPR's legacy Public Radio Satellite System and the new ContentDepot program distribution system will operate in parallel through at least February.

NPR intends to keep the dual systems running and has not set a new target date to drop PRSS and rely only on ContentDepot for program distribution.

"We need more time to solve the various operational issues and for users to gain experience and comfort with using the system successfully," stated Pete Loewenstein, vice president of NPR Distribution, in a message to public radio engineers recently.

The transition period began Nov. 1.

Entercom to Pay \$4.25 Million in Payola Settlement

ALBANY, N.Y. Before Eliot Spitzer took office as governor of New York, he wrapped up unfinished business involving radio.

As one of his last acts as state attorney general — the job in which he achieved national prominence as a corporate reformer — Spitzer announced a \$4.25 million settlement with Entercom Communications and six of its subsidiaries to resolve "pay-for-play" allegations.

Under the consent agreement, Entercom did not admit guilt. Its payment includes \$3.5 million to be distributed through a philanthropic organization to not-for-profits for music education and

appreciation programs, plus \$750,000 in costs to the state.

Financial analyst Marci Ryvicker of Wachovia Capital thinks the total cost to Entercom of the settlement will be around \$4.5 million once the company's own legal expenses are included.

In the lawsuit filed in the state supreme court in March, Spitzer alleged that Entercom sought payments from record labels and traded airtime for promotional items and personal trips. He also alleged that the broadcaster allowed the labels to decide what songs stations would air overnight to manipulate music charts.

Entercom agreed to institute several "reforms," according to the AG's office, which has made similar settlements with CBS Radio, SonyBMG, Warner, Universal and EMI.

NAB Protests Satcaster STA Requests

WASHINGTON The two satellite radio companies have asked the FCC to approve requests for special temporary authority to give the companies time to bring some of their terrestrial repeaters into compliance.

NAB representatives met with FCC staff members in late December to again ask the commission to place the STA requests from XM and Sirius on Public Notice so the public may file comments on "arguments related to the legitimacy of the repeaters," according to a commission document. The trade group wants the commission to probe the circumstances leading up to the errant repeater placement.

An attorney from Fletcher, Heald and Hildreth attended the meeting on behalf of the Alaska Broadcasters Association, but Sirius' request for an STA to place repeaters in Alaska and Hawaii was not discussed.

XM-4 Launched

WASHINGTON XM Satellite Radio is now broadcasting using its two newest satellites — the recently launched Boeing XM-4, known as "Blues," as well as "Rhythm," launched in early 2005.

The duo will allow the satcaster to deliver digital broadcasts beyond its 15-year contract requirement with Boeing, XM said.

Rhythm and Blues together cost approximately a half-billion dollars, including launch fees and insurance, an XM spokesman told Radio World.

The satellites replace XM's original satellites, "Rock" and "Roll," launched in 2001, which will serve as in-orbit spares.

CEA to Members: Obey FM Mod Regs

ARLINGTON, Va. The Consumer Electronics Association is encouraging members to comply with FCC regulations concerning FM modulators.

Radio World has reported that NPR is watching, now that the holiday shopping season is past and consumers have been purchasing products, to see the impact of efforts by satellite radio companies, receiver manufacturers and the FCC.

The commission began an informal inquiry in 2006 into wireless modulators to confirm compliance with its regulations. NPR and NAB had submitted engineering studies showing that some FM modulated products were emitting too much power and interfering with some terrestrial FM stations. CEA has been in contact with the FCC on the issue; and XM and Sirius had some of their products re-tested, re-certified and approved for sale.

In its CEA Smartbrief newsletter, the trade group encouraged members that

manufacture FM modulators to "ensure that they are compliant with FCC regulations, and to ensure that the devices are compliant with the products' original FCC certifications."

News Roundup

AMERICAN MEDIA SERVICES formed a division, AMS-I, to help stations capitalize on Internet-related technologies. "Many radio broadcasters seem to regard the Internet as a technological enemy," said AMS President/CEO Ed Seeger. "We should be allies. Making radio and the Internet fully integrated will enable radio station owners to reach additional pools of listeners and to tap into new streams of revenue."

MMTC, the Minority Media Telecommunications Council, is 20 years old, yet the lobbying group says it is only slightly closer to overcoming the barriers to entry and access to capital faced by people of color in broadcasting, cable, wireless, wireline, satellites, print media and the Internet.

BRIAN COOLEY will give the Radio Luncheon keynote at NAB in April. The CNET.com editor at large covers consumer electronics and personal technology; he is a former radio news director in San Francisco and Los Angeles.

SBE CHAPTER 43 of Sacramento will host an Ennes Workshop on Saturday, Feb. 24. It will feature presentations on broadcast technology applicable to both radio and television. Organizer and moderator is Fred Baumgartner, director of broadcast engineering for MediaFlo USA. For info see www.sbe43.org.

AM

► Continued from page 8
The group is presently studying this area and expects to discuss it at the upcoming meeting," Marino said.

Cris Alexander, director of engineering for Crawford Broadcasting, said he supports allowing the use of MoM for AM directional antennas. However, he does have several reservations.

"Assuring the long-term stability of the array is one. The other has to do with who is certifying arrays using the MoM method," Alexander wrote in the December 2006 issue of "The Local Oscillator," the newsletter of the Crawford Broadcasting corporate engineering department.

"I would be comfortable with the certification of any of the people at the meeting, but there are others out there who I am certain would not hesitate to certify an array without following proper procedure." Alexander also contributes to Radio World.

Marino said there is concern among some observers that many broadcast engineers are inexperienced with MoM software, which could lead to incorrect results.

The ad hoc committee "has been working to develop the proper criteria under which MoM may be used by those inexperienced with computer modeling," Marino said.

Time is Money

ESE

Broadcasters have saved both for over 35 years using ESE precision master clocks and timing-related products. ESE products accurately synchronize broadcast operations using a choice of GPS, WWV, Modem, Crystal or line frequency for affordable, reliable, perfect time.

Spend a few seconds on www.eseweb.com to discover a complete array of timing systems that are designed for easy installation, set-up and operation.

142 Sierra Street
El Segundo, CA 90245 USA
Tel: (310) 322-2136
Fax: (310) 322-8127
www.eseweb.com



Radio World, February 1, 2007

Past columns are archived at radioworld.com

Winds Affect Marti, Satellite Dishes

by John Bisset

Laverne Siemens is the director of engineering for Golden West Media in Canada. A client station of his in Saskatoon, Saskatchewan reported that one of his Marti STL-15C receivers at a repeater site would squelch off in windy conditions. The other receiver at that site — which gets its feed from the same antenna through a splitter — was rock-solid regardless of the weather conditions.

An initial test of the receiver on the bench proved nothing. It squelched off only when the signal got down to under 4 uV. It was returned to the field under the assumption that the problem must be with the splitter system. The receiver failed again after just a few days.

At this point the customer tested the splitter with a spectrum analyzer and confirmed that it was working fine. There was plenty of received signal, so the receiver got shipped back to Laverne's shop again.

This time Laverne promised the client that the receiver would not be returned until they found something definitive. The first test was what Laverne called the "air force" treatment: plenty of chassis flexing and bumping followed by cold spray and the hot air of a hair dryer.

This test got the signal to drop, and the problem was finally narrowed down to the LC filter can on the IF filter. If enough cold spray was applied right on the can, the signal would drop to the point of squelching off. This was a drop of about 30 dB.

Laverne and his staff confirmed it was the IF filter by monitoring both the input and output of the filter with a spectrum analyzer tuned to 10.7 MHz. After it was in the failed condition it took only a slight tap on the side of the can — or a few seconds of heat from the hair dryer — to get it working again.

In 27 years of servicing Marti gear, Laverne never had a reason to open one of these LC filters. However, by this point they had spent enough time on the unit that Laverne just wanted to get it fixed and back in service.

They replaced the entire filter card. Now there was nothing to lose by further damaging the old card, so he cut it open. Inside, and seen in the foreground of Fig. 1, is a cracked 2.7 pfd capacitor. It fell apart as soon as it



Fig. 1: The defective cap in this IF can is seen in the foreground.

was desoldered, shown in Fig. 2. Based on the appearance of the capacitor it had likely been that way since day one, or somehow cracked after it was soldered in place.

Laverne's hunch is that under windy conditions there were minor vibrations of just the right type that got transferred down the coax to shake the capacitor and cause it to go intermittent, which in turn caused the drop in signal level. The next step is to replace the defective cap and tackle soldering the can back together so he has a spare on the shelf.

Thanks, Laverne, for an interesting repair lesson. Laverne Siemens can be reached at lsiemens@goldenwestradio.com.



Fig. 2: After desoldering, there wasn't much left except the capacitor leads.

Roberta Barmore is a senior RF tech and chief operator for WTHR(TV/DT) and WALV(LP) in Indianapolis. Referring to an archived *Workbench* column at radioworld.com, Roberta raises a red flag about where the garden-variety RTV sealant (common at hardware stores) is used around copper wire and steel chassis.

She writes that most common "hardware store" RTV outgases acetic acid as it cures, which can cause corrosion and eventually lead to big problems. Some versions of RTV don't do this, for instance automotive types labeled "oxygen sensor safe" and Dow Corning's 748 non-corrosive sealant. At WTHR, the staff has standardized on the latter with good results.

Roberta says she was lured to TV 19 years ago, having started her broadcasting career in radio. Most days she still misses radio; and although the TV budgets are (usually) larger, the headaches are larger still.

Roberta Barmore can be reached at rbarmore@wthr.com.

★ ★ ★

R.C. Woolfenden is operations director at WFAX(AM), one of the first Christian/religious block-formatted stations in the country, located in suburban Washington, D.C.

R.C. just read the *Workbench* submission on APC UPS sensitivity with respect to generators. The station has two APC units, purchased this year, that have this problem. R.C. looked for a sensitivity switch, or adjustment, on the two offending units but could find none. He e-mailed APC and found that not all uninterruptible power supplies have this feature; and given the widespread use of generators at both studio and transmitter sites, it's a feature you may want to consider including in your list of specifications when purchasing a UPS.

Without the ability to adjust the UPS, adding the isolator-power conditioner is the next step to keep the UPS happy with generator power.

★ ★ ★

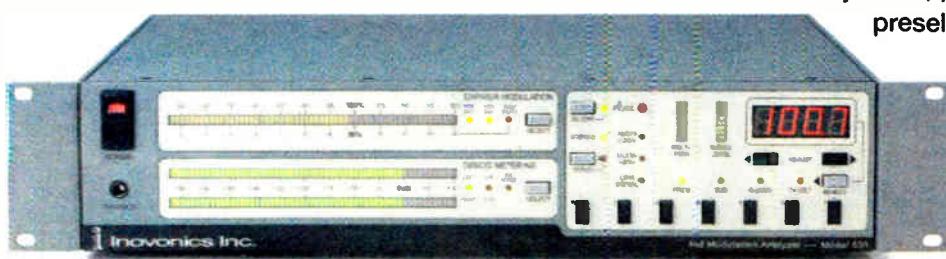
See WAX, page 14 ►

Top-Value FM Monitor

Retains FM measurement accuracy with IBOC digital broadcasting*

Compatible
with...

IBOC
DIGITAL RADIO



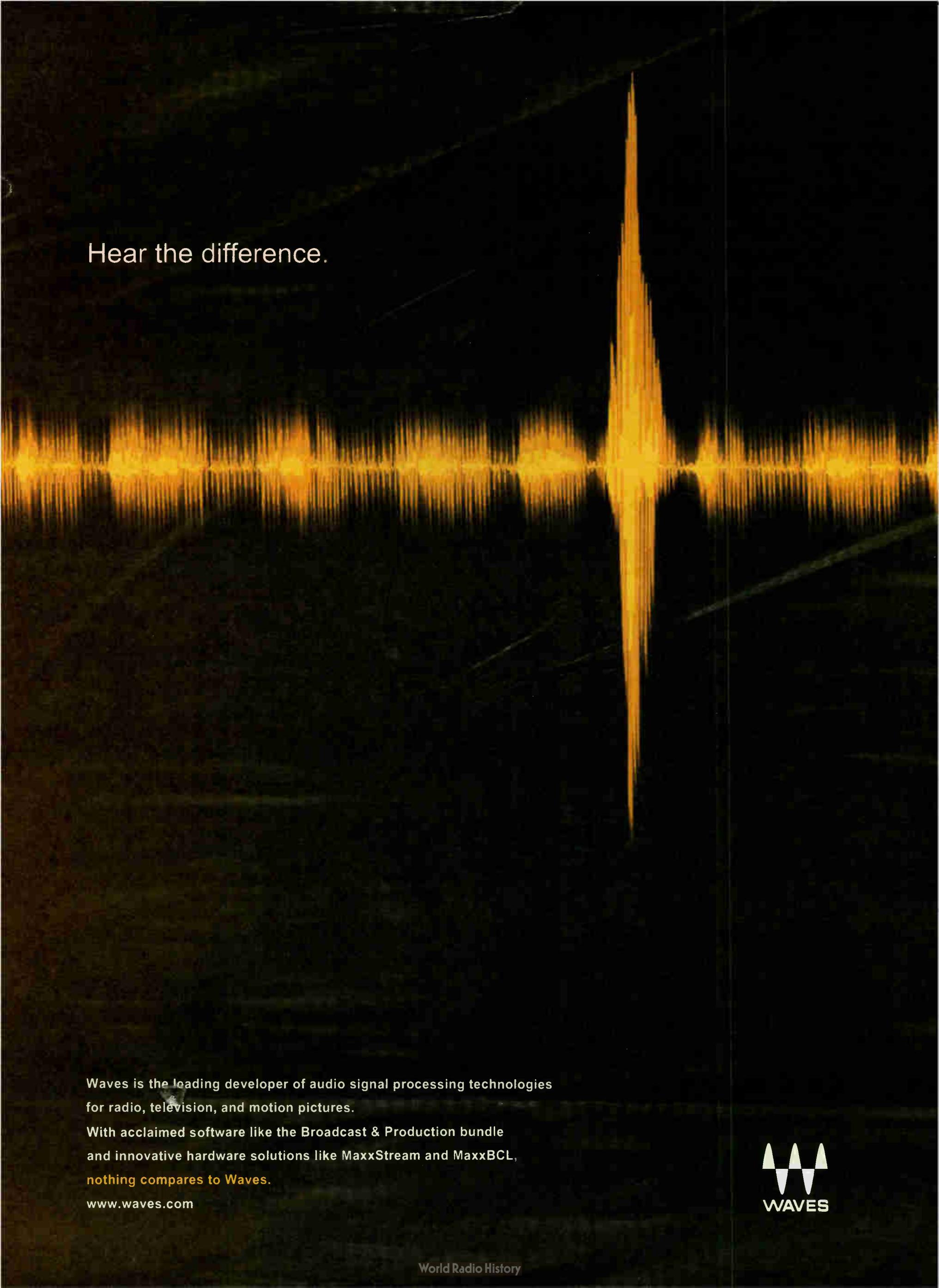
A wealth of features makes Inovonics' second-generation 531 the undisputed value leader in FM monitoring. In addition to the high-resolution total-mod display, the 531 also shows stereo audio levels, SCA and RDS subcarrier injection, plus a relative indication of incidental AM noise. A digitally-tuned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

*+4% max. Total-Mod offset
with IBOC carriers on.

Model 531 - \$2700

Visit www.inovon.com for full technical details.

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

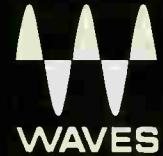


Hear the difference.

Waves is the leading developer of audio signal processing technologies for radio, television, and motion pictures.

With acclaimed software like the Broadcast & Production bundle and innovative hardware solutions like MaxxStream and MaxxBCL, nothing compares to Waves.

www.waves.com



Wax

► Continued from page 12

A reminder that a coating of car wax will make removal of even wet snow a snap.

If non-engineers are tasked with satellite dish snow removal, take a few minutes to explain that heavy-handedness can ruin the dish, costing the station hundreds if not thousands of dollars.

Make sure the snow removal staff is armed only with a broom and they understand that banging on the dish with the broomstick will affect dish performance by knocking the parabola out-of-round. The few minutes of training will pay back tenfold in keeping satellite formats on the air, and you at home during snowstorms.

John Bisset has worked as a chief engineer and contract engineer for 37 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbiss-



Fig. 3: A little car wax applied to satellite dishes will make even wet snow easy to remove.

set@bdcast.com. Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit. ■

MARKET PLACE

Nautel Has 'No More Secrets'

Nautel is inviting broadcasters to enter its "No More Secrets" contest.

Entrants can win a Nautel digital transmitter or a direct-to-channel digital exciter. Each month, a Nautel secret will be revealed in the company's advertisements. Contestants will be directed to the contest Web site to enter. The contest runs through April 19 and is open to members of the radio broadcasting industry within North America. No purchase is necessary.

The grand prize winner will be announced at NAB2007.

For information visit www.nomoresecrets.com.

OMNIRAX

BROADCAST FURNITURE

Omnirax from Design to Production

- At Omnidax we work together with you from initial design concept all the way through finished product, ensuring that your furniture will provide you with years of satisfied use.
- Our strength is forging partnership relations where we can use our expertise to turn your ideas into reality. We are able to work to your exacting specifications or provide comprehensive design services that remove the guesswork from your investment.
- Our CAD/CAM process ensures precision fit and finish, repeatability, and ease of modification. All of our designs are rendered in the computer prior to manufacturing. We are able to make alterations and adjust to your equipment, guaranteeing you not only get what you want, but exactly what you need.
- We are small enough to give every job the personal touch; large enough to outfit a complete facility.
- The measure of our success is the achievement of a synthesis of form, function and ergonomic comfort.

Some of our many customers since NAB 2005:

KFIR, FM (CBS Infinity) San Francisco, CA
Westwood One New York, NY

KZYR Avon, CO

Z99 / Register 10 Cayman Islands

KKIQ Pleasanton, CA WGLY Essex, VT

KSKA Anchorage, AK KNBA Anchorage, AK

WBZ Baltimore, MD KYSL Frisco, CO

WEBZ / WDNC Raleigh, NC

KNEW (Clear Channel) San Francisco, CA

Metro Networks Jacksonville, FL

Univision Radio Houston, TX

KPAM Portland, OR (in process)

KCWU Ellensburg, WA (upcoming)

"I'm blown away" - Dave Williams, Director of Engineering, Clear Channel San Francisco

"High quality, heavy duty furniture. Great workmanship and finish. Most importantly, it was packaged so well that we had no shipping damage. Design services were excellent. We got an effective, attractive, user friendly design."

- Jon Banks, Jon Banks LLC, Technical Consultant to Krystal 93 Radio, KYSL, Frisco, CO

P.O. Box 1792 Sausalito, CA 94966
800.332.3393 415.332.3392 FAX 415.332.2607
www.omnidax.com info@omnidax.com



CAD rendering



MARKET PLACE

Neutrik Touts Crimp-XLR

Neutrik is offering Crimp-XLR cable connector and chassis receptacle products.

These are the crimp termination versions of its "XX" and "DLX" series. The company said the Crimp-XLR is suitable for large cable assemblies and solderless RoHS applications.

It is available in several models. The three-pole FXX and MXX cable connectors are terminated on semi-automated machines and include boot assembly and cable testing, while the three-pole FXX and MXX connectors and the three-pole NC3FD-LX-HA and NC3MD-LX-HA chassis connectors are terminated with hand crimp tools.

The company also has announced an improved version of its XXR colored coding rings, for use with the XX series. "The XXR provides faster and easier connections for audio and instrumentation applications, as the new coding rings expand to fill the void between the rear boot and the front shell/housing, for a more secure and durable fit," it stated. The insert does not have to be unsoldered to change the color coding. The rings also enable easy identification between XLR cable ends and panel-mount receptacles.

And Neutrik has introduced the DLX Series, an enhanced version of its DL XLR chassis connectors. It is intended as a match for the EMC XLR cable connector and is touted for its RF protection and electromagnetic shielding.

For information visit www.neutrik.com.



SCMS Holiday Bash

SCMS throws an annual Christmas BBQ Luncheon for engineers in the Charlotte, N.C., market and surrounding area.

"We have gifts that we pass out and just make it a social event and give everyone a thanks for their friendship and business during the year," said the supplier's Bob Cauthen. Twenty-five people attended this year.

Shown, clockwise from left: Scott Hollingsworth and Allan Lane of CBS; Bob Cauthen/SCMS (standing); Ron Muffley/BBN; Brad Humphreys/CBS; and John Lackness and Ernie Vincent of SCMS.

Other companies represented included Clear Channel, Radio One, Lincoln Financial Broadcasting, MediaTech, William Culpepper Associates, WHIP(AM), Comrex and Dalton Communications.



WHO'S BUYING WHAT?

Public station KRPS(FM) in Pittsburg, Kan., receives a new Harris Z16HD transmitter. Keith Retzer is director of engineering for the 100 kW station, which broadcasts at 89.9 MHz. ...

DK-Technologies (UK) said it supplied 11 Master Stereo Display 100 audio meters to systems integration firm Oxford Sound & Media. Oxford is installing the units as part of a fit-out contract for GCap Media. ...

Netia said Radio Riyadh, Saudi Arabia's national radio station, has installed Radio-Assist to enable a tapeless workflow from acquisition of audio through playback. The digital audio software system was implemented by Audix Broadcast Ltd and Jamal Jaroudi Group. ...

Wegener said it received an order from Horizon Christian Fellowship's Horizon Broadcast Network for file-based radio distribution equipment that will be used to support the launch of a radio network. Tom Phillips is COO of HBN. ...

Eagle Radio Communications purchased NexGen Digital for several of its stations in the Midwest, according to Prophet Systems. The stations are KELN(FM)/KOOQ(AM) in North Platte, Neb.; KHMY(FM), KHUT(FM) and KWBT(AM) in Hutchinson, Kan.; and KFEQ(AM), KKJO(FM), KSFT(AM) and KSJO(AM) in St. Joseph, Mo. Mark Vail is VP/COO and Kevin Wagner is director of radio programming for Eagle Radio.



Steve Moore maneuvers a new Harris Z16 transmitter into KRPS(FM).

“My Number One Codec Rental is Zephyr Xstream”

-Steve Kirsch, President Silver Lake Audio



“When ISDN equipment rentals began in the early 1990s, we started with an equal number of different companies’ codecs. Today, Silver Lake has over 100 Zephyrs in stock, ten times more than any other brand.” says Steve Kirsch, owner of Silver Lake Audio.

The reasons should be obvious. Reliability, ease of use, compatibility, great support.

Telos: The Best Way To Hear From There.

And there. And there. And there.

Telos
AUDIO | NETWORKS
www.telos-systems.com

The Telos Logo and Zephyr Xstream are registered trademarks of TLS Corporation © 2006 TLS Corporation.
Silver Lake Audio is a registered trademark of Silver Lake Audio™

World Radio History

400

~~250~~ studios already?

Time flies when you're having fun!

400

Hard to believe, but we passed the ~~250~~ studio mark recently.

We're told that it's a major milestone, but we prefer to call it a good start.

In fact, our clients have made Axia the **fastest growing console company** in radio. To you, we say "thanks" for your trust and enthusiasm. And to those of you who aren't yet clients: we're ready when you are.

Okay, back to work now. (Consoles don't build themselves, you know.)



www.AxiaAudio.com

© 2006-2007 TTS Corp. All rights reserved. Axia is a trademark of TTS Corp.

AE's Internet Radio That Works

by James Careless

For more than 10 years I have been writing RadioNet, a quarterly column on radios and the Internet for the international edition of Radio World.

During that time, I have searched high and low for viable Internet radios. Designed to resemble and function like a conventional AM/FM receiver, an Internet radio connects to stations on the Web. Want to hear news, rock and talk from around the globe? An Internet radio will take you there, no PC required.

That's the theory. In practice, real Internet radio models are few. However, the new Acoustic Energy Wi-Fi Radio fits the bill, at a cost most consumers can afford.

Available for \$299.95 at www.crane.com, the AE Wi-Fi Radio makes it easy to sift through thousands of webcasters by genre or location. The downside: The radio provides access to so many stations that finding one you want can be mind-numbing task.

Nuts and bolts

Made by Acoustic Energy, based in the United Kingdom, the AE Wi-Fi Radio is a fairly discreet little device. Imagine a 5-inch cube with a wedge of cheese lying on top; that's the approximate shape of the AE Wi-Fi receiver. The sides and back are black plastic, while the front speaker grill



Despite its radio-like appearance, the AE Wi-Fi Radio isn't a conventional receiver.

and angled top control panel appear to be brushed aluminum. On this panel you'll find a blue backlit monochrome LCD display, two rows of five buttons and a single rubber tuning/volume knob.

Don't let this low-key appearance fool you; the AE Wi-Fi Radio is a capable device. Using its Select and Back Keys, plus its rotary knob, you can quickly look by stations by Genre or Location. Because it is compatible with Real

Audio, Windows Media and MP3 webcasting streams, "this unit is capable of receiving 99 percent of all broadcasts available on the Web," said Will Fisher, AE's group support manager. "Yet because it connects to a Wi-Fi network in your home — which needs to have a broadband Internet connection — the AE Wi-Fi Radio can tune to these signals wirelessly; just like a regular radio." In addition, the radio can access music files stored anywhere on your LAN, be it at home or business.

Set up

Despite its radio-like appearance, the AE Wi-Fi Radio isn't a conventional radio receiver. To tune to Internet radio stations, it must connect to a wireless network with broadband Internet access first.

If you have security activated on your wireless LAN (which you should), you'll need to obtain an access code for entry into the AE Wi-Fi Radio. Entering the various numbers and letters requires use of the single rotary knob. This takes time, but isn't quite as time-consuming a process as one might expect.

After you have connected the AE Wi-Fi to the Web, you have to surf to www.recordingmag.com



The AE Aego M Series Music System, sold separately, consists of two small satellite speakers and a sub-woofer that connect into the AE Wi-Fi Radio's headphone jack; the author says the audio improvement is breathtaking.

to Stations and Genres, then dial through the various categories using the knob. Once you find a Genre you want, you have to hit the Select button again, then dial through the various stations in that category. Unless you know which station you want to find, making a choice is difficult given the display's limited information. (To back up a level, you push the Back button.)

The AE Wi-Fi Radio is proof that easy-to-deploy Internet radio has arrived.

www.vaco.uk to download the URLs of nearly 5,000 Webcasters. With the list loaded onto the AE Wi-Fi Radio, you can tune to stations directly, or search based on the genre or location you're interested in. These can also be played back through the device's twin (stereo) speakers. Good news: The station list — which is updated every time you turn the AE Wi-Fi Radio on — is supplied free of charge.

"There's no subscription fee," said Fisher. "The reason we don't charge for listings is that regular over-the-air radio is free. So, to be fair, we don't believe that we should be charging people to access Internet radio."

Pros and cons

On the pro side, the AE Wi-Fi Radio is extremely stable once you've set it up. (The fact that it runs on Linux may have something to do with this.) It's so stable, in fact, that the only thing that happens after a power blackout is that the AE Wi-Fi Radio restarts itself.

The sound quality from the front-mounted speakers is reasonably good, although the set would benefit by offering tunable Treble and Bass controls.

Worth noting: To provide a quick, dramatic improvement in sound quality and channel separation, C. Crane sells the AE Aego M Series Music System for \$199.95. Consisting of two small satellite (left-right) speakers and a sub-woofer that connect into the AE Wi-Fi Radio's headphone jack, the Aego only takes 5 to 10 minutes to set up. The audio improvement is breathtaking. If you want to make your Internet radio sound like a high-end stereo system, the Aego will do the trick.

On the con side, tuning the AE Wi-Fi is, well, confusing. This is because you have to use the Select button to drill down

It is possible to preset up to eight stations on the AE Wi-Fi Radio, which can be a big help. Still, tuning this device is not a slam-dunk by any means. As well, popular stations may experience dropouts during listening, due to traffic jams on the Web. This is not the AE Wi-Fi Radio's fault, but is due to the nature of Webcasting.

The AE Wi-Fi Radio's firmware can be updated online to provide more functionality, said Emanuel Rose, C. Crane's director of sales and marketing.

"Upgrading the firmware will add a three-line selection display that is easier to use and that gives you more practical information," he said. "The firmware upgrade will also give you the option to personalize your Wi-Fi radio through your computer and add your favorite stations into a 'My Stuff' folder located on your radio."

With a tuning interface that is somewhat limited, the AE Wi-Fi Radio can be frustrating to use. However, the unit's stability is impressive, and the range of stations it offers is astounding. As well, the fact that the AE Wi-Fi Radio accepts high bit-rate streams where available means that the incoming feeds can be excellent to listen to. For instance, I'm listening to a 128 kbps stereo stream from KOQX(FM) in San Jose, Calif., as I write this. When pushed through the Aego speaker system, the resulting audio is top-rate.

The AE Wi-Fi Radio is proof that easy-to-deploy Internet radio has arrived.

EXPECT MORE FROM YOUR AM TRANSMITTER

Armstrong Transmitter X-1000B
1KW HD Radio ready AM Transmitter for under \$10K

Built with dual hot-swappable 600 Watt RF modules capable of 150% modulation, X-1000B can bring that major market sound to your radio station. Engineered with the latest technological innovations, X-1000B offers high reliability, built-in redundancy and it is HD Radio ready.

Best of all, our customers tell us that the money they save running the X-1000B pays for itself with savings in electricity and maintenance costs over an older transmitter ...and as a bonus they get exceptional reliability and that major market sound for free.

But, don't take our word for it. Talk to our customers already on-the-air with the X-1000B. Call or email for a users list and decide for yourself why owning this transmitter is a no-brainer.

ARMSTRONG
TRANSMITTER CORPORATION

Tel 315-673-1269 / sales@armstrongtx.com / www.armstrongtx.com

*HD Radio is a registered trademark of iBiquity Digital Corporation.

**got
wire?**
cables & connectors
racks
tools
problem solvers
test gear
& much more
www.systemsstore.com

ProFiler client success stories. Everyone post!

"**ProFiler** gives our program directors access to logged audio on any station PC. They're delighted!"

From Jim Davis, KSUI/WSUI University of Iowa

"No more forgotten airchecks since ProFiler is automatic. It saved at least one student from failing last year, since he kept forgetting to roll tape. It's hassle free!"

- Professor Mark Seignious
ETI S, Northwestern University

"ProFiler solved a particular problem for us with WAXY because we needed to keep this 'logger' off our house LAN and give access to it to non-

employees whose computers live on a totally separate network.

ProFiler fills the bill nicely!"

→ Gary Blau, Jefferson-Pilot Miami ←

"We had a problem with competitors recording our live sports broadcasts and rebroadcasting them in their own news. We used ProFiler's scheduled record feature to spot record those stations... then our lawyers took care of them. We're very pleased with ProFiler... I bought four of 'em!"

Dennis Eversoll, Subsidiaries Indianapolis

"We're running 3 ProFilers at our stations in New York. I want to keep audio logs for years, not just months. So I installed a terabyte hard drive; I can store 4-5 years of audio on it! I love ProFiler."

MIKE TOCCO, SBS NEW YORK

"Even sales people who aren't computer savvy can use it. Ours learned ProFiler real easily - now they save spots and send them to clients without having to ask production."

— GEORGE SEIFERT —
WAKR - WONE - WQMX



There was a notice of proposed rulemaking, so I decided to install **PROFILER** just in case the Commission decides to require it - it's a good defensive move. ProFiler's doing great: it's effective, it's easy to access audio... It does the job!"

Jeff Zeissmann, WNKR-FM

"We'll have internal audits required by the University, or a University official will get a request for a transcript, so we use ProFiler for long form logging and skimming; I use removable drives & get a year's worth of audio; when one's full I just pull it out and store it."

→ Jeff DePolo, WRTI-FM
Temple University, Philadelphia ←

"We use our hard-drive playout system to record and re-air portions of our morning and midday shows. We use ProFiler as a backup recorder as well as for logging and skimming, and it's saved us a few times! Plus, when the jock says 'I did the greatest bit in the world!' it's nice to have an immediate high-quality version for promos or archiving."

» Erick Steinberg, KFOG, San Francisco <<

We call it ProFiler. Our clients call it indispensable.

What would you do with a **computer-based audio logger**? Telos ProFiler's MP3 audio logging features alone (expandable to capture up to **8 streams** on one PC) are enough to satisfy most folks, but ProFiler is loaded with other tools... like a **skimmer** that switches to a higher bit-rate when the mic is open, **export functions** that help you assemble great-sounding airchecks and composites quickly, and remote access via IP.

But – as you can see – our clients tell us that ProFiler helps them do even more. How much more? Browse www.telos-systems.com/ProFiler/ to discover how ProFiler can work for you.

Telos ProFiler. How will *you* use it?

Telos
AUDIO | NETWORKS

TRAVELS WITH SCOTT

by Scott Fybush

Where can you find a 12-tower directional AM antenna system, not one but two classic Art Deco studio buildings, the closest co-channel AM stations in the country and the Pro Football Hall of Fame, all within an hour's drive or so?

Welcome to northeast Ohio — not the big city of Cleveland, but the somewhat smaller markets of Akron, Canton and Youngstown, south and east of Drew Carey's hometown.

Triple threat

With the National Radio Club convention taking place in Akron last Labor Day weekend, it didn't take much of an excuse to find a couple of days to drive down to the area from my home base in upstate New York. It didn't hurt that I had several longstanding invitations to visit engineering friends in Youngstown.

Jerry Starr is one of those rare triple-threats: He started his career as a DJ on Youngstown's heritage top-40 station WHOT, but he's also a wiz behind the production console and a talented engineer to boot. Jerry retired from WHOT and its sister stations (now under the Cumulus umbrella) a few years ago, but he was happy to play tour guide for a day, with the assistance of two of the market's top engineers, John Clarke at Clear Channel and Wes Boyd at Cumulus.

Both have been busy over the last few years. At Clear Channel, John's pride and joy is one of the most remarkable AM transmitter farms in the country: the six towers of WKBN (570), right next to the six-tower night site of WNIO (1390). WKBN's been on this former farmland in Poland, Ohio since the '70s, but 1390 just arrived a few years ago.

(It had quite an odyssey to get out here, having lost its heritage tower site a few miles away to a big strip mall, followed by several years of STA operation from a new single-tower site that's still used for its day signal.)

To clear the way for 1390 to build its night site next door to WKBN, Clear Channel ended up buying yet another adjacent property, which had been home to the five-tower night site of Youngstown's AM 1330. (It's now WGFT, but was the original AM facility of WHOT, the station where Jerry got his start, and today it's operating daytime-only from its other site northeast of Youngstown.)

It also took some heavy-duty skirting of the existing WKBN towers to prevent any pattern disruption — but it all worked, and it's quite a sight to see all those sticks rising from the farmland as you head south from Youngstown on I-680!

Longwire

John and Wes are both busy with tower-replacement projects, too, including one site that both companies share.

WBBW (1240) and WNCD (93.3) were once sister stations, and the Cumulus-owned AM remains a tenant on the FM tower, now owned by Clear Channel. It's in the process of being replaced — and so WBBW is operating, at least for now, from a longwire antenna strung up the side of Wes' own FM tower, home to WHOT(FM) 101.1 and WYFM 102.9, behind the Cumulus studios.

Art Deco Radio in Northeast Ohio



Photo by Scott Fybush

The new WNIO transmitter building is seen with part of the WNIO and WKBN arrays behind it.



WKBN's lobby is still a sight to see, complete with round windows and call letters inlaid into the floor.

Wes has two wire antennas in operation in the market; there's another one, designed by Jerry, just across the state line in Sharon, Pa. It's keeping WPIC 790 on the air while a new tower is built on the base of its old Truscon self-supporter that was taken down in April 2005.

Speaking of Truscon, that venerable tower manufacturer was based right in Youngstown, and we drive past its old factory as part of Jerry's tour.

Even though it's been more than half a century since Truscon turned out its last tower, examples of its work are still visible all over the city. The original WBBW tower, for instance, was donated to the suburban Struthers school district when it was replaced in the '60s, and it still stands outside Struthers High School, holding the antenna of WKTL(FM).

And there's a 660-foot Truscon self-supporter behind the studios of WKBN(TV) on Youngstown's south side. It's been supplanted by a much taller guyed tower, but the huge insulators at its base give a clue as to what was once out behind the gorgeous Art Deco studio building. Until the tall TV tower was built in the '70s, this land was home to the WKBN(AM) towers as well, and the TV tower was insulated so it could be

detuned from the AM array. It must have been a sight to see. And indeed, WKBN's lobby is still a sight to see, complete with the round windows and the call letters inlaid into the floor.

Art Deco radio

Remarkable as the WKBN studio building is, there's an even better-preserved example of Art Deco radio architecture just an hour or so to the west in Canton.

WHBC(AM) built its studio building right in the heart of downtown, on Market Avenue, in 1938, and to walk in the door in 2006, you'd swear time had stopped right then and there. The illuminated call letters above the doorway and the classical relief sculptures on the front of the building are nice; but when you get inside, the first thing you see is an elevated reception area, and just behind that, a big glass window looking right into the main AM studio, all surrounded by spiffy curved walls and railings, mirrors and all the Deco detailing you'd have expected to see at Columbia Square in Hollywood or 30 Rock in New York back in the golden age of radio.

Chief Engineer Bill Glasser has been with WHBC since 1966, and he's justifiably proud to show off his facility.



The original WBBW tower in its new home at Struthers High School.



Wes Boyd and Jerry Starr
ATU for WBBW's

Beyond the main AM studio, the space that was once master control still serves that function, albeit with long racks of ENCO servers and other modern broadcast gear. Next to the AM studio, a former performance studio and sponsor's gallery has been converted into the main studio and production room for WHBC(FM). There was once a mirror-image set of studios on the other side, now used as the newsroom and the general manager's office. (Bill says the big window that once looked from the sponsor's gallery into the studio is still behind the wall that now separates the two rooms.)

And did I mention that WHBC(AM) is still live and local, all day long, with news every 15 minutes and hefty doses of



The lobby of WHBC.



Bill Glasser pauses in WHBC Master Control.



WHBC afternoon host Brice Lewis in the studio.



check out the temporary longwire antenna.

local sports?

Before we leave Canton, one more bit of radio trivia: it's just under 22 miles from the four-tower array of kilowatt daytimer WINW (1520) to the six-tower array of kilowatt daytimer WJMP in Kent, also on 1520. That makes them the most tightly-spaced pair of co-channel AM stations anywhere in the country, with directional patterns so tight that at my hotel just two exits down the highway from WJMP, there's almost no sign of the Kent station. Think the FCC would ever let that happen today?

Archived articles in this series are available under Travels With Scott at radioworld.com. Past articles visited radio facilities in Los Angeles and Milwaukee.

All the Advantages of HD Radio In a BE Tube Transmitter

Introducing BE's FMi T Series for High Power HD Radio

These highly-efficient, cost-effective transmitters can help you harness HD Radio's revenue enhancing potentials, such as multicasting and Messagecasting. Based on BE's field-proven T Series, they feature Class C operation and our patented folded half-wave technology.

No company designs and builds a more complete range of analog and digital radio transmission options than BE. And, thanks to Essential Spectral Precorrection™ (ESP) and other proprietary BE innovations, no HD Radio system outperforms the combination of BE FXi HD+FM Exciters and HD Radio transmitters.



Broadcast Electronics, Inc. • 4100 North 24th Street, Quincy, Illinois 62305
Telephone: (217) 224-9600 • Fax: (217) 224-9607 • E-Mail: bdcast@bdcast.com

Broadcast Electronics and the BE logo are registered trademarks; Total Radio is a trademark, and Messagecasting is a service mark of Broadcast Electronics Inc. HD Radio is a trademark of iBiquity Digital Corporation.

FIRST PERSON

A Rural Remote With Little Drama

Comrex Access Brings Missouri Audio Drama Performance to the Public Radio Satellite System

by Sue Zizza

The author is executive director of the National Audio Theatre Festivals.

On June 23, 2006, the National Audio Theatre Festivals in conjunction with Native American Public Telecommunications and Native Voices at the Autry produced 2.5 hours of live, high-quality audio drama.

The program was fed to the Public Radio Satellite System thanks to the Comrex Access, a remote product designed to transmit audio bi-directionally between itself and another Access unit located anywhere in the world. The signal can be sent via public Internet, telephone or ISDN lines.

Our experience with this new technology demonstrates how audio dramatists can get their shows out live to the Internet and uplinks for further distribution, even from a very remote location.

"The National Audio Theatre Festivals broadcasts its annual workshop performance to the local area," said NATF Technical Coordinator David Shinn. "Since moving the event to West Plains, Mo., in 2000 we have been using a Marti system to route the audio from the West Plains Civic Center's stage to our host station KKDY(FM) a few miles away. Between their broadcast and their streaming Web link we have been able to offer the programs to listeners locally, nationally and internationally for the last few years."

"Then, once the post-production is completed on the multitrack recording of the show, we offer it to stations through the PRX and on CD."

New artists, new listeners

Along with participants from the public radio and independent and commercial audio producing communities, the 2006 NATF Audio Theatre Workshop helped to train the first wave of new American Indian audio dramatists through the Native Radio Theater Project.

"Native American Public Telecommunications has partnered with Native Voices at the Autry in Los Angeles to create a series of contemporary audio dramas for audiences in the American Indian, public radio and Internet communities," said NRT Project Coordinator John Gregg.

Because the weeklong workshop was hosting more than 30 guest participants from the Native Radio Theater Project as well as three mentored Native staff artists, we wanted to see how we might be able to support their mission of bringing these new works into the urban, rural and remote tribal-based stations.

Using the Access, Shinn said, "the NATF performance for the first time was uplinked live to the PRSS from a very

rural, remote community and listeners heard a high-quality feed over their radios or Internet connections."

NATF enlisted the help of experience broadcast remote engineer Marc Wiener, a veteran of CBS radio and television, to

Center. Many NPR engineers were able to listen in to the test to see if this might also suit their future broadcast needs.

Access and broadcast

"We learned that when dealing with a high-security firewall, like the one NPR has, the Access unit connected outside the firewall must have a static IP address," said Shinn. "The static IP address makes it

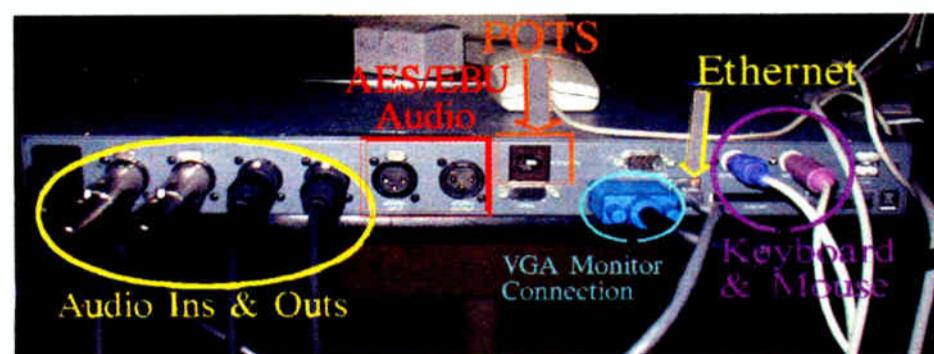


Fig. 1: Ins and outs on the back of the Access unit.

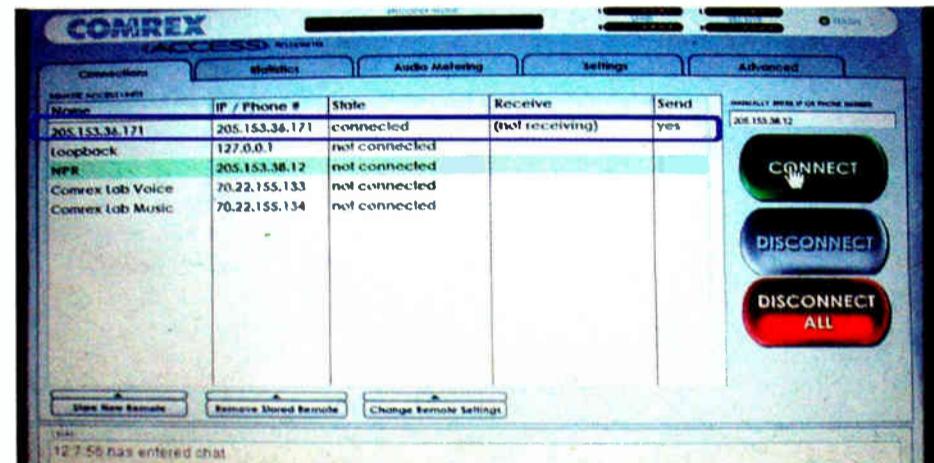


Fig. 2: Setting up the broadcast parameters.

monitor the broadcast and its quality. "Once the initial set-up and tests had been run between West Plains and NPR in D.C., Marc took over maintaining the signal and was the dedicated engineer for the broadcast," said Shinn.

Workshop reaches farther

"Having broadcast from many remote tribal locations I knew NAPT could not use a signal from anything but a quality connection like ISDN or T-1," said Gregg. "I spoke to the local telephone company representatives and found that ISDN was not available in West Plains and the closest T-1 to the performance stage was at least a mile away at the community library."

"We considered taping the show live an hour at a time and then hand-carrying the recordings on CD over to the library — 'moccasin net' — for upload over their T-1 line," Gregg said. "And back in the early spring it seemed like we'd have to go with this plan to ensure that a good quality signal would be delivered to stations."

In May Shinn read about the Comrex Access, shown at the spring NAB show. "The unit claimed to make it possible to get close to CD-quality signal from one location to another, no matter how remote. I read about a test broadcast that happened aboard a jetliner and called Comrex."

Chris Crump, the supplier's director of sales and marketing for Comrex, saw the project as a good testing ground for the Access unit and made it possible for NATF to have units in West Plains and in Washington at the NPR Satellite Uplink

possible for the Access unit behind the firewall to connect over the Internet to the other unit. Once Century Tel installed the right kind of DSL line backstage at the West Plains Civic Center we began the initial set-up and test of the system with feeds running between Missouri and D.C."

Marc Wiener, our remote engineer, said he found the Access setup to be straightforward and unambiguous. "Although we requested, and got, a static IP address from our Internet provider in West Plains, the unit professes to operate equally well with DHCP addressing, and defaults to this connection mode on boot-up. You are presented with the Main IP Address Screen. If you are setting a static address,



Alt-S on the keyboard gets you into the Config. program where you enter the usual IP Address, Subnet, Gateway and DNS information.

"You are now good to go, and any computer hooked to the Internet with Microsoft Internet Explorer version 6 or better, or Firefox version 1 or better with a Flash plug-in, will take you to the user interface by simply typing the IP Address of your Access unit into the URL bar of your browser."

Working with your receiver

"Because incoming IP connections to National Public Radio are blocked by a firewall, we gave the control room our address and let them connect to us," said Wiener. "It took only about five seconds of searching to find us in West Plains. We established our link two days in advance of the broadcast and let the unit cook, feeding a continuously looping CD of well-recorded music down the line. The unit never dropped out."

In addition, he said, a number of engineers stopped by the NPR control room to monitor the feed, curious about the quality of the audio transmission. "The fidelity and minimal presence of the usual artifacts associated with audio over IP elicited the first of two expressions of awe from our colleagues in Washington," Wiener said.

"The day of the broadcast, we synchronized our watches with the control room clock. I first called them on a phone and they gave me a countdown to zero. I then went on mic in West Plains and, while still on the phone, gave Washington my zero count down. I could hear myself coming back over the phone ... delay was no more than a quarter of a second. The countdown elicited the second 'wow' from Washington."

"During the actual broadcast, I had Washington turn our feed around and send it back to me for confidence monitoring. I did detect occasionally degraded audio in the form of reduced fidelity or, very infrequently (six times in two hours), the electronic/synthetic voice effect associated

See DRAMA, page 23 ▶

2007 Audio Theater Workshop

The National Audio Theatre Festivals will host the 26th annual Audio Theatre Workshop in West Plains, Mo., June 23–30. It is a unique audio arts training organization dedicated to all areas of audio production, with a look toward future technology that will continue its goals of reaching out to new listeners and new artists.

Participants attending the weeklong workshop will be able to take classes in audio performance and production. Special Programs include a Narrator's Track hosted by Grammy-and Audie-winning audiobook producer/director Paul Ruben. William Dufris, known to many as the voice of Bob the Builder, will be on hand to work with narrators on demo reels. Improv and character development workshops will be offered as well. Sound Design and Sound Effects sessions will be available to participants from professionals in the field.

The 2007 ATW includes a live theater performance broadcast and Webcast; it is to be recorded by MetroMobile of Chicago. Elements will include narrators, improv and work from the NATF Script Competition winners and the Native Radio Theater Project.

For workshop fees, travel and registration information visit www.natf.org or call Executive Director Sue Zizza at (516) 483-8321.



Harris is your end-to-end radio solution provider.

AM/FM Analog or HD Radio™ • Audio Consoles • Broadcast Studios

High Power AM • Systems and Service • Intraplex Transport

HD Radio™ is a trademark of iBiquity Digital Corporation

Harris PR&E NetWave console with optional networking.
Available in 8-16-24 channel frames, all with fully
modular construction.



FlexStar HDx exciter—the gold-standard for FM and FM-HD excitors, featuring RTAC (Real Time Adaptive Correction for best mask compliance) and Exigne, the latest iBiquity platform in HD Radio.



ZX1000, 1 kW tri-mode FM/FM-HD or digital only transmitter. FM transmitters available from 250 W to 70 kW, in analog or HD Radio.



Destiny 3DX-50, 50 kW medium wave direct digital drive high efficiency, high reliability AM transmitter. AM transmitters from 1 kW to 2 megawatts, all fully compatible with HD Radio.

Imagine Harris transmitters... combined with legendary Orban audio processing.



OPTIMOD 9400-AM *Digital*

No-compromise, independent, multiband processing for analog AM and digital radio—in one box!

For over 20 years, OPTIMOD-AM has dominated the sound of major-market AM radio. Orban's new 9400 offers even better analog AM processing, while its unified analog and digital design substantially reduces costs compared to a two-box configuration.



Contact Harris at 800-622-0022 or email autoconfirm@harris.com



assuredcommunications™

Government Systems • RF Comm • Broadcast • Microwave

www.harris.com

Radio's Royal Family Redux

*Metadata Takes on New Importance
In the Era of Satellites and MP3s*

You've no doubt heard the familiar refrain "Content is king," which has become a touchstone of ultimate truth in the digital media world. A related and increasingly cited reference holds that "If content is truly king, then metadata is its queen." All gender-based aspersions aside, it's time for everyone in radio to accept the fact that broadcasting now includes two important content types: audio (most important) and program-associated metadata (almost as important).

This has always been true for radio,

but the latter used to be simply presented via spoken word of the host/presenter/DJ. What's new is the need to provide this data continuously and synchronously via an auxiliary, typically text-based display. This is essential for terrestrial radio given that it has become a typical feature of competing services, such as satellite radio and MP3 players.

When applied to the typical music radio service, this metadata includes song title, artist and (sometimes) album or other data, all of which adds considerable

value to a listener using radio for music discovery. The addition of this metadata may even make the difference between such a listener tuning in to a station or not, so its importance cannot be discounted, and it will likely become increasingly critical.

Quick returns

Interestingly, this value is not necessarily dependent on the success of digital terrestrial broadcasting. As IBOC is deployed, analog FM broadcasting is concurrently experiencing its own subtle renaissance through the maturing of RBDS as a useful and increasingly available metadata service. While always

The Big Picture

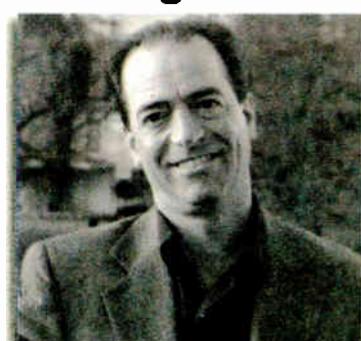


Photo: Gary Hayes, BBC

by Skip Pizzi

envisioned as useful, the current value and full importance of music metadata via RBDS to terrestrial radio services in today's competitive context could never have been imagined.

So rather than being a highly prospective investment, with dubious and possibly quite long-term ROI (like IBOC), the implementation of music metadata transmission over *analog* FM services can provide quick returns. Meanwhile, the timing and current availability of funding for a station's digital transition can be leveraged to do the work necessary to provide an elegant, automated method of metadata provision, to be applied to both IBOC and analog FM services by terrestrial broadcasters (more on this below).

Note also that today's radio receivers are changing the way in which this content is displayed — even over analog FM. Beyond the traditional eight-character

Cure soundcard headaches in 3 steps!

1. Get a USB Matchbox.

2. Connect to your PC here.

3. Connect to your studio here.

Replace your consumer sound card with The USB Matchbox!

You'll get superb audio without noise, hum, or interface hassles.

Just crystal-clear highs, solid bass, and no "digital grunge".



- Professional performance at true professional levels.
- 30V internal power supply for 20+ db of headroom
- THAT InGenius™ RF suppressed input stages
- Input, Output levels are adjustable
- USB powered, no wall wart

The USB Matchbox will instantly improve your on-air sound!

Replace all of your PC soundcards with USB Matchboxes and hear the difference!

Now in stock at all Henry Engineering dealers.
Visit www.henryeng.com for full details.

We Build Solutions



Analog FM
broadcasting is
experiencing its own
subtle renaissance
through the
maturing of RBDS.

LED text displays to which we've become accustomed, RBDS data is now being presented on graphical screens with simultaneous display of multiple data fields in attractive fonts. Such displays are or will soon be available in home, automotive and handheld form factors.

And thinking expansively, remember that the metadata carried by broadcasters need not forever be limited to text display. Next-gen metadata services could easily include graphics such as album cover art, thumbnail photos, animations and more. Just as broadcast audio has evolved over time, we may be experiencing only the first wave of a metadata transmission process that will itself mature and develop.

Get interactive

The receivers addressed by these twin content streams are not just "sinks" anymore (i.e., they are no longer pure receive-only devices). Increasingly, these radio receivers will be but a single component of a larger, "connected" digital media ecosystem. This implies that the system will have additional connectivity, which in some cases will allow the user to immediately (or later) download to local memory a high-quality copy of the content discovered via radio listening.

See METADATA, page 23 ►

Metadata

► Continued from page 22

This feature is enhanced by making the metadata display "active" (i.e., hyper-linking it to sources of the content), such that the receiver can, via a single key-stroke or button-press, direct the user to a download site, or even take the user deep within a site, right to the specific song-download confirmation page.

If the download involves a cash transaction, the radio service may be compensated for the reference, since the discovery process the radio service provided led directly to the purchase. Further, in this scenario, the discovery process led the user not just to the song, but to that particular download site, which is presumably one of many alternate and competing sources for such a purchase. Thus the establishment of these links is a new form of commerce that could become a regular part of the radio sales portfolio and the competitive marketplace.

Such a process is already possible and in use on the Web, where stations' on-air and/or Webcast playlists are directly linked to music download sites. In some cases, these download sites are branded under a station's name at its own Web site — even though the process might

actually be accomplished via redirects to a third-party's site. An example of this is the WMMR Digital Music Store at <http://wmmr.tunegenie.net>.

In other cases, a station may provide links to clearly stated third-party vendors of downloads or packaged media. This approach is used by the online playlists and "Now Playing" browser windows of KCRW's Music service at <http://kcrw.com>, for example, where song titles are linked to search windows at Apple's iTunes store, and album titles are linked to the appropriate CD-purchase page at Amazon.com.

Next steps here will likely involve the addition of similar metadata-driven interactivity to services other than Web streams, and on devices besides PC-based browsers (such as RBDS- or IBOC PAD-equipped handheld radios with wireless data connectivity).

FEATURES

Something else to think about here is how radio services are now multipurposed and fed to several different platforms simultaneously, each of which may have its own encoding scheme for audio, as well as separate encoding for metadata.

A multi-platform world

For example, today a broadcaster may transmit the same original audio stream via analog FM plus RBDS metadata, along with HDC encoding plus IBOC PAD metadata for HD Radio, and one or more streaming media formats (perhaps at multiple bit rates, as well) plus HTML metadata for the Web. And that's just for today; the future will likely expand upon these options.

Broadcasters have entered a world where a single content stream of audio and metadata may flow over many differ-

ent portals. Just as a book is translated into numerous different languages for distribution to various physical regions of the world, so too can a radio program be transcoded into numerous formats for separate virtual sectors of the audience. Thus is the potential audience maximized, and the greatest distribution efficiency is extracted from a single production process. When doing so, however, it will be important to consider both the content and the metadata formats of the target platform.

As the digital media transition continues, the various formats of program-associated metadata for radio broadcasts will continue to grow in their importance to listeners, and in their value to broadcasters. Long live the queen.

Skip Pizzi is contributing editor of *Radio World*. 

Drama

► Continued from page 20

with IP telephony. But all of these degradations were short-lived (three to five seconds) and recovery was smooth and without incident."

The delay during the actual broadcast, he said, was constant at about one second for the complete round trip. "I'm guessing that the delay was greater than during our time check because of the much more complex waveform encoding that the unit was required to perform during the show," said Wiener.

"The signal we heard at our particular facility in Lincoln, Neb., was quite clean for the two-and-a-half-hour show," said Gregg. "In fact, there were very few instances of signal drop; the longest one was only about half a second in length, just after the top of the second hour. There were a few artifacts as well, which sounded like a bad MP3 file, and for a few seconds the artifacts sounded a bit 'bubbly.' Not bad considering it was delivered to the uplink site via the Internet."

"One precaution we took with Century Tel was to ensure the DSL was a dedicated line and that no one else had access to it for any other purpose during the transmission," said Gregg. "We had no complaints from stations or listeners."

"Overall, I'd say the show's transmission over the Internet was a success. Distribution to public radio stations that carried the show didn't report any problems to us either, so I wouldn't hesitate recommending the Access unit to any producer doing a live remote in rural areas with limited connectivity, and especially if the best connection is DSL."

Gregg thanked Pete Lowenstein, Ralph Woods, Kay Guinn, Toby Pirro, Vince Destajo, Bill Bremmer and technicians at the STC uplink center, as well as Nebraska Educational Telecommunications in Lincoln, SueMedia in New York and The National Audio Theatre Festivals for making this broadcast happen. 

The cash-machine formerly known as RevenueSuite returns to the airwaves as Google AdSense for Audio.

RevenueSuite, a source of additional income for radio stations, promises to be even more so in this incarnation as AdSense™ for Audio, thanks to the power of Google technology. And when you combine that with the industry's most innovative station automation products – SS32™ and Maestro™ – you'll understand why hundreds of stations in markets of every size are starting to talk about the future of radio stations with renewed optimism.

At Google, our commitment is strong and clear and unchanging: we're here to help you run your station more efficiently and profitably than ever before.

Visit www.google.com/ads/asaudio to find out more.

©2006 Google Inc. All rights reserved.
Google and the Google logo are registered trademarks of Google Inc.



See us at RAB Booth #13

Radio Rescues President's Cat

by James Careless

A VIP gone missing at the White House. The president distracted from affairs of state as the Secret Service scours the grounds in vain. A sad ending seemingly unavoidable until radio intervenes to save the day.

Yes, this is the stirring story of how radio rescued a Very Important Pet — Tiger, President Coolidge's cat.

Act 1: In Which the Main Characters Are Introduced

Elected as vice president in 1920, Calvin Coolidge succeeded to the presidency upon the death of Warren Harding in August of 1923. Elected to the position the following year, he would reside in the White House until 1929, during the boom times known as The Roaring Twenties.

He was notable for his reticence. When someone tried to win a bet by motivating Coolidge to say three words, the president famously replied, "You lose." Quiet Cal also was an animal lover. "Any man who does not like dogs and want them about," he once said, "does not deserve to be in the White House." He kept cats and dogs, canaries and mockingbirds, wombats and raccoons, according to Coolidge pet chronicler David Pietrusza.

Among President Coolidge's favorite White House companions was Tiger, a large orange tomcat with vertical black stripes. The feline was noted for coming on command any time the president



National Photo Company Collection (Library of Congress)

Officer Benjamin Fink holds Tiger, the Coolidge's cat, at the White House on March 25, 1924.

STATION/STUDIO SERVICES

If We Were a Bank....

...you'd be throwing money at us! Banks are paying, what, 5% or so on money market accounts? Meanwhile, our "investors" - broadcasters like yourself - are reaping ridiculous returns on their money. One client's \$149 investment returns \$3000 within two weeks. Another picks up the same promotion and does \$6000! Then there's our friend Bruce, GM at a small market station up north, whose modest investment in our Winter Safety Tips has returned over \$30,000 to date! Visit GraceBroadcast.com today for free demos, sales helps, and a healthy return on your investment!

 GRACE BROADCAST SALES
Sound Ideas for Building Business™

Free Demos.
Questions? Call us toll-free (888) 472-2388.
www.gracebroadcast.com

yelled, "Here, Tige!" Such was Tiger's calm demeanor that the commander in chief was able to drape the cat around his neck like an oversized furry scarf — though according to a woman whose grandmother knew the family and who wrote about the cat to Time magazine recently, Tiger was a "Conan the Destroyer beastie" who once ruined a valuable antique bedspread.

Act 2: An Unexpected Absence

Like so many other animals that have occupied the White House — four-footed and otherwise — Tiger took to wandering the halls of power. But he was a farm cat at heart, raised in the open spaces of Coolidge's Vermont farm. Although Tiger presumably did his best to stay within the confines of the presidential mansion, the outdoors called to him.

On the night of March 20, 1924, someone left a door open at the White House. Tiger saw his chance and took it. Even though there was an ice storm falling upon Washington, President Coolidge's cat scooted outside.

The next morning the president yelled "Here, Tige" to no avail.

Act 3: The Alarm Is Raised

Drawing upon the awesome powers invested in him by the Constitution of our great land, Coolidge ordered his staff to search the White House and its grounds. When this turned up nothing, the D.C. police were put on alert.

The ensuing drama was described tautly by Casey Kasem during a Radio Hall of Fame Awards Broadcast in 1997.

"For three days there were no signs of Tiger," said Kasem. "This worried the president. For though Tiger was large and well-put together, he was *not* a city cat."

"And then one of the president's staff came up with a *brilliant* idea. Maybe Tiger could be found — by radio!"

Act 4: Radio to the Rescue

March 24, 1924, evening. At Washington's WCAP, 640 kilocycles, Secret Service agent James Hanley stepped up the microphone and declared, "The president's cat is missing!"

Hanley gave WCAP's listeners a description of the missing orange-and-black tomcat, explained that he answered to the call of "Here, Tige" and provided the White House's phone number.

"Moments later, the White House phone began to ring off the hook," Kasem related. "A few callers claimed to have seen Tiger. But many more, apparently with excess cats of their own, offered the president a replacement. Indeed the president *could* have had more than a *hundred* new cats by morning, if he had wanted them."

Fortunately, Navy Captain Edward Bryant was one of the people who heard the Secret Service's broadcast that night. The next day, he went to the Navy Building — a quarter-mile from the White House — to visit the office of Captain Edward Sullivan. Next to Sullivan's desk lay a sleeping, purring cat that had wandered in unannounced a few days earlier.

Acting on a hunch, Bryant yelled, "Here, Tige!" The cat awoke and ran to the officer's side.

Hanley gave WCAP's listeners a description of the missing orange-and-black tomcat and provided the White House's phone number.

"This is the president's cat," exclaimed Bryant in Kasem's retelling, and he "scooped up Tiger, hailed the first cab he could find and told the driver to take him to the White House."

Act 5: Epilogue

"President Coolidge was overjoyed to see Tiger," Kasem told his listeners. "He immediately ordered a cat collar that said, 'My name is Tiger. I live at 1600 Pennsylvania Avenue.'

"Then he met briefly with the press," Kasem concluded. "Calvin Coolidge was normally a man of few words. But that day he gave one of his *longest* off-the cuff remarks. 'Tige is back,' said the president. 'Thanks to radio!'"

The story doesn't end happily though; Tige returned to the White House but not for long. One day he scooted outside again, never to return. According to author Pietrusza in his article "Wombats and Such: Calvin and Grace Coolidge and Their Pets," Mrs. C. reacted to Tiger's loss by commenting, "Perhaps, instead of safeguarding him with the collar, we had made him a too attractive and tempting souvenir."

Post scriptum: When Coolidge was inaugurated as president on March 4, 1925 — almost a year after Tiger's rescue — he became the first U.S. president to broadcast his inauguration speech via radio.

Radiocube

This is a small ad for a GREAT RADIO AUTOMATION SOFTWARE with a small price, too! Get your free demo today: www.radiocube.com

Software for Station Operators and DJ's

Q1 SALES BOOSTERS from Grace Broadcast Sales

Fully produced & market exclusive :30- or :60-sec. radio features you can download immediately and **SELL RIGHT NOW!**

WINTER SAFETY TIPS
BLACK HISTORY MONTH
VALENTINE'S DAY
FFA WEEK SALUTES
PRESIDENTS DAY

— Free Demos & Sales Materials — at GraceBroadcast.com

Makes Sense! (Dollars, too.)

ATTENTION PROVIDERS!

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

WGFA Finds Niche: Agriculture Radio

by Ken R.

"The good book" for most general managers is still Arbitron's, but not for Maggie Martin, general manager and owner of WGFA(AM/FM) in Watseka/Kankakee, Ill.

"We just don't have the concentrated population that Arbitron likes," she said. "What matters to us is a survey we buy from Ag Media Research every two years which tracks the listening habits of farmers in our area of Illinois and Indiana."

Those numbers are impressive. In the 2006 survey WGFA's cume rating approached 90 percent between 5-7 a.m. weekdays. This represents the stations' audience expressed as the percentage of the farm population in Iroquois County that tuned in at least once during that time. The nearest competitor had about 30 percent of the market during the same daypart. (More on AMR is found at www.agmedia.com.)

Can't buy me love

WGFA(AM) is a 1,000-watt directional started by Maggie's husband Dick in 1960. Its 50,000-watt FM was added one year later. The latter airs a blend of news, agriculture features and contemporary music; the former offers inspirational talk and farm reports. Detailed weathercasts are provided on both stations.

"In fact our station's call letters stand for 'World's Greatest Farming Area,'" said Martin.

While the couple has owned other stations, they now own just these two. In a world of megacusters, WGFA is an exception. Dick, a former sports play-by-play broadcaster for the University of Illinois, retired in 1991. Maggie took over management in 1990, although she had no prior broadcast experience. Her background is music, though perhaps not the type heard

WGFA Teacher Of the Week

From the station Web site:

WGFA's Teacher of the week is back. Do you or your child have a teacher you'd like to nominate to receive our weekly award? WGFA is giving you the opportunity to honor this special person with a plaque and scrapbook page. And the teacher's class will get pizza certificates and a free slushie. Just mail, fax or e-mail a short letter about your teacher today.

Every Monday Morning at 7:55 we'll announce the weekly winner. The Teacher of the Week is brought to you by Monical's Pizza, Scrapbooking Now and Then, Country Insurance and Financial Service and Pence Oil Company.



A school group visits WGFA. Headshots are of the station's Justin Kaiser.



Colleen Callahan, facing camera, and other WGFA staff pump gas with ethanol at Renewable Fuels Day in Watseka, Ill., last spring.

on WGFA. She holds bachelor's and master's degrees in music from the University of Michigan.

"But I grew up in a family that owned an independent business. That taught me about customer service," she said. "I learned to be ethical and continually invest in my people and the business, which is easier to do with an independent operation. Here we are free to make the best long-term decisions."

"While strong ethics are important, we still need to remember that more has to come in the front door than goes out the back door. I make my numbers every month and keep an eye on the entire financial picture of the stations. If it's good for the station it should be good for our clients and employees," she said.

Certainly the bottom line is not the only concern at WGFA.

Sometimes we let them work from home because we don't clock their hours, only their output."

Sometimes smaller is better

Colleen Callahan, past president of the National Association of Farm Broadcasters and the first woman to hold that post, is WGFA's agriculture director. She also is in demand as a motivational speaker.

"Colleen's first introduction to WGFA was when she toured our station as a young girl," said Martin. "She is from nearby Milford, Ill., and her husband is involved with showing cattle. She has local roots."

One of the challenges in small-market radio is bringing in enough money. While many small stations resort to "dollar-a-holler" spots, Martin is able to keep WGFA's rates relatively high.

"If you give away the spots, you can't afford to invest in your station," she said. "You can either run the operation cheap and then try to sell it, or you can really serve the area and plan on sticking around."

Mike Loyd is vice president of marketing at Farm Credit Services, a company that has advertised on WGFA for more



Traffic Director Jenny Dombrowsky and General Manager Maggie Martin.

"Our people are terrific. We insist

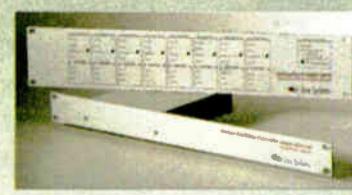
that they take vacations, even if we have to limp along while they're gone," said Martin. "And we also have some parents of young children working for us.

than 10 years.

"I not only look at the ratings, but I talk to our customers and prospects in focus groups," he said. "We get a lot of good comments about WGFA. Our sales rep

See WGFA, page 26 ►

Product Showcase



Model RFC-1/B Remote Facilities Controller

- control transmitter from any telephone
- 8-64 channels of telemetry and control
- programmable control by date and time
- optional printer and modem adapters
- programmable telemetry alarms
- integrated rack panel

 Sine Systems, Inc.

615.228.3500

more information: www.sinesystems.com

Not Worth the Paper It's Printed On?

Compliance Plans Prevent Enforcement Problems Only if Actively and Effectively Implemented

by David H. Solomon

In case after case before the FCC, companies argue that there shouldn't be enforcement action against them, or that any enforcement action should be less stringent, because they fixed the problem as soon as the FCC told them about it. In case after case, they lose this argument. The FCC's view is that compliance is required before the agency finds out about a violation, not after.

So what's the best way for a broadcaster to ensure compliance in advance, or at least maximize the likelihood of compliance?

More than a list

Simply giving employees a list of rules and telling them to make sure to follow them often will not do the trick. Rather, in areas of key importance and active FCC enforcement, it will often be helpful for broadcasters to create a formal compliance plan, and then to follow it carefully.

A strong and well-implemented compliance plan increases the likelihood of compliance. In addition, if a glitch in implementation occurs, the existence of such a compliance plan should help discourage or mitigate any FCC enforcement action.

Effective compliance begins with setting a strong tone that compliance "matters" to the company, that the company takes its regulatory obligations seriously. Such an *ethic of compliance* can then be implemented through the details of any specific compliance plan.

A compliance plan need not be elaborate. What it should cover in any particular instance will vary depending on the nature

of the substantive area as well as the size and internal dynamics of the company. An effective compliance plan should focus on topics such as the following:

• **Locus of Responsibility.** A single person should hold ultimate responsibility for compliance in each area covered by the compliance plan, but the same person doesn't need to be responsible for every area. For example, an engineer could be responsible for Emergency Alert System compliance while a program director could be responsible for payola/sponsorship identification compliance. In any event, the person should be senior enough to be empowered to take the necessary steps to make sure the compliance plan is followed carefully. For example, one recent FCC consent decree established a radio broadcaster's general counsel as responsible for public file rule compliance, while another recent consent decree designated a television station's news director as the responsible for compliance with the commission's emergency captioning rules. Whoever is chosen, that person should, of course, have expertise in the relevant area of the rules.

• **Overview of FCC Requirements and Station Policies.** A compliance plan should include a "plain language" summary of the relevant FCC requirements and station policies implementing them. This will provide relevant employees with a handy reference source of what they must do (or not do).

• **Compliance Procedures.** These procedures are really the guts of any compliance plan. They should do more than just summarize the rules and tell

people to follow them. Rather, the procedures should lay out in a practical way who is supposed to do what, how they should do it, and when. In a Part 17 tower compliance plan, for example, procedures should be established to cover such areas as ensuring that proper registration, signage and tower lighting are accomplished at the appropriate time before or during tower construction; ensuring that towers for any stations that are being acquired are in compliance or, if not, are made compliant promptly; making sure that lights and alarms are working and monitored correctly; notifying the FAA when tower lights go out and fixing the problem; checking towers to see if they need to be repainted. Having formal procedures to be used in key areas will go a long way to achieving compliance objectives.

• **Record-Keeping.** In addition to keeping records required by the rules (for example, issues-programs lists), it may be helpful to keep internal records to track compliance and, if questioned by the FCC, to demonstrate compliance. For example, if the program director is responsible for public file compliance, the station may want to require that he or she keep a log or certification of compliance.

• **Training and Re-Training.** A compliance plan can only work if the people who implement it know what they're doing. Relevant employees should be trained (and periodically re-trained) on applicable FCC requirements and the company's compliance procedures. Given employee turnover in the broadcast industry, the lack of training for new employees is one of the most significant causes of non-compliance. Thus, for example, new managers charged with hiring responsibility should be trained on

the commission's EEO outreach and record-keeping requirements.

• **Oversight.** A few proactive steps can help ensure that a compliance plan is working and is up to date. For example, a company could consider periodic compliance reviews or audits of whether the plan is being followed. It can also facilitate complaints or suggestions from within the company. When problems arise or are identified, a company should take appropriate steps to minimize the risk of similar problems arising in the future, for example, remedial training for the employees involved. A process should be established for periodically re-evaluating and revising the compliance plan based on problems that arise, changes in the rules, or simply new and improved thinking by people within the company about how best to achieve compliance.

The world's greatest compliance plan will not be worth the paper it is written on if it is not actively and effectively implemented by management, consistent with the kind of overall ethic of compliance discussed above. A compliance plan is not itself an end but rather is a potentially important means for broadcasters to achieve more important ends: compliance and avoidance of FCC enforcement.

The author is a partner in the Washington law firm of Wilkinson Barker Knauer LLP and a regular contributor to Radio World. From 1999 to 2005 he was chief of the FCC Enforcement Bureau. Reach him at dsolomon@wbklaw.com.

WGFA

► Continued from page 25
from the station is very attentive and puts together packages that really work for us."

Maggie Martin believes that being small gives her an advantage.

"We can adapt," she said. "We hardly ever have to react to a situation. In fact we were streaming on the Internet before almost everyone else. We actually stopped for a while during that period when the copyrights were being sorted out. We had to tell disappointed grandparents in California that they couldn't hear their grandkids' basketball games."

And WGFA broadcasts a lot of sports, sometimes as many as three games in one day. All live sports coverage is put on the air and on live Internet stream.

"We have a full-time staff of eight and about five part-timers," she said. "We use our part-timers to help with sports and weekend shifts and we always try to use interns from the area high schools."

WGFA is now a family affair. Maggie Martin's daughter Stacey handles national agriculture spot sales and has a local territory as well. The local sales manager's daughter also is in the sales department.

"It's important for continuity to have that kind of family involvement," said Martin.

Ken R. is a former broadcaster who says he read lots of farm reports on the air but never knew a pork belly from a soybean.

Happy Birthday Radio!



In 1906, Reginald Fessenden became the first person to broadcast words and music over radio waves



Radio grew up
with
JENNINGS inside

Since 1942, the Jennings vacuum capacitor has been renowned as the **standard** choice for transmitters worldwide.

Tell us about your favorite radio history fact and you will automatically be registered to win a Vintage Radio. Visit us at www.jenningstech.com.

got tools?
cables & connectors
racks
tools
problem solvers
test gear
& much more
www.systemsstore.com

MOST WANTED

The world's best on-air microphone - period.



"The PR40 makes me sound fabulous. I absolutely love this microphone. We replaced our old microphones, which by the way were considered to be the industry standard, and the difference is like night and day."

- DUSTY STREET
FREED RADIO STUDIO
ROCK AND ROLL HALL OF FAME
SIRUS SATELLITE RADIO



"I am not the most technical guy in the business, but after 32-years in the broadcast business, I know microphones. I plugged in the PR 40 straight into the board without any processing and it absolutely blew me away. Without a doubt the PR40 is the best broadcast microphone ever developed."

- MIKE MCKAY
BRAVO MIC COMMUNICATIONS
KVLC 101-GOLD FM
KXPZ ROCKET 99.5FM



"This mic is unbelievable. I have worked with some of the most expensive microphones in the broadcast industry and none, I mean NONE compare to the PR 40. I have received reports from stations all over the world about the amazing audio quality of this mic."

- GREG HEMMINGS
WSLS-TV NEWSCHANNEL 10



"The Heil PR 40 is incredible. There is absolutely nothing better on the market and I've had the opportunity to use all the standards over the years. The difference is really remarkable."

- PD MICHAEL "SHARK" SHARKEY
WSUN FM 97X
COX RADIO TAMPA BAY



Heil Sound Ltd.
www.heilsound.com
info@heilsound.com
618.257.3000

Products & Services

SHOWCASE

DIGITAL AUDIO CONVERTERS

BONIFEX Redbox

Redbox RB-ADDA2
A/D and D/A Converter, 24 bit 192kHz

Supports sample rates up to 192kHz.
Easy to use, front panel controls.
Independent AES/EBU and word clock synchronisation.
RS232 serial control.
AES/EBU, S/PDIF and optical digital I/O, balanced and unbalanced analog I/O.

24bit
192kHz

INDEPENDENT AUDIO

T: 207 773 2424
E: info@independentaudio.com
www.independentaudio.com

Visit our website for details:
www.sonifex.co.uk

CALL FOR NEW CATALOGUE

A Great Place to Advertise!

Radio World.

Radio World's Products and Services Showcase provides a perfect medium for marketing your products and services.

For more information contact
cvanveen@imaspub.com
to request a media kit.

Thanks for Reading Radio World!

LEX

Exciter/Transmitters
Ultra Slim - 30W, 50W, 100W
New Features on the LEX Series Include:

- Built-in Stereo Generator with Very High Separation and Fast Audio Clipper
- Up to Seven Frequencies, Power Levels, and Program Presets (remote controllable)
- Rear Panel Connection for Direct DC Battery Back Up with Auto Switch Over and Built-in Charger
- Built-in Front Panel User Programmable FSK ID Keyer for Auto ID of Translators



COMPLETE CONTROL WHEREVER YOU ARE RELAX – YOUR SYSTEMS ARE IN GOOD HANDS

System downtime costs you money. But however far you are from your transmitter or studio, you can stay in control with the Davicom MAC telemetry system from Comlab. It remotely monitors and controls your equipment giving you complete confidence in the integrity of your transmissions.

And if things do go wrong, you and your engineers will know about it immediately, meaning reduced costs and maximum efficiency.

In the USA contact:



t: 800/ 438-6040
f: 704/ 889-4540
www.scmsinc.com

In Canada contact:

davicom

t: 416/ 682-3380
f: 416/ 682-8996
www.davicom.com

- Reduce Costs
- Remotely manage your assets
- Flexible monitoring
- Rapid failure identification
- Alarms via IP/phone fax/email
- Totally Scalable

VoxPro®

The Short/cut® Replacement

Network-MP3-AGC-Search-Fade-Effects and Fast

Available at all broadcast distributors

AudionLabs.com 206 842 5202 x203

2008 Audion Laboratories Inc. All rights reserved. Audion, VoxPro are registered trademarks of Audion Laboratories Inc. Other company and product names may be trademarks of their respective owners.

You're Here!

...and so are the potential buyers for your products and services.



Radio World is a great place to find things for your business, and a great place for prospects to find you!

To advertise, call Claudia at:
703-998-7600, ext. 154
or e-mail: cvanveen@imaspub.com.

Online Too, It's All About the Content

Who Drives Your Radio Station's Web Site? Is It Sales or Programming?

Web content is driven by one of two elements: programming or sales.

Although this concept is elementary, it's clear that many students were sleeping when they should've learned this basic fact in communications class. There was a time when sales took the driver's seat in television and radio with advertisers dictating the content to be seen and heard by America. Big sponsors had the power to have hosts fired, scripts changed, schedules juggled. Even game shows could be fixed for a price.

Broadcast business culture has changed, but sales still has a tendency to want to drive content for reasons that correlate with modern times. The bottom line for sales has of course increased dramatically. Add to this our hyper-communicative world where everyone and his brother has an opinion about entertainment and information content, and it's natural for sales management and sponsors to get behind the wheel to create or influence a product.

If content professionals don't take the initiative — or aren't even hired in sufficient numbers to control their arena — sales forces have no choice but to take control and drive the entertainment platform to a place that they feel confident will produce a financial gain. And although we're all in this to make a profit, sales will do so in a very different way than content developers.

Radio and TV programmers, having fought this battle for decades, have for the most part conquered the impulse for sales departments to take over content. However, Web content — at least the content created for "media" Web sites — is under enormous pressure to make money. Often the content infrastructure for media Web sites isn't in place because the very companies that are demanding profits don't want to make the investment hiring content directors.

So what ends up happening? Before you can say, "The client wants their logo more prominently displayed in that 'advertisorial' article about new cars," the sales department has turned into content experts.

Who's in charge?

Unsure of who's driving your Web site content? Here's a simple test.

Does the sales manager have the authority to direct the Webmaster in creating content other than advertising? When a client demands to change content, is it done carte blanche? Does a salesperson have direct contact with the Webmaster without supervision from someone other than the sales manager? If you answered "yes" to any of these questions, sales is large and in charge.

So what's wrong with sales driving content? The answer depends on what kind of Web site you want.

If you want pages filled with ill-targeted content, too many ads and a point of view directed by advertisers, you may as well have your sales department take over the creative. However, if you want to provide content on your site that is tailored to engaging a target audience and generating multiple pageviews, return visits and recommendations to others to visit your site, you require a content

director.

It would seem logical to put program directors in charge of the content of Web sites for radio stations. At least for now, this assumption is incorrect. Few program directors have experience developing Web site content. Most PDs are so consumed with running their radio stations they have little time for the Web and view the site as a marketing

See WEB, page 31 ▶



Web site of Emmis station KPWR(FM), Power 106, 'Southern California's #1 Hip Hop radio station.'

Promo Power



by Mark Lapidus

Ethernet path...

IP-based equipment control

Remote mirrored servers

Transmitter remote control

RBDS

Surveillance and security

Backup audio path

to the transmitter site.



Innovative IP-based applications save money, save time and protect valuable station assets. But how to get IP connections at remote transmitter sites?

LanLink HS-900 provides IP Ethernet and RS-232 data where no wires or cables exist. And without licenses, leases or new antennas.

Ask the digital STL experts today.

Moseley

Dave Chancey 805.968.9621 Bill Gould 978.373.6303 www.moseleysb.com

'High Tech; High Touch; High ROI'

RAB Convention Looks to Arm Salespeople To Confront Challenging Revenue Environment

by Craig Johnston

The U.S. Army used to have a commercial with a closing line that went something like: "We get more done before breakfast than most people do all day." Attendees to the Radio Advertising Bureau's annual conference, opening Feb. 8 in Dallas, might feel that way once they get to the event.

"I'm not sure I know of another conference in our industry where we have sessions that start as early as 6 o'clock in the morning," said George Hyde, executive vice president for training and conferences. "And at our keynote breakfast we start serving breakfast at 7:30." Exhibits open as early as 7 a.m.

OMB BROADCAST

FM TRANSMITTERS

All transmitter powers with the best quality price ratio

NEW EM 5000 S

- Solid-state FM 5 kW transmitter.
- Improved design with three independent 2 kW power amplifiers, exciter and control unit in one 19" rack cabinet.
- Redundant design.
- Record in memory of events and alarms.
- Programmable automatic power control as energy saving feature.
- Fold back SWR protection system.

OMB, the Future of Communication

www.omb.com

MT/MR PLATINUM

- Studio to transmitter link system.
- Link transmitter with 20 W power output.
- Available in frequencies from 200 to 960 MHz supplied in 20 MHz bands.
- High stability oscillator.
- LCD screen display for parameter selection and readings as follows:
 - frequency (6 digits).
 - forward / reflected power.
 - modulation level.
 - pilot signal (19 KHz) sampling while in transmission.
- Audio inputs: mono balanced, stereo (MPX), and 3 SCA.
- Fold back SWR protection.

OMB AMERICA
telephone (305) 477-0973
(305) 477-0974
fax: (305) 477-0611
3100 NW 72nd Ave, Unit 112
MIAMI, Florida 33122 USA
<http://www.omb.com>
usa@omb.com

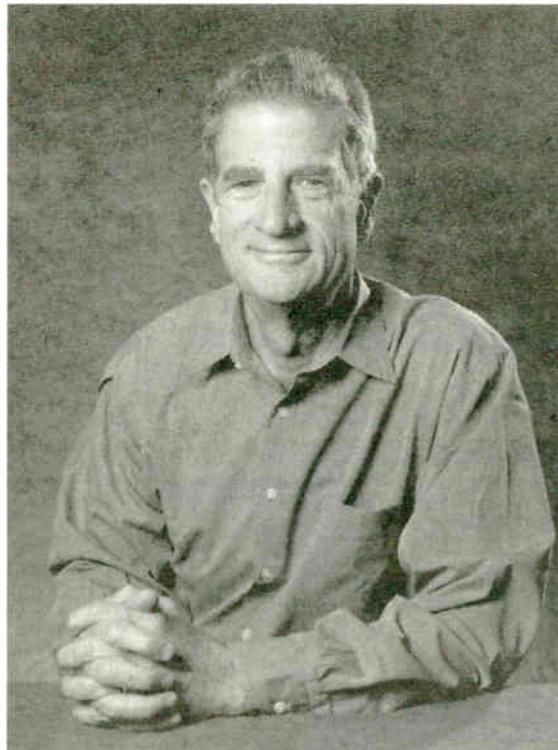
OMB EUROPA
sales and customer service factory
telephone 976-504 696 telephone 976-503 580
fax 976-463 170 fax 976-503 855
Avda. San Antonio, 41 Camino de los Albares, 14
CUARTE DE HUERVA CUARTE DE HUERVA
50410 Zaragoza, ESPANA 50410 Zaragoza, ESPANA
<http://www.omb.es>
europa@omb.com



Dan Burrus



Mercedes Ramirez Johnson



Jon Coleman

He said it takes some full days for radio sales managers to keep up on everything that's going on in the radio business.

"For our leadoff keynote, we have Dan Burrus, one of the most sought-after futurists, speaking about what's in the future, what's happening, how's it going to affect us."

"For our second keynote, we have someone who controls one of the largest advertising budgets on earth, Betsy Lazar from General Motors. She's going to talk about some of the things General Motors is up against as they try to get more consumers off the seats of their cars into General Motors' cars."

Rounding out the keynotes will be Jon Coleman from Coleman Insights, who has completed a study on how people react when spots come on the radio ("When the Spots Come On," RW, Dec. 6), and Mercedes Ramirez Johnson, who survived a plane crash in the mountains of South America that killed all but four people on board.



Betsy Lazar

According to RAB figures, U.S. commercial radio revenue was flat through most of 2006 compared to the year before. How to move that needle is likely to be among the topics of RAB's new president and CEO, Jeff Haley, who will present a "State of the Industry" address at his first annual conference since replacing Gary Fries.

Digital

Following the 2007 theme of "High Tech; High Touch; High ROI," the conference has sessions addressing specific challenges radio faces now and in the years ahead.

Digital radio is one of the topics. "Over the long haul, HD Radio will offer new and innovative sales options to build business for our marketing partners, in addition to the well-publicized opportunities for new programming streams," Hyde said. He feels it's time to educate sales and other station personnel, as well as advertisers and the audience, of the promise of HD Radio. "There's no reason to wait until it's a matter of days or weeks away, until the guy across the street, your competitor is doing something with it."

The convention will include sessions focusing on issue and opportunities for stations marketing to Hispanic and urban audiences. "There will be information that's literally 'hot off the press' revealing some fascinating information from the Radio Advertising Effectiveness Lab regarding higher levels of receptivity to radio advertising on the part of these audiences," said Hyde.

Non-traditional revenue is an annual issue at RAB conventions, and will be center-stage again. "Frankly, I think we've just scratched the surface when it comes to the potential of non-traditional

See RAB, page 32 ▶



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

Steve Tuzeneu was accepted into membership by the Society of Broadcast Engineers. He has also received the Certified Broadcast Technologist certification from the SBE.

The Empire State Building appointed **Joseph J. Maguire** broadcast manager. He had been chief engineer of WLTW(FM) at Clear Channel Communications.

Radio Advertising Bureau President

Web

► Continued from page 29
tool. This translates into sites that typically promote listening times for contests, specialty programs and information about station appearances.

Engage

True content entertains, informs and interactively engages a user. Some good examples for radio station sites: CD reviews written by DJs with response of reader opinion (like a blog); streamed videos of artist interviews; podcasts of unique features; song videos; and local up-to-the-minute traffic information.

Media outlets have the choice advantage of being able to constantly market their site(s) on their airwaves for free. Unfortunately, this opportunity is usually squandered in urging the audience simply to get more information about a marketing message on the site. Rarely do you hear a station actually encouraging listeners to visit its Web site specifically to view something entertaining.

Even sites with great content often make the mistake of not promoting that content properly or enough. I must give Clear Channel's Evan Harrison big props for his creation of "Stripped," "Music on Demand" and "Viral Videos," giving many stations reason to actively promote Web site use.

An Internet content director and program director should be partners in creating the balance of appropriate content and marketing messages. The content should always far outweigh the marketing messages, because the content is what will build the page views and return visits. When you see your weekly usage statistics on the rise, your sales department can then do what they do best: sell.

The author is president of Lapidus Media and a long-time contributor to Radio World. Write to him at mlapibus@cox.net.

GM JOURNAL

Emeritus **Gary Fries** joined Excelsior Radio Networks as a consultant to its subsidiaries Dial Global and MJI Interactive. Fries was president/CEO of RAB from 1991 to 2006.

AKG Acoustics named **Dino Virella** U.S. national sales manager. He was owner and principal of VirellaPro Sales and Marketing.

Symetrix appointed **Paul Roberts** director of domestic and international sales. He is returning to the company from Loud Technologies, where he worked in sales



Paul Roberts

management for two years. Roberts previously was inside sales manager for Symetrix from 1995 to 2003. ... Symetrix appointed **Ray Tantzen** to the new position of product and training specialist and field engineer. The company says his focus will be on the SymNet line of network audio solutions. Tantzen had been with Loud Technologies growing its TAPCO brand.

Jeff Smith has departed Nassau Broadcasting Partners after ten years as director of broadcast systems.



Ray Tantzen

CBS Radio promoted **Jennifer Donohue** to vice president and general manager of WCBS(FM). She had been director of sales for CBS Radio stations in New York and general sales manager for WNEW(FM).

Market analyst **Tim McElgunn** was named chief analyst, Broadband Advisory Services at Pike & Fischer, a publisher of market intelligence on advanced communications services. Previously he headed U.S. consumer broadband analysis at Stratecast, a division of Frost & Sullivan.

John R. Pepper II, co-founder of WDIA(AM), considered the first nationwide radio station with programming targeting a black audience, passed away at 91 after an extended illness. WDIA, which Pepper founded in the 1940s with Bert Ferguson, helped launch the careers of B.B. King and Isaac Hayes.

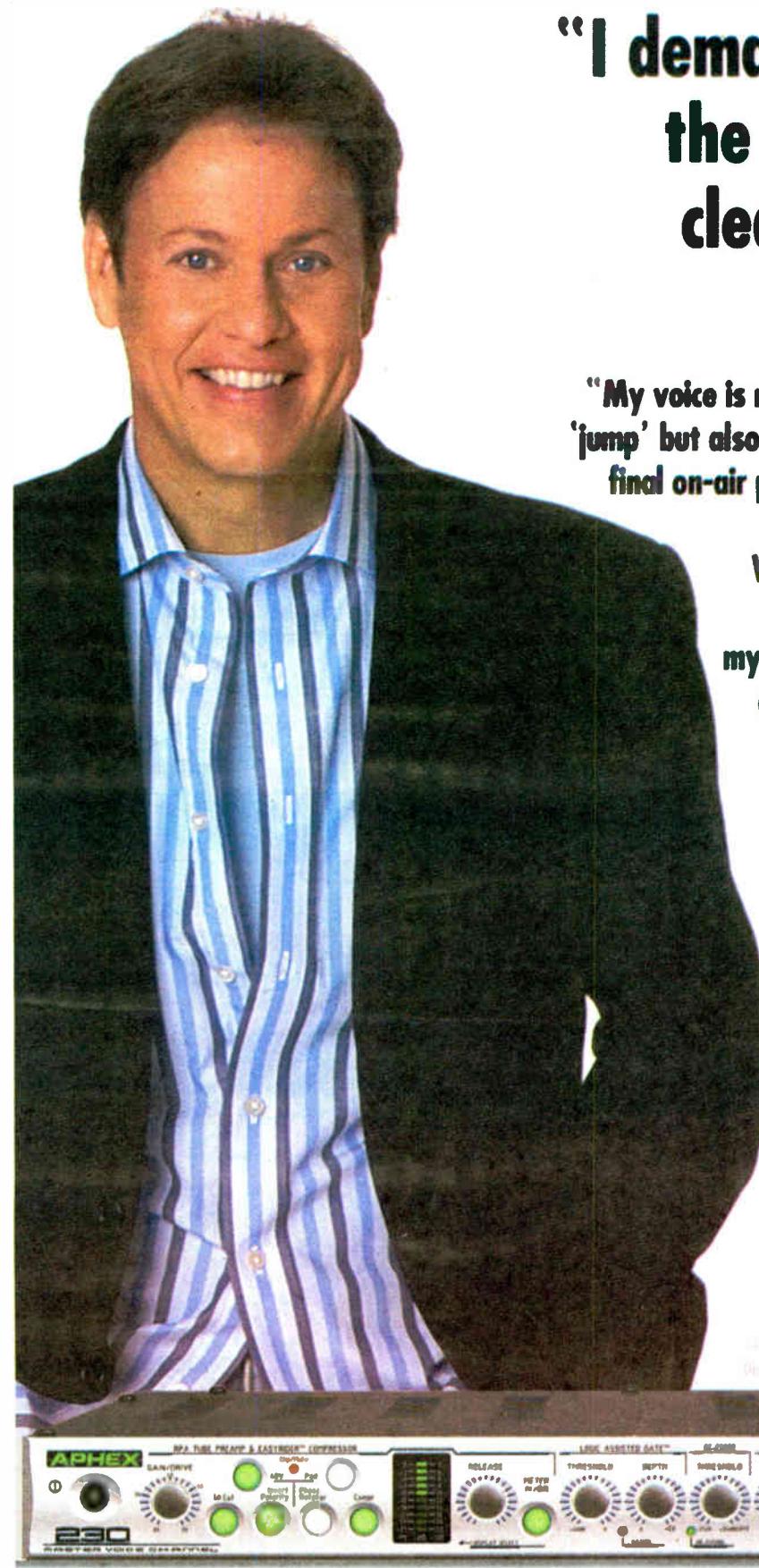
"I demand the best... the Aphex 230 is clearly the best."
- Rick Dees

"My voice is my on air signature. I want it to 'jump' but also be clean, full and natural. Most final on-air processors are cranked to 'stun' and not very kind to voices. With the Aphex voice processor, both my voice and the voice of my sidekick Patti 'Longlegs' Lopez are incredibly open and present, even after going through the station's loudness box."

The Aphex Model 230 Master Voice Channel is a combination of proprietary technologies and the highest quality components. Its performance cannot be duplicated by any other product or combination of products, hardware or software, at any price.

If you demand the best for voice processing, demand the Aphex Model 230.

APHEX
www.aphex.com



RAB

► Continued from page 30
revenue, and that it's far from being maximized," said Hyde.

"Through much of the last year, the RAB revenue reports have shown non-traditional revenue to be growing at a faster pace, and that will happen as long as there are creative thinkers in radio." Non-spot revenue grew 10 percent in the first 11 months of 2006 compared to the same period a year before, outpacing the more traditional radio ad categories, RAB reported.

Another session of note, Hyde said, is "The Dr. Phil Solution to NTR," featuring RAB's NTR director, Brandeis Hall, and Elaine Clark of Revenue Development Systems. "Other sessions feature acknowledged business-develop-

ment experts like Sheila Kirby [of Interep] and Sylvia Allen [Allen Consulting], as well as new names and faces bringing new ideas to the conference."

Early exhibits

No place is radio seeing more of a double-edged sword than in the area of electronic audience measurement, as it raises new sales issues but also opens new doors.

Addressing the topic of "Selling in a World of Electronic Measurement" is Charlie Sislen of Research Director Inc. "He'll do a great job of explaining not only what the changes mean, but also what stations can do to prepare for the changes, and take advantage of them when they happen," said Hyde.

"It's also worth noting that we have a large group of exhibitors who provide hardware, software and other services to

our member companies." Exhibit hours on Thursday are 10 a.m. to 8 p.m. On Friday and Saturday, exhibits are open 7 to 10 a.m. and again noon to 6 p.m.

Another arena that offers challenges and opportunities to radio is the Internet. "The fact that we have a number of sessions exploring the digital sales future, including the Internet, indicates that there's more than just one way to be successful in developing synergies between radio stations and the Internet," said Hyde. He said RAB will present a half-dozen sessions on the subject. "It'll be a full smorgasbord for anyone who's interested in this area."

RAB will also provide opportunities for networking at various receptions and get-togethers.

Craig Johnston is a frequent contributor.

Radio World welcomes comment on this or any story. Write a letter to the editor at radioworld@imaspub.com.

Show Info

What: RAB 2007

When: Feb. 8-11

Where: Hyatt Regency Dallas (Reunion Tower)

Who: Radio sales, management and leadership

How: www.rab07.com

How much: RAB Members \$699, Others \$999



Products & Services SHOWCASE

LEX

Exciter/Transmitters
Ultra Slim - 30W, 50W, 100W
New Features on the LEX Series Include:

- Built-in Stereo Generator with Very High Separation and Fast Audio Clipper
- Up to Seven Frequencies, Power Levels, and Program Presets (remote controllable)
- Rear Panel Connection for Direct DC Battery Back Up with Auto Switch Over and Built-in Charger
- Built-in, Front Panel User Programmable FSK ID Keyer for Auto ID of Translators



Buy simplicity, reliability and service

EAS
Price \$1750.00

Equipment is in stock for immediate delivery!

GORMAN-REDLICH MFG. CO.
257 W. Union St. Athens, Ohio 45701

Phone 740-593-3150
FAX 740-592-3898



- 5 two-way RS-232 inputs/outputs for computer, remote signboard & character generator
- 6 audio inputs on standard models. All audio inputs & outputs are transformer isolated from encoder-decoder board
- Automatic interruption of program audio for unattended operation
- 4 line 40 character LCD display with LED backlighting
- 20 key keypad to program unit, set modulation level, set input levels
- Will handshake with automation equipment jmg@gorman-redlich.com Web Site: www.gorman-redlich.com

♦ Also available: weather radios, antennas for weather radios, crystal controlled synthesized FM digitally tuned radios, remote signboards, cables for interconnection, character generators.

Internet & Talking Remote Control

• CircuitWerkes
• Sicon-8

Introducing the First Totally New Talking Remote Control Design in Over a Decade!!

- Voice recordable technology
- Onboard Web Server
- 8 channels metering, status, & control
- Expandable up to 32 channels
- 2 heavy-duty SPDT relays per channel
- Self-calibrating, auto-ranging meters
- Up to 5 alarms per channel
- Cell-phone interface
- Audio pass-through
- Free GUI software to monitor your site & program the Sicon-8
- X-10 capability for additional control

Learn more & test-drive the Sicon-8 web server at www.circuitwerkes.com

CircuitWerkes, Inc. - 2805 NW 6th Street, Gainesville, Florida 32609, USA / 352-335-6555

Efficient Effective Affordable

RADIO WORLD'S Products and Services Showcase provides a perfect medium for marketing your products and services.

For more information, contact Claudia Van Veen at 703-998-7600 ext. 154 to request a media kit.

Radio World.

BROADCAST

Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

WANT TO SELL



Full product line for sound control & noise elimination.

www.acousticsfirst.com

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

NEED TOWERS PUT UP? Let's talk. 919-658-2190

Shively Model 6813 6 Bay antennae, W/de-icers, thermostat and auto unit, 300' of 1 5/8" coaxial. Excellent condition. Priced \$4700.00 - call Gene Huff - 606-877-1326, wygeradio@yahoo.com

www.radioworld.com

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO SELL

Orban Digital Optimod 8200 With Digital Audio Card, Excellent condition, Priced \$4400.00 - call Gene Huff - 606-877-1326, wygeradio@yahoo.com

Orban Optimod - Serial # 520236 in good condition. Please contact Mike Raley at (704) 523-5555 for more information or e-mail mraleys@bbnradio.org for a picture. Asking price is \$2500.00 which includes shipping.

AUTOMATION EQUIPMENT

WANT TO SELL

Now available, radio automation for the Linux operating system. Schedule music, voice track, create shells, auto or announcer assist mode, set intro and ending cues, hit the vocal every time with your voice tracks, execute exact time events, join networks, and more. The software is free, there is a small duplication fee. For more info call 406.665.1832.

COMPLETE FACILITIES

WANT TO SELL

**NEW OR USED
COMPLETE PACKAGES**
STUDIO/STL/TRANSMITTER /ANTENNA OR ANY COMBINATION OF ABOVE.
-LEASE OPTIONS-
-EMERGENCY RENTALS-
-REMOTE BROADCAST RENTALS-

SCMS, Inc. (800) 438-6040

"You Know We Know Radio"

Concrete Transmitter Buildings - Prefabricated & Delivered Nationwide, Bulletproof, Maintenance Free, 5 Year Warranty, Custom Sizes Available. Call AES Precast Co. at 800.342.3274 or visit our website www.ASPrecast.com

CONSOLES/MIXERS

WANT TO SELL

LPB Blue 5c consoles - We've got about five of them in good condition. We will let them go "as is" for \$650.00 each plus S&H. Contact Mike Raley at (704) 523-5555 or e-mail mraleys@bbnradio.org for pictures.

LIMITERS/AUDIO PROCESSING

WANT TO SELL

Digital RF Adapter No. DTCA-10 Serial No. 010. \$ 2500.00 Call Gary Hayes at WKY-FM at 440-466-9559 for information.

Potomac 1901-4, As is condition \$6500.00 Call Gary Hayes at 440-466-9559 for info.

WANT TO BUY

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

WANT TO BUY

ROTATION BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin, Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402 493 1886 FAX 402 493 6821

Collector want to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash pick up 773-339-9035

PROMOTE YOUR BUSINESS

ADVERTISE!

For more information, call Claudia Van Veen at 703.998.7600, ext. 154.

MONITORS

WANT TO SELL

Belar FM Mod Monitor FMM-2 (#160094), Stereo Monitor FMS, (#170064) and Amplifier RFA-1 (#402609) - Sell as one unit for \$600.00 "as is". Please contact Mike Raley at (704) 523-5555 or e-mail mraleys@bbnradio.org for pictures.

NEED DONATION

Non-profit broadcasting organization seeks donation of solid-state fm transmitter, cd players, STL, stereo console & more. For radio stations in Haiti & Panama 501c tax deductible document will be give to donor for tax purposes. Info: Call Serge at Lakay Broadcasting Network 860-206-1055 or donsergio12@yahoo.com

Non-profit radio station/organization seeks donations of radio equipment. We specifically need a console, a P3 or higher computer, studio and field microphones, mic processor, studio monitors, CD players, a hard-drive based field recorder and a telephone audio interface. Email: ColinCruz@TheBlast.FM

REMOTE/ MICROWAVE



SPEAKERS AND HEADPHONES

WANT TO BUY

Collector wants to buy old vintage speaker & amplifier, McIntosh, Marantz, Electro Voice, Jensen, Altec, Tannoy, Fisher, Dynaco. Cash pick up 773-339-9035

STATIONS

WANT TO SELL

CONNECTICUT HISPANIC AM STATION FOR SALE, Southern CT AM, huge Hispanic population coverage, highest in state. 24 hour heritage station. Good upside opportunity. For info 781-848-4201 or salesgroup@beld.net

OWN YOUR OWN!! Exclusive Cash Cow Combo less than 100 miles from Atlanta with One of A Kind Revenue Stream. Hurry! This one won't last long! RETIRE DOWN SOUTH-CALL DAVE HEDRICK-256-613-2630

STUDIO- TRANSMITTER LINKS (STL) AND RPU

WANT TO SELL

Moseley SL9003Q-4S Digital STL System. Bench time only. \$10500. Mark at Marcaelectric@afaz.net. 928-379-2411

Digital STL Xmtr CD Link, Digital STL Receiver 950T, Excellent condition, Priced \$5200.00 - call Gene Huff - 606-877-1326, wygeradio@yahoo.com

TAPES/CARTS/ REELS/CDs

WANT TO BUY

Collector wants 10" Automation music tapes from syndicators...must be announced. Please respond to zenithfan@aol.com

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.

TRANSMITTERS/ EXCITERS/ TRANSLATORS

WANT TO SELL

RF Specialties of Missouri - Used Transmitter Harris DX-25U Digital AM Transmitter 7-Yrs Old 1160-kHz - Like New - Chris 800-467-7373

Gates BC 1G 1 kW tube type AM , condition as is. \$2500 + shipping. Call Brian Larson 518-753-0975

QEI 600 watt-FM good condition with new Nex US exciter \$4995.00 - without exciter \$3995. + shipping - Call Brian Larson 518-753-0975

QEI Quantum 3.5 tuned to 91.7FM in Decatur, AL. Installed in 1995 configured for 220 VAC single phase. Good condition but the combiner had a heating problem on it and it will only make 2.5k. This is disconnected and ready for immediate pickup. Quantum 300 exciter is included. Will let go "as is" for \$2795.00. Buyer will be responsible for pick up and delivery. Exciter not included Please e-mail mraleys@bbnradio.org or call Mike at (704) 523-5555. Visit www.bbradio.org/sale

QEI QuantumM 3.6kw transmitter and Harris Digit CD Exciter in Worcester MA. Installed Sept. 2000, replaced with HD system Aug. 2005. Configured for single phase 220v. Excellent condition. \$20K or Best Offer. Buyer responsible for pick up and delivery. Contact Donald DeMarsh at (774) 239-3652 or donald.demash@verizon.net

Translators C.P. in Deerfield (107.7) and Somerset (93.3) MI for sale 517-750-6543

Bext Model FR 1000 solid state FM transmitter. This needs repair on the final output and will only make 25%. Will let go "as is" for \$2500.00 plus S&H. E-mail mraleys@bbnradio.org for pictures and information. Exciter not included.

Three Phase CSI FM12000E tuned to 99.7 FM in Summerville, SC. Installed at 1984 but is running at full power. Buyer will need to remove transmitter when replacement is installed mid August. Exciter not included Price \$1850.00 "as is". E-mail mraleys@bbnradio.org or call Mike at (704) 523-5555. Visit www.bbradio.org/sale

BAY COUNTRY BROADCAST EQUIPMENT

BUY - SELL - TRADE

Your #1 Source

For Quality Used Radio Broadcast Equipment

View The Latest List Online at: <http://www.baycountry.com>

Or call and we will fax it to you.

7117 Olivia Rd, Baltimore MD 21220

Toll Free: 877-722-1031 • FAX 443-596-0212 • E-mail: sales@baycountry.com



FM Exciters - STL's - FM Pwr Amps - Antennas - Studio & Test Equipment

SCMS Inc (800) 438-6040

"You Know We Know Radio"

Three Phase CSI FM12000E tuned to 99.7 FM in Summerville, SC. Installed at 1984 but is running at full power. Buyer will need to remove transmitter when replacement is installed mid August. Exciter not included Price \$1850.00 "as is". E-mail mraleys@bbnradio.org or call Mike at (704) 523-5555. Visit www.bbradio.org/sale

Three Phase CSI T-20-F1 tuned to 99.7 FM in Charlotte, NC. Installed at 1987 and running at full power before being replaced. Transmitter is located in Charlotte, NC and is ready to ship. No exciter is included.. Price \$2300.00 "as is". E-mail mraleys@bbnradio.org or call Mike at (704) 523-5555. Visit www.bbradio.org/sale

Reach Broadcast Professionals!

To advertise e-mail cvanveen@imaspublishing.com

TRANSCOM CORPORATION

Serving the Broadcast Industry Since 1978

Transmitters and Broadcast Equipment for Radio & Television

Used FM Transmitters

1.5 KW	1983	8E FM 1.5A
2 KW	1999	Crown FM2000A
3.5 KW	1986	Harris HT 3.5
5 KW	1987	Harris FM5K1
7+IBOC	2005	Harris Z16 HD
10 KW	2005	Harris Z10 CD
10 KW	2001	Henry 10,000D-95
20 KW	1985	Harris FM20K
20 KW	1989	QEI FMO 20,000B
25 KW	1980	CSI-T-25-FA (Amp Only)
50 KW	1982	Harris Combiner w/o exciter-transmitter switcher

Used AM Transmitters

1 KW	1980	Continental 314R1
1 KW	1999	Harris Gates 1 Solid State
5 KW	1996	Continental 315D Solid State
5 KW	1974	Continental 315F
5 KW	1982	Harris MW5A
5 KW	1987	Harris MW5B
10 KW	1985	Continental 316F
10 KW	2000	Omnitrax 10,000A
50 KW	1985	Continental 317C2

Exciters

Used, 2004, Harris Digit 2nd Generation "New" 20w & 30W Synthesized exciters

New TV Transmitters- Analog and Digital

OMB & Technologix VHF and UHF (10 W to 10 KW) TV Antennas

Used TV Transmitters

1 KW UHF Axcellera 832A, CH 28
55 KW UHF GE TT598, CH 25
55 KW UHF RCA TTU-55B, CH 25

Used Misc. Equipment

Orban 8200 Optimod
Bird RF Thruline Wattmeter, 50S
Patch Panel, 3 Port, 1-5/8"
Denon 720R cassette NEW
Potomac Phase Monitor 1901 Digital 2 Twr
Sola Voltage Reg. 60hz 1 KVA s-phase

Please visit our website for current listings.

800-441-8454 • 215-938-7304 • FAX: +1-215-938-7361

www.fmamtv.com • E-mail: transcom@fmamtv.com

RETUNING & TESTING AVAILABLE • CALL US FOR A QUOTE!

Consultants

Consulting Communications Engineers
EMC Test Lab

- FCC Applications and Field Engineering
- Frequency Searches and Coordination
- AM/FM/CATV/DTV/DTV
- EMC Test Lab-FCC and European (IEC)

OWL ENGINEERING, INC.
651-784-7445 Fax (651) 784-7541
 5844 Hamline Ave. N., Shoreview, MN 55126

The Coverage Map Store

REALcoverage.com

High Performance Engineering
for Maximum Coverage



MEDIA TECH INC. 704-799-2245
 jpierce@mediatechusa.com

High-quality Internet Streaming
For Broadcasters!
Give us a call to "hear" the difference!
Streaming Equipment available

Doug Vernier
 Telecommunication Consultants

Broadcast Engineering Consulting
AM/FM/TV/LPTV/DTV
Custom mapping service
Frequency searches
Propagation prediction
FCC application preparation

Vsoft
 Software for your PC
 (800) 743-3684
www.vsoft.com

**R. MORGAN BURROW, P.E.
& ASSOCIATES, P.C.**

ALLOCATION STUDIES
MISCONCEPTIONS ABOUT TOWERS & RF. Page 24
ELECTROACOUSTICS
OSHA measurements
304-258-7921 Fax 304-258-7827

SPACE IS AVAILABLE!
 E-mail Claudia: cvanveen@imaspub.com

Reach Broadcast Professionals!

For more information, including rates & deadlines, call Claudia Van Veen at 1-703-998-7600 ext. 154.

Advertise today!

MISCONCEPTIONS ABOUT TOWERS & RF. Page 24
 IBDC Power Levels
 Clear Channel Reefs
 A WebSideStory
 Visit us on the web at www.radioworld.com
 101 Demorest Sq., #E, Demorest GA 30534-2725

**FASTER...
MORE ACCURATE RADIO COVERAGE**

Real Time 3-D Displays
Interference calculations
Cost effective mapping
Fully integrated databases
Used by the FCC
Latest standards built-in

RADIO SOFT
 Visit us on the web at www.radiosoft.com
 101 Demorest Sq., #E, Demorest GA 30534-2725

GRAHAM BROCK, INC.
 BROADCAST TECHNICAL CONSULTANTS
 Full Service From Allocation to Operation AM/FM/TV/LPTV/DTV Services
 Field Work Antenna and Facilities Design
 Over 45 years engineering and consulting experience
 912-638-8028
 202-393-5133
www.grahambrock.com

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World?
 Yes No
 Signature _____ Date _____

Contact Name _____

Title _____

Company/Station _____

Address _____

City/State _____

Zip Code _____

Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS WTB Category: _____ Model: _____
 Make: _____ Model: _____
 Brief Description: _____

Price: _____

WTS WTB Category: _____ Model: _____
 Make: _____ Model: _____
 Brief Description: _____

Price: _____
 *Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.
 Broadcast Equipment Exchange • PO BOX 1214, Falls Church, VA 22041
 Tel: 703-998-7600, ext. 154 • Fax: 703-671-7409 • E-mail: cvanveen@imaspub.com

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

CORNELL-DUBILIER MICA CAPACITORS

FROM STOCK

JENNINGS VACUUM CAPACITORS

FROM STOCK

JENNINGS VACUUM RELAYS

SURCOM ASSOCIATES

2215 Faraday Ave., Suite A

Carlsbad, California 92008

(760) 438-4420 Fax: (760) 438-4759

e-mail: link@surcom.com web: www.surcom.com

MÉXICO

INGENIERIA EN RADIODIFUSIÓN Y TELECOMUNICACIONES

+52-81-83-583027 FAX: +52-81-83-581172

E-mail: etamezescamilla@atxel.net,

etamez@ATT.net.mx

Empresa dedicada a: Venta de equipo. Asesoria y Gestoria en A.M., F.M., T.V. y MMDS. Elaboramos Memorias, Peritajes, Pruebas de Comportamiento, Características Técnicas, Planos, Proyectos, Instalaciones, Homologaciones y trámite para el NOM.

Are You a Distributor?

**ADVERTISE HERE!
Space is available
Call 703-998-7600 ext. 154**

Radio World

5827 Columbia Pike, 3rd Floor Falls Church, VA 22041

PHONE: 703-998-7600 • FAX: 703-671-7409

Classified Advertising Rates Effective January 1, 2007

	1x	6x	13x	26x	32x
1-9 col inch (per inch)	\$110	105	100	95	90
10-19 col inch (per inch)	\$95	85	75	65	60
Distributor Directory	\$135	130	125	120	115
Professional Card	\$105	100	95	90	85
Station/Studio Services	\$200	170	145	123	105
Classified Line Ad	\$2/word				
radioworld.com Line ad	\$2/word				
Blind Box Ad	\$16 additional				

Call Claudia Van Veen, at 703-998-7600 ext. 154 or e-mail:

cvanveen@imaspub.com to reserve space in the next issue.

Use your credit card to pay, we now accept VISA,
MASTERCARD and American Express.

www.radioworld.com

BEE

POWER TUBES

REBUILT

1/2 THE COST

OF NEW!

ECONCO
NEW TUBE**ECONCO**

TEL: 800-532-6626

INTL: +1-530-662-7553

FAX: +1-530-666-7760

www.econco.com

SE HABLA ESPAÑOL

ECONCO

NEW TUBE

TRANSMITTERS/ EXCITERS/
TRANSLATORS WTS (Con't)

Rest Assured! FCC Certified
FM Stereo Transmitter

- ✓ 50W RF output, continuous duty!
- ✓ Auto protect with auto soft fail & auto restore!
- ✓ Automatic battery backup!
- ✓ Digital display of all parameters
- ✓ Perfect for LPFM, Translators, as well as stand-alone exciters

www.ramseyelectronics.com
800-446-2295
ramsey *In Our 33rd Year!*

Used QEI FMQ 10000 in fair condition. This is a three phase transmitter with a bad IPA and combiner that will only make 80% power. Willing to let this 12 year old transmitter go for \$3650.00 but buyer must arrange pick up and shipping from Ashland, Va. Contact Mike Raley at (704) 523-5555 or e-mail mraley@bbnradio.org for more information. Serial number is ST10KW054.

FM Translator at 104.5 – Manchester, KY Call Joey Kesler 606-843-9999

BESCO
INTERNACIONAL
World Leader In AM - FM Transmitters
"Now in our 34th year"

AM & FM Pre-Owned Units In Stock

All Powers • Manufacturers • Instruction Books • Spares & All Complete

Visit our Website: www.besco-int.com

Or Call Rob Malamy, National/Int'l Sales at 321-960-4001

WANT TO BUY
Need complete set of HARRIS MW-1, AM, modules. This is for a circa 1978 or 1979 transmitter. Please contact Eric @ 717-243-1200 from 9 am until 5 PM or E-mail wwoo@pa.net

AM Phasors, Phasor Parts, Phase Monitors, Rf Switches, AM Transmitters. Continental Communications 314-664-4497, Contcomm@sbcglobal.net

www.radioworld.com

FOR THE BEST PRICE
& 24 Hr service on transmitting tubes & sockets/parts, new &rebuilt call Goodrich Ent. at 402-493-1886 day or night, www.goodrichenterprises.com.

PROMOTE YOUR BUSINESS! ADVERTISE !

For more information, call Claudia Van Veen at 703.998.7600, ext. 154.

Radio World
Equipment Exchange



ISO 9001 Certified

The Choice of Successful Broadcasters Since 1934

NEW POWER TUBES

Triodes
Tetrodes
Pentodes

NEW SOCKETS & REPLACEMENT PARTS

Worldwide Availability

Made in U.S.A.

CALL 800-414-8823
Int'l (650) 592-1221
Fax (650) 592-9988

Visit our Web Site at www.eimac.com



D And C Electronics
An International Distributor of RF Components
Tubes
NEW & REBUILT

TRANSMITTERS, STUDIO EQUIPMENT, STLS, ANTENNAS,
RADIO DATA SYSTEM (FOR CAR RADIO DISPLAY)
EXCITERS-TRANSMITTERS, TRANSLATORS, MIXERS-CONSOLES, RADIO LINK
RPU, MOSFETS, VACUUM CAPACITORS, SOCKETS

Eimac **ETI** **Pro-Tek®**
SVETLANA **CE** **EEV**
OMI **FROM OUR STOCK**

BEST PRICES **To Order:**
1-800-881-2374
Outside U.S. (352) 688-2374
Se Habla Español

3089 Deltona Blvd.
Spring Hill, FL 34609
BEST SERVICE
Website: www.dandcelectronics.com
352-688-2374
Fax 352-683-9595

RF PARTS™ CO.
Se Habla Español We Export
EIMAC • TAYLOR • SVETLANA
New & Rebuilt Tubes - Same Day Shipping
Motorola • Toshiba • SGS • Thomson & Mitsubishi Semiconductors
800-737-2787 760-744-0700
rfp@rfparts.com www.rfparts.com

Q: How do I advertise in Radio World?



A: To advertise, call Claudia at 703-998-7600, ext. 154,
or e-mail: cvanveen@imaspub.com.

EMPLOYMENT

HELP WANTED

POSITIONS WANTED

CHIEF ENGINEER; TOP 35 MARKET. Minimum 10 years experience as radio engineer; 3 as chief. Full knowledge: AM/FM RF, TX's, studios, automation (AudioVault preferred), Windows 2000, XP, 2003 server. Troubleshoot at component level. Salary related to experience. Clean Driving Record. EOE. Email resume: engjob0701@hotmail.com

Fun, articulate, energetic and hard-working female seeking positions in radio. Specializing in board-operations, promotions, and traffic. Willing to relocate. Renee Buster 972-287-3793 ebuster07@sbcglobal.net

Vibrant, dependable, quick-witted, fun broadcaster loaded with personality, will go anywhere! Seeking position at fun station, ready to succeed for you. Ryan 817-468-7523 jdkong@sbcglobal.net

C.E. position wanted: Experienced with computers, transmitters, H.D. transmitters, automations, digital studios. Robert King, Call: (915) 581-2979.

Very motivated, hard working, dependable, and outgoing. Willing to relocate, and do what it takes to start radio career. Contact me Rhine Holford. 817-308-8158

Friendly, Eager to work, ISCT Certified, Commercial FCC License with radar, NABER Certified two-way radio technician, amateur radio extra, seeks CE, asst. CE F/T, P/T Contract, AM/FM, Cable, TV. Contact: Mitchell Rakoff, mitchellrakoff@yahoo.com 718-969-5224

Run your employment ad on our web site for only \$2 per word!

Call Claudia for all the details at 703-998-7600 ext. 154

ADVERTISER INDEX

This listing is provided for the convenience of our readers.
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
31	Aphex Systems	www.aphex.com
16	Armstrong Transmitter Co.	www.armstrongtx.com
28	Audion Labs	www.audionlabs.com
15	Axia - A Telos Company	www.axiaaudio.com
28	Bext, Inc	www.bext.com
32	Bext, Inc	www.bext.com
19	Broadcast Electronics	www.bdcast.com
3	BSW	www.bswusa.com
32	Circuit Werkes	www.circuitwerkes.com
28	Comlab, Inc.	www.davicom.com
7	Comrex Corporation	www.comrex.com
4	Electronics Research, Inc.	www.eriiinc.com
10	ESE	www.eseweb.com
23	Google Inc.	www.google.com/ads/asaudio
28	Gorman Redlich Mfg	www.gorman-redlich.com
24	Grace Broadcast Sales	www.gracebroadcast.com
21	Harris Corporation	www.broadcast.harris.com
27	Heil Sound, Ltd.	www.heilsound.com
22	Henry Engineering	www.henryeng.com
12	Inovonics Inc	www.inovon.com
26	Jennings Corp	www.jenningstech.com
8	Kintronic Labs Inc	www.kintronic.com
6	LBA Technology, Inc.	www.lbagroup.com
24	Mediatron GmbH	www.mediatron.com
29	Moseley Associates	www.moseleysb.com
30	OMB America	www.omb.com
9	Omnia - A Telos Company	www.omniaaudio.com
14	Omnirax	www.omnirax.com
21	Orban	www.orban.com
5	Radio Systems Inc	www.radiosystems.com
25	Sine Systems	www.sinesystems.com
28	Sonifex Ltd.	www.sonifex.co.uk
13	Telos Systems - TLS Corp.	www.telos-systems.com
17	Telos Systems - TLS Corp.	www.telos-systems.com
40	Vorsis	www.vorsis.com
11	Waves, Inc	www.waves.com
1	Wheatstone Corporation	www.wheatstone.com
2	Wheatstone Corporation	www.wheatstone.com
39	Wheatstone Corporation	www.wheatstone.com

◆ READER'S FORUM ◆

HD Facts Will Reveal Themselves

This is in regards to the letter "But Does It Work?" from Travis Turner (*Reader's Forum*, Dec. 6).

Mr. Turner is correct. He and others looking to get the simple question of "Does it work?" answered are encountering much information, much of it conflicting, some downright incorrect. I am, obviously, a proponent of the HD technology. If you ask me:

On FM, the high frequencies smooth out, you can add additional audio channels with the possibility of increasing revenue, and you can rent out your excess data capacity with the possibility of increasing

tages hear for yourself.

Talk to persons like myself who have been running HD for four years now. I have been involved in much testing, both sanctioned by Ibiquity and the FCC and on my own. Four years is a long time to have many experiences. I tell it like it is, both good and bad. Mr. Travis sounds like a level-headed, open-minded person. There are others who have that trap door closed tightly and won't even listen to what persons like myself have to say on the subject of HD. Seek out people with experience. Keep your mind open and listen to what they have to say. Ask your questions and press for answers that meet your criteria.

The unfortunate fact is that Mr. Travis and others with questions will have to seek

Go for a ride. Listen to the HD signals.

Find someone with an HD Radio and talk to them about their experiences. Before making a judgement, experience the medium.

revenue. Yes, it does work, and, very simply, the reduction in multipath interference in the received FM HD signal to me justifies the cost of improvements.

On AM, yes, the HD works at night. It's been proven. And yes, the HD works during the day. I've been listening to WOR-HD for four years now on my drive into the city. I've driven to Philadelphia and the eastern end of Long Island listening to WOR in HD. It works fine and is a dramatic improvement in audio quality on the AM band.

But there are many criteria upon which I base my statements.

If Mr. Turner and others are looking to discover the underlying truth, they need to consider many factors and do certain things to discover the information they are looking for:

Read everything you see on HD. You will first need to determine if the "facts" as presented are, in fact, true. Do these "facts" contain underlying criteria that have not been revealed? Is the person stating the "facts" a raving lunatic who is throwing out "facts" that are incorrect or based on his version of the "facts," and not revealing his criteria for stating these "facts"? Establish your own criteria for gathering and parsing information. All this must be considered, and when condensed down, the real "facts" will reveal themselves.

Mr. Travis and I suspect others with questions most likely have not experienced a live HD broadcast. Make an effort to visit a station or two operating in HD. Chances are these stations will have radios. Go for a ride. Listen to the HD signals. Find someone with an HD Radio and talk to them about their experiences. Before making a judgement, experience the medium.

I purposely take persons on routes with known multipath issues on FM and signal issues on AM, first on an analog-only drive, then an HD-only drive. There is nothing to hide this way, and, by hearing the analog issues, I can't be accused of "fixing" the drive test. You will the advan-

out the information they desire. No one can provide all the answers for them, as this is a topic that, in many aspects, can be considered personal. All I have ever asked is that persons experience the medium and consider the sources of their "facts" before rushing to a judgment in regards to HD. And yes, you can publish my e-mail address (tomray@wor710.com). I am willing to discuss HD operation with anyone who desires information.

Tom Ray
Vice President
Corporate Director of Engineering
Buckley Broadcasting/
WOR-710HD Radio
New York

The author is a contributor to RW. Opinions are his own.

Simple Gratitude

I was recently forwarded a letter from John Lyons to Radio World, in which he dedicated his recent Excellence in Engineering award to my late father, Joe Losgar (*Reader's Forum*, Dec. 6). There was even a photo of my dad in the published letter that I had never seen before.

I loved my father dearly and admired him very much, but I really had no idea how influential he was in the broadcast world. My fondest memories are of accompanying my father and brothers on frequent trips to the Empire State Building as young children, often in the dead of night when the station was off the air, and how much fun we had playing in the nearly empty skyscraper.

John's letter is a gift to my family. His dedication of the award to my father is even more remarkable, as he could not possibly have known that anyone in my family would ever see that letter. He was honoring a man out of the purest of motives: simple gratitude. For that, we send our heartfelt thanks.

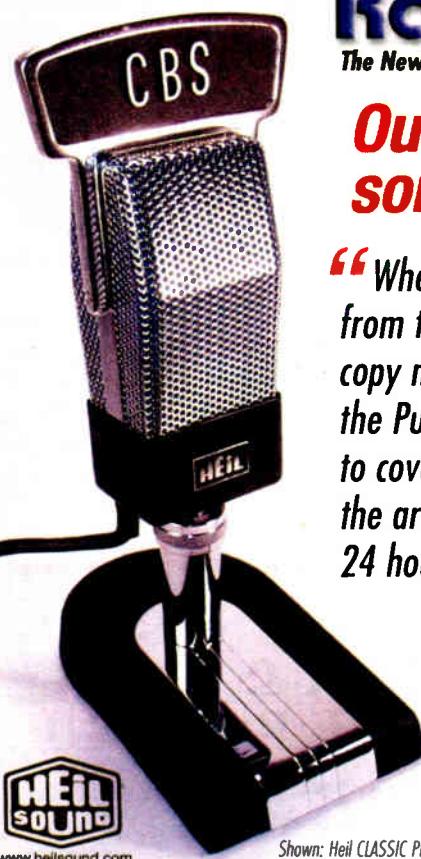
Janice Losgar
Plainfield, N.H.

Radio World
The Newspaper for Radio Managers and Engineers

Our readers have something to say

"When you deal with everything from transmitters, studios and the copy machine, to the PC LAN and the Public File, Radio World seems to cover it all. I'm still waiting for the article on how to get more than 24 hours out of the day though!"

Allan A. Augustyn
Director of Network Engineering
Radio Results Network
Escanaba, Mich.



Show: Heil CLASSIC PRO offers a retro look of the '40s with the dynamic sound of today.



www.heilsound.com

GUEST COMMENTARY

Dick Burden: FM Stereo Revisited

Some Broadcasting History on the FM Stereo Standard From a Person Who Actually Performed the Noise Tests

by Richard W. Burden

I read with interest the recent discussion on revisiting the decision on the U.S. standard for FM broadcasting ("IBOC Has Been a Mistake," Sept. 27). Was this decision wrong? Before we attempt to reinvent a 45-year-old standard that has stood the test of time, served us well and been adopted by other countries, we need to revisit the facts.

Subcarrier research dates back to Major Armstrong's work in the early 1950s. Of interest is that two engineers working with Armstrong at the time were Murray G. Crosby and William G. Halstead, each of whom championed different approaches in FM stereo.

Introducing FM

FM broadcasting in the '50s and early '60s did not enjoy the financial attraction as it does now. AM broadcasting with its network radio attraction was very much king at that time. Many of those FM stations that did not simulcast their AM programming provided a background music service to stores, restaurants and offices via a technique known as Simplex systems: a means of deriving an income in order to maintain financial viability.

FM listeners tuning to those stations during the Simplex era heard the program along with the commercials. In the stores, restaurants and offices, the program was muted during those commercials. A muting relay installed in the receivers of subscribers was activated by a high-frequency signal in the subcarrier region of the FM signal and simply muted the receiver during the commercials.

Simplex was never enthusiastically received by the FCC, but was accepted in order to promote the new service of

FM. FCC authorization to Simplex was required prior to operation.

In 1955 Halstead petitioned the FCC to authorize the concept of subcarriers and gained authorization for this new service. In 1958, the FCC issued an order denying the renewal of Simplex authorizations by stating that the practice of simplex did not agree with the basic concept of broadcasting given in the Communications Act.

By the late '50s, the Hi-Fi craze was in full swing and the possibility of stereo broadcasting became a hot topic. An industry committee composed of receiver manufacturers, broadcasters and other interested parties formed the National Stereophonic Radio Committee to review the potential approaches to broadcast AM, FM and TV stereophonic broadcasting.

Although presentations for stereophonic AM, FM and TV were presented at that time, this small group soon reasoned that it was unrealistic to simultaneously consider the study of all three. Because FM was notably the emerging medium and the overwhelming choice of the Hi-Fi enthusiast, FM was the obvious choice to study first.

Designing the system

Fourteen FM stereo systems were submitted for consideration. Six of those were considered for further study and testing. Two utilized AM subcarriers (Zenith and GE), three utilized FM subcarriers (Crosby, Halstead and Calbest) and one (EMI-Percival) used a low bandwidth (100 Hz) steering signal to carry left/right directional information.

These six systems were tested in July and August of 1960. The committee chose KDKA(FM) in Pittsburgh as the host for the transmitting facility and located the receiving site at a motel in Uniontown, Pa. All tests were conducted using the same transmitting and receiving facilities for all proponents. The H.H. Scott Company provided a standard receiver to each system proponent for use at the receiving site.

As a result, all systems tested used the same transmitter and antenna, as well as the same receiving antenna and receiver. Stereo generators and multiplex adaptors were the responsibility and the design of each proponent.

Each proponent had evaluated trade-offs associated with their design. Each took different, or in some cases slightly different, approaches in the design of their FM stereo system. The actual tests confirmed these differences.

Both the AM systems (Zenith and GE) offered stereo separation to 15 kHz and good main channel or monophonic signal-to-noise, but suffered in subcarrier signal-to-noise compared with their FM counterparts.

The wideband subcarrier system submitted by Crosby offered stereo separation to 15 kHz. FM subcarrier limiting provided a somewhat better noise performance than that of the two AM subcarrier systems. However, a wider than traditional SCA bandwidth was required in order to accommodate 15 kHz frequency response plus subcarrier deviation.

The wider bandwidth permitted an increase in the noise to the subcarrier. Thus, the signal-to-noise performance of this subcarrier, while performing better than the two AM systems, did not perform as well as either of the two narrow-band systems. A second factor, associated with the bandwidth and the deviation of the wideband subcarrier, required a reduction in deviation of the main or monophonic channel deviation by 6 dB, thereby reducing the main channel signal

As the one who actually conducted those noise performance measurements on each of the systems tested, I can attest that the results of those measurements did confirm the theory anticipated for each of the systems as given.

From the source

Here is what we learned: Anytime there is an attempt to put two pounds in a one-pound bag, there are going to be tradeoffs. Each tradeoff needs to be evaluated. Eventually each aspect in the tradeoff needs to be ranked by preference. The actual decision is a result of those preferences.

The two AM systems offered full 15 kHz separation, good monophonic signal to noise, good spectrum management

Six systems were tested in July and August of 1960. The committee chose KDKA(FM) in Pittsburgh as the host for the transmitting facility and located the receiving site at a motel in Uniontown, Pa.

to noise performance by 6 dB as well.

The two narrow-band FM systems (Halstead and Calbest) were both adaptations of a standard SCA channel. In order to fit within the bandwidth of the subcarrier high frequency, response of the subcarrier had to be limited. Halstead limited the stereo separation to 8000 Hz, and Calbest to 3500 Hz. The reasoning supporting the reduction in audio frequency separation was premised on the perception of little to no audible directional information in the octave of 8,000 to 15,000 Hz.

The net gain here was that a narrow-band channel with limiting would offer better signal-to-noise without an audible loss in the stereophonic effect. While some listening tests claim there was an audible difference in the separation, other tests claim that there was no audible difference. These systems, however, did offer the best signal-to-noise performance. Both offered very good main channel or monophonic signal-to-noise as well.

with the use of an AM subcarrier, allowing for a SCA carrier to be included, but were reduced in signal-to-noise on the stereo subcarrier.

The wideband FM system offered full 15 kHz separation, a better subcarrier signal-to-noise than that of the two AM subcarrier systems, but not as good as achieved with either of the two narrow-band subcarrier systems. Its wideband subcarrier requirement resulted in reduced signal-to-noise performance of the main or monophonic carrier. The same wideband subcarrier requirement also negated the use of any SCA carrier.

The two narrow-band FM systems offered the better subcarrier signal-to-noise performance but were limited in reduced high-frequency audio separation. Both offered good spectrum management with room for an SCA carrier.

How would you rate the systems presented?

Comment on this or any other article by e-mailing radioworld@imaspub.com

◆ READER'S FORUM ◆

Fessenden

To James O'Neal: What an amazing amount of research you accomplished on the Fessenden story ("Fessenden: World's First Broadcaster?", Oct. 25). Your research will convince a few (like me), but won't overtake the Christmas Eve tale. Such stories have lives of their own. It will be told and retold forever, and there will always be those of us who "know better" — or at least know what the current records support.

Last weekend our choir sang "O Holy Night" and I noted the date and writer's name. When I was asked to sing a solo version of the song at our upcoming worship service, I decided to

find out its story. The account I read on the Internet had lots of stories, including the Fessenden broadcast story.

I recalled our local paper publicizing the celebration of the 100th anniversary of voice broadcasting by Fessenden. The ham club in Walla Walla, Wash., was having an open house to mark the occasion. I knew I had a Christmas story to share.

The next time I got back on the Internet, your research came up on a Google search for "O Holy Night." Now when I share the story I can also give "the rest of the story."

Ole Olesen

Milton Adventist Church
Milton-Freewater, Ore.

◆ READER'S FORUM ◆

Bandwidth Potential

Some readers know I have been a bit of a hardhead when it comes to satellite radio and its perceived threat to radio (*Reader's Forum*, Dec. 6). We've had discussions on the subject in perceptual meetings or over coffee in your break rooms. I maintained that the satellite radio guys were not a long-term threat. I was honestly not sticking my head in the sand as much as I was sitting there saying to myself, "The math doesn't work."

I've also said — privately and in the trade press — that the best use of XM and Sirius bandwidth is not in what amounts to playing records without any commercials in between. Why? It just never made sense to me.

Sirius is going to start using its bandwidth for something besides a place out of the rain for radio haters. And they don't even have to merge with XM to do it.

— Jack Taddeo

They've launched several satellites including, in the case of XM, two replacements for premature failures. (I would love to have been on the call to the insurance company!) They build a bunch of studios for production along with a broadcast center, and then locate them on two of the most expensive chunks of real estate on the planet, New York and D.C. They pay a ton of money for content (Stern, NFL, CNN, etc.) then charge \$12.95 a month for the service. It doesn't add up.

HBO has arguably one of the best brands and delivers on their promise of quality content year after year. They charge about the same amount of money as XM and Sirius. Which one do you think gives more value for the dollar? The call letters are HBO.

So if you're in a segment that loses a billion dollars a year, and your business plan actually shows that the more subscribers you add the more money you lose, what do you do? You wake up and realize that you are in the *mobile* entertainment business, not the anti-radio business.

Bandwidth is bandwidth. Does it make sense to use all of the technology, satellite space and expensive corporate digs to "play records"? How about using the same bandwidth to send video entertainment? Think there are many SUVs and minivans out there with backseats full of DVDs to keep the kids entertained? You bet. Any reason they wouldn't want to watch all of the top-rated shows on Nickelodeon, Disney Channel, Discovery Kids, PBS, etc., while they are in the car? No. And that is just the lower end of the market.

Enter Sirius. In one quiet announcement it said a mouthful. First, satellite radio isn't a big enough deal for it to base its future on. Second, it wants to be out in front of XM. Third, it realizes that content is king and that it can get great content with built-in demand from other sources without having to produce it in-house.

And finally, it needs to make a course correction and it needs to make it now if it is going to avoid another ambiguous year.

Back to my original position on satellite radio: The bandwidth is worth more than what they are using it for at present. So Sirius is going to start using its bandwidth for something besides a place out of the rain for radio haters. And they don't even have to merge with XM to do it.

Jack Taddeo
Park Ridge, Ill.

Portable Internet Trademark

Please note Portable Internet is a registered trademark of Portable Internet Inc. ("iFusion Is Portable Internet Radio," RW Online, Dec. 28).

Please do not use this trademark, or allow this trademark to be used in blogs or posts for anything other than Portable Internet Inc. products. The iFusion WiFi

Digital Won, Analog Zero

We live in a digital world. Just as "horseless" described how people began moving from one place to another a century ago, "digital" now describes how information moves from place to place around us.

Over the past decade, digital has indeed won. And analog is slowly being pushed to the margins. Except, of course, in the world of radio broadcasting, where HD Radio, the chosen format for converting stations to digital transmission, continues to generate heated opposition.

RW believes that the continued industry debate over our chosen form of IBOC is largely focused on the wrong questions. Is IBOC the best solution for converting our industry's infrastructure to digital? As letters to our Reader's Forum reflect issue after issue, there is no consensus. But more to the point, even if there were, HD Radio is our standard; RW supports its rapid and ubiquitous adoption. We should be asking instead how radio can move quickly to take advantage of the power this new technology offers.

In the best of times, change is disruptive. In uncertain times (and free, over-the-air radio broadcasting has rarely, if ever, faced more uncertainty), change can cause almost anyone to act like the fabled deer in the headlights. But like the deer frozen before a speeding car, we must move quickly or risk being left a mangled carcass in the analog lane as the rest of the world, led by iPods, cellphones, Sirius and XM, WiMax and more, speeds by in the digital express lanes.

The technical infrastructure of our industry hasn't enjoyed a significant upgrade since FM stereo came along in the 1960s. (We, of course, discount the debacle that was AM stereo.) In a world where Moore's Law predicts hardware turnover every 18 months, the century past offers an astounding tribute to the robustness and efficacy of the original analog system. Even so, its day is past. HD Radio promises multiple channels, digital clarity and, yes, all of the challenges that accompany any new technology. But even in the face of imperfection, in our opinion, we should embrace it.

So salute the analog past. And start running as fast as you can to catch up to the future. Because digital won.

— RW

Internet radio is not a Portable Internet Inc. product.

Mike Flom
Fair Lawn, N.J.

Good Looking Out

Thanks to Ron Schacht for pointing out a problem we've had for a long time relative to communicating with the FAA (*Reader's Forum*, Dec. 6).

I've had success in discovering the correct phone number to cause a NOTAM to be issued by calling the FAA number at the nearest public airport. Its Web site seems to have ignored this particular contact problem. Another contact point we should all be aware of is the regional office. See the instructions for FAA form 7460-1 for contact info for each, including a phone number. This form can be downloaded from the FAA Web site. This is the form we use to tell it we're building or changing something in the first place. A tower of this height would require FAA study and clearance, and FCC registration, so it should appear in both databases — the FAA and the FCC — before a construction permit was

issued. To determine whether an FCC Antenna Structure Registration Number (ASRN) was ever issued, visit the ASR database page on the FCC site and search by coordinates. The FAA study number also should appear on the ASR record. The tower proponent also should have filed form 7460-2 once the tower was completed, and begun the marking required in the underlying study letter.

I really hate blowing the whistle on a fellow broadcaster, but as Ron points out, a new, unmarked tower of that height could pose a significant hazard to aviation.

Gary O. Keener
San Antonio

All Caps

Anytime TASCAM is listed it should be in all capital letters. It is an acronym: TEAC Audio System Corporation of America.

Patti Gunnell
Systems Contracting
Channel Manager
TASCAM
Montebello, Calif.

—EDITORIAL STAFF—

Paul J. McLane	ext. 117	<i>Editor in Chief, U.S.</i>
Leslie Stimson	ext. 129	<i>News Editor/Wash. Bureau Chief</i>
Kelly Brooks	ext. 136	<i>Associate Editor, RW & Production Editor, RWEE</i>
Thomas R. McGinley	—	<i>Technical Adviser</i>
Michael LeClair	—	<i>Technical Editor, RWEE</i>
John Bisset	—	<i>Contributing Editor</i>
Skip Pizzi	—	<i>Contributing Editor</i>
Marguerite Clark	—	<i>Editor (International), Milan</i>
Rogelio Ocampo	ext. 121	<i>Latin America Editor in Chief</i>
Karina Gerardi	ext. 137	<i>Latin America Editor</i>
Peter Finch	—	<i>Editorial Assistant, Milan</i>

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, James Careless, Harry Cole, Mark Durenberger, Charles Fitch, Ty Ford, Scott Fybush, Frank Grundstein, Harold Hallikainen, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Daniel Mansergh, Sharon Rae Pettigrew, Carl Lindemann, Ted Nahil, Tom Osenkowski, Ken R., Rich Rarey, Tom Ray, Randy Stine, James G. Withers, Travis the V/O Guy, Barry Umansky, Tom Vernon.

—ADMINISTRATION & PRODUCTION—

Stevan B. Dana	.....	President
Carmel King	.....	Chief Executive Officer
John Casey	.....	Publisher
Marlene Lane	.....	Chief Operating Officer
Chuck Inderrieden	.....	Chief Financial Officer
Eric Trabb	.....	Vice President, Sales
T. Carter Ross	.....	Editorial Director
Davis White	.....	Production Director
Karen Lee	.....	Production Publication Coordinator
Lori Behr	.....	Ad Traffic Manager
Linda Sultan	.....	Classified/Product Showcase Layout
Robert Green	.....	Circulation Manager

IMAS Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church, VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church, VA 22041. REPRINTS: For reprints call or write Emmily Wilson, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 2007 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

Radio World

Vol. 31, No. 3

February 1, 2007

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.radioworld.com

—ADVERTISING SALES REPRESENTATIVES—

US East & Latin America: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: jccasey@imaspub.com
US West & Canada: Dale Tucker	916-721-3410	Fax: 916-729-0810	e-mail: dtucker@imaspub.com
Classified Ads: Claudia Van Veen	703-998-7600 x154	Fax: 703-671-7409	e-mail: cvanveen@imaspub.com
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese.imaspub@tin.it
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callems@world.odn.ne.jp
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com

NEXT ISSUE OF RADIO WORLD FEBRUARY 14, 2007
NEXT ISSUE OF ENGINEERING EXTRA FEBRUARY 21, 2007

For address changes and subscription renewal, please visit www.rwonline.com and click on "Subscribe to RW." To submit letters or story proposals, to request writer's guidelines, or for other editorial matters, e-mail the editor at radioworld@imaspub.com.

It's a Whole New WORLD!



AUDIOARTS ENGINEERING
NET-8 DIGITAL AUDIO NETWORK

AUDIOARTS NET is the **EASY** way to interface your **D-75N** digital consoles! And because **D-75Ns** are also standalone designs each studio can operate **INDEPENDENTLY**, relying on the network only to share resources. And by **EASY** interface we **MEAN** it—you don't have to be a software guru or IT professional to get up and running—and **STAY** running! And because it's **AUDIOARTS**, you can rest assured it'll be reliable and preserve your budget. **TAKE ADVANTAGE** of **WHEATSTONE's** extensive expertise in **DIGITAL TECHNOLOGY**!



AUDIOARTS ENGINEERING



Condition your *Signal*

with the New Vorsis® HD-P3

What Is It?

A four-band parametric equalizer feeding a three-band limiter with adjustable crossover points, AGC and selectable filters for FM, AM or streaming audio formats. The HD-P3 includes a variable de-esser, an expander and dual digital outputs (one with user selectable HD latency FM delay), plus high pass, low pass and notch filters, and a signal de-correlator to optimize bass content. All this controlled by an ethernet protocol computer interface that lets you run one or many HD-P3s from your office or internet based locations.

What It's For:

Processing for your new HD signal, improving your existing FM or AM signal chain, preprocessing streaming audio-over-internet, a standalone HD processor or a realtime DJ monitor feed—and finally—a KILLER studio production tool.

What's It Like?

“PERFORMANCE with OVERDRIVE”



VORSIS®

It's What's Next in Processing

a division of Wheatstone

World Radio History

Copyright © 2007 by Wheatstone Corporation