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**Internet Audio**

Buyer's Guide rounds up the newest streaming and Net business tools.

Page 49

**Silver Sweepstakes**

Win one of 25 great prizes from Radio World this year.

Page 4



# Radio World

The Newspaper for Radio Managers and Engineers

January 17, 2001

**INSIDE****NEWS**

▼ IBOC tests will be conducted in coming months under the scrutiny of the NRSC.

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**ENGINEERING**

▼ What are the implications of space combining for FM IBOC?

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▼ Ali R. Mahnad and Leroy C. Granlund argue on behalf of sidelobe-free antennas.

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**GM JOURNAL**

▼ NextMedia builds a strategy based on smaller markets — and a big presence in the Chicago suburbs.

Page 27

**STUDIO SESSIONS**

▼ Digidesign's Pro Tools Free, the speedy PlexWriter 12/32 and Travis on the changing world of pro audio.



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NEWS ANALYSIS

## What's Next for LPFM?

*FCC Finds 255 Initially Eligible for Licenses; Advocacy Groups Decry Reduced Service*

by Leslie Stimson

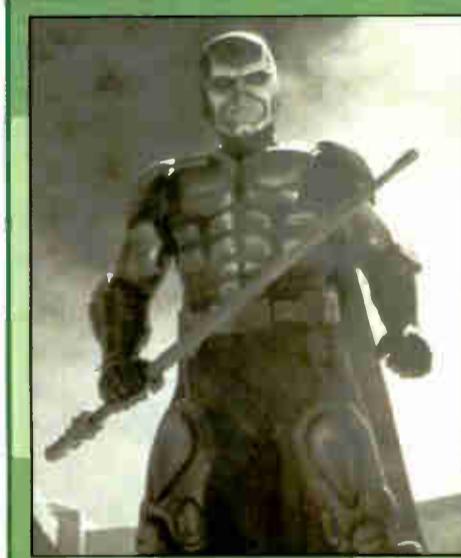
**WASHINGTON** Advocates for those seeking to own one of the FCC's new class of low-power FM stations this year are disappointed at cutbacks in the service mandated by Congress last month.

Soon after lawmakers acted, the FCC released a list of the first 255 applicants eligible to own LPFMs. Advocates of the new service said they would help

eligible applicants get stations on the air as quickly as possible.

The commission had been waiting to see what Congress would do about LPFM before licensing new stations. Last-minute congressional budget haggling in December produced language restoring third-adjacent channel protection to the FCC's new class of low-power service and forbidding ex-pirates from owning LPFM stations.

See LPFM, page 8 ▶



## Bibleman at NRB

**Christianity's Caped Crusader is among the highlights at the upcoming National Religious Broadcasters Convention and Expo in Dallas February 10 - 13**

Page 3

NEWS MAKER

## Keeler Named SBE Educator

by Randy J. Stine

**AUBURN, N.Y.** From his vantage point as a professor of telecommunications and broadcasting at Cayuga Community College, Steven Keeler sees a bright future for budding radio engineers.

The rest of the industry just hopes he is correct.

Keeler, 46, has been named the SBE National Broadcast Educator of the Year.

**SBE certification**

In his 13 years at Cayuga, Keeler has built one of the most respected telecommunications technology degree programs in the country. Cayuga is one of only 14 schools in the United States to carry SBE certification.

Keeler's teaching skills, technological savvy and close relationship with the local SBE chapter and local engineering community were among the reasons cited for his

See KEELER, page 6 ▶

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## ◆ NEWSWATCH ◆

### Arbitron Starts PPM Testing

**NEW YORK** Arbitron is recruiting consumers in the Philadelphia area for the trial run of its radio, TV and cable channel audience-measurement device, the Portable People Meter.

The research firm hopes to procure and install personal meters with 300 consumers in the Wilmington, Del., radio metro area for the first phase of testing. The company expects the recruitment process to be complete by mid-February.

Arbitron plans to have more than 70

broadcasters and cable networks encoding signals by the time the full 300-person panel is in place. By December 2000, 48 radio, TV and cable channels were encoding broadcasts. Many of these stations were using an upgraded version of the encoding software Arbitron released at the end of November.

The PPM is a pager-sized unit that is worn by a listener or viewer throughout the day. The device detects embedded codes sent by broadcasters in the audio portion of the programming. At the end of the day, the meter is placed in a recharging station that also sends the collected codes to the

Arbitron database.

Arbitron has asked the National Radio Systems Committee to help design test criteria to ensure it's encoded signal is not interfering with a host station's signal. The NRSC has not yet formed a committee to handle this issue.

### LPB Acquires Omnitronix

**FRAZER, Pa.** LPB Communications is on a buying spree. Six months after acquiring Fidelipac, LPB has acquired

Omnitronix, a manufacturer of solid-state AM and shortwave transmitters.

Terms were not disclosed when the deal was announced in December 2000.

LPB, an industry stalwart for years in low-power transmission and consoles, has taken a higher industry profile since its purchase by Tom Spadea, the current president, in 1998. In addition to buying studio equipment maker Fidelipac, LPB recently introduced a new budget-oriented console line.

David L. Solt founded Omnitronix. The company has made the Omni line of AM transmitters since 1987 and the "world's only solid-state shortwave transmitter" since 1997. Its products range in power up to 100 kW.

LPB plans to consolidate the Omnitronix operation, now in North Wales, Pa., by next summer. The two companies are located near each other in the Philadelphia area.

See NEWSWATCH, page 8 ▶

# WHEN LIGHTNING STRIKES...



### It's GOOD to be MODULAR!

This new AUDITRONICS CONSOLE is DIGITAL so you can keep your signals pristine. It's MODULAR, making support a breeze. And it's serial controlled, making it AUTOMATION FRIENDLY. It has all the features you'd expect from our bigger consoles but it's priced to save you money. **CONTACT WHEATSTONE - THE CONSOLE COMPANY**

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### OPINION

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# 2001 NRB Convenes in Dallas

by Sharon Rae Pettigrew

Dallas is a perfect fit for radio managers attending the 2001 National Religious Broadcasters Convention and Expo.

"It's really a hub of Christian broadcasting activity," said Karl Stoll, director of communications for NRB. "Nearby is KCBI(FM), one of the largest Christian stations in America, and FamilyNet, the southern Baptist television network."

## Atmosphere

The welcoming atmosphere of the Texas town, and the new presence of a Texas Republican in the White House, should add to the attendees' enjoyment of the 58th annual get-together.

Approximately 5,000 broadcasters are expected at the Wyndham Anatole Hotel Feb. 10-13.

There are several changes that will be evident in this year's program.

**What:** NRB 2001

**When:** Feb. 10-13

**Where:** Wyndham Anatole Hotel, Dallas

## On-Site Registration Costs:

Full Member Convention/Expo - \$345

Associate Member

Convention/Expo - \$395

Spouse of Member - \$160

Non-Member Convention/Expo - \$525

Spouse of Non-Member - \$180

International Rate - \$250

Member Exposition-Only Pass - \$70

Non-Member Exposition-Only Pass - \$80

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Fax (703) 330-7100 or 6996

Address: 7839 Ashton Ave., Manassas, VA 20109

Web site: [www.nrb.org/conv.htm](http://www.nrb.org/conv.htm)

"We've changed the structure of our educational workshops," said Stoll. "We've added a track of workshops for people involved in church media ... folks who may be involved in doing some form of audio or video production. Some churches have a tape ministry and maybe some of their own radio production in the church. We'll provide information on how to do those types of things."



Christianity's Caped Crusader — Bibleman

NRB boot camps will again be included in the full registration. Focuses include radio, television, stewardship and the Internet. Boot camps will be held on Saturday Feb. 10.

"We have scheduled a whole block of Internet workshops," said Wayne Pederson, NRB chairman and executive vice president of Northwestern Radio at Northwestern College in St. Paul, Minn. "There is a lot of interest on the part of our membership on what they are going

to do on the World Wide Web.

"This is a very interesting time for broadcasting because of emerging technology and the convergence of technology," said Pederson. "Religious broadcasting is in the middle of that. We're moving strongly into the Internet, direct broadcast satellite and all of those things that will radically change the way we do our business in the next five to 10 years."

## Opening session

The Opening General Session Saturday evening is sponsored by KMA Companies and is scheduled to be emceed by Chonda Pierce of Myrrh Records.

With an increase in Christian communicators making the leap to the Internet, the NRB this year has added an Internet award. That honor will be a part of the Awards Night Program on Monday, Feb. 12.

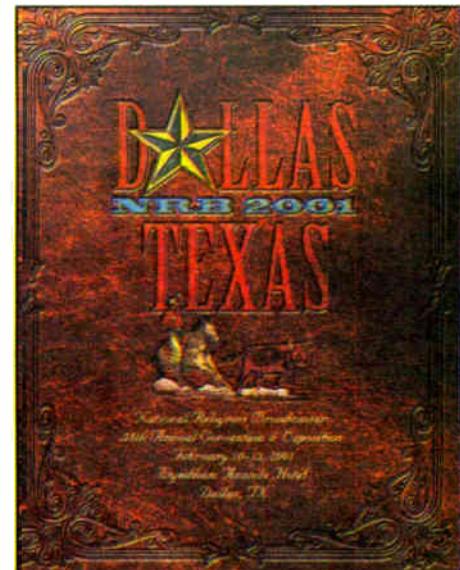
Musician John Tesh will present a few awards, as will former "Eight Is Enough" teen heartthrob Willie Aames, who now serves as vice president of Pamplin Entertainment and plays the character Bibleman.

Christianity's Caped Crusader will be at the exhibit hall opening on Sunday Feb. 11 with his sidekick for the ribbon cutting.

"Aames will give a testimony during awards night," said Stoll. "He'll talk about how God changed his life."

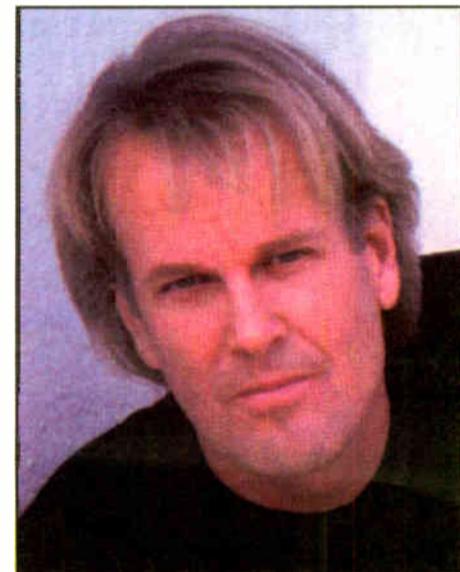
Another big draw at the convention is expected to be the Public Policy Breakfast. Campus Crusade for Christ International is sponsoring the Monday morning event. The group Acappella will provide musical entertainment.

The "Point/Counterpoint: Religion and Politics" discussion is usually a major draw at the breakfast event. Janet Parshall, who serves as host of "Janet Parshall's America" program and as the Family Research Council's consultant for strategic communications will, along with Alliance Defense Fund President Alan Sears, represent the conservative side of the discussion. Ralph Neas, president of People for the American Way &



People for the American Way Foundation and Alan Dershowitz, Felix Frankfurter professor of law, Harvard Law School, will represent the liberal side of things.

According to Stoll, the annual Anniversary Banquet, sponsored by KMA Media Group on Tuesday Feb. 13, is the highlight of the conference.



John Tesh

"James Robison, who runs Life Outreach International out of Dallas, will be the keynote speaker," said Stoll. "John Tesh will play a few numbers for us."

Other highlights of NRB2001 include the Job Fair on Sunday Feb. 11, sponsored

See NRB, page 8 ►

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The Digital Alternative

# 25 Years ... 25 Great Prizes

Have I got exciting news. With this issue, we debut our 25th Anniversary Silver Sweepstakes. The contest is part of the celebration of the founding of IMAS Publishing a quarter-century ago.

Throughout 2001, we will conduct 25 random drawings. Starting Feb. 1 and in every issue through the end of the year, one fortunate reader will win a great prize. The winners will be announced on this page.



And the prizes we'll be giving away truly are awesome.

They come from 25 of the industry's finest suppliers: Aphex Systems, Audio-Technica, Auralex Acoustics, Audix, Bradley Broadcast and Pro Audio, Belar Electronic Laboratory, BSW — Broadcast Supply Worldwide, Comrex, CRL Systems, Digigram, Enco Systems, Gentner, Harris Corp., Henry Engineering, Inovonics, Mackie, Marti Electronics, Nagra, Neumann USA, O.C. White Co., Syntrillium, Scott Studios, Shively Labs, Superior Electric and Symetrix.

How's that for an all-star list?

Maybe you will take home a new on-air processor, spectrum analyzer, production mixer or studio microphone. Wouldn't a shiny new Flash recorder, ISDN codec or software editing package help keep you warm on a winter's night? Here's your opportunity.

To become eligible, simply register at our Web site at [www.rwonline.com](http://www.rwonline.com). Click on the Silver Sweepstakes icon and fill out the electronic entry form.

The contest was conceived by John Casey, our national sales manager and resident marketing genius. Well done, John.

I'll announce the first winner next time. But here's a peek: the prize puts out 15 watts, it runs on AC or battery power, it is made by one of the most familiar names in radio and yes, it is smaller than a bread box. Retail value: \$1,495.

So sign up now to maximize your chance of winning something great.

I am revved up about the contest because it gives us a chance to say thanks to you, the finest readers anywhere; to acknowledge the support of a wonderful group of advertisers; to recognize our own accomplishments over 25 years; and to give away some great STUFF!

★ ★ ★

How often does a letter from the FCC leave an engineer smiling? The happy fellow in the photo is Marvin Collins, a long-time member of the RW family who recently retired from KFI(AM)/KOST(FM) in California.

Marv was surprised when he received a letter from Jim Zoulek, district director of



Marvin Collins

the FCC Los Angeles office, who wrote:

"On behalf of the commission it is my extreme pleasure to present you with the enclosed plaque honoring you for your tireless efforts in overseeing years of successful progress in the broadcast industry. Your achievements in the broadcast community

and dedication to duty have certainly made it a pleasure to know and work with you."

The plaque was in honor of Marv's 46 years in radio. Zoulek had intended to present it at the Southern California Frequency Coordinating meeting in October, but our intrepid engineer was, as usual, occupied that week — in fact, he was in Las Vegas working on the Radio Music Awards show, which he described for us in our Jan. 3 issue.

Congratulations, Marv. And thanks, Jim, for acknowledging the efforts of those in the field who toil behind the scenes to make radio a better industry.

★ ★ ★

Radio itself gets a nice pat on the back from Beverly Bartlett, who writes for The Courier-Journal, a Gannett newspaper in Louisville, Ky. Thanks to Louis Bornwasser for sharing the column.

Bartlett pondered the best developments of the past century, the things worth keeping for another hundred years. She wrote of radio:

"Other 20th-century developments were more life-changing, life-saving or awe-inspiring. But I would like to see the radio ... in the running. In a way, I'm making up for past slander.

"My generation grew up scoffing at the radio," she wrote, "believing it was barely hanging on in the face of the vast improvement of television. After all, we even watched music on television. ..."

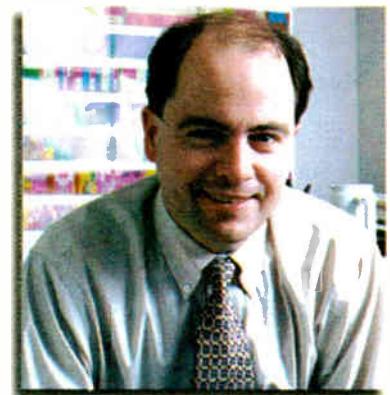
"My parents' quaint stories — about listening to the radio to hear Queen Elizabeth's coronation or the news of World War II or (imagine!) boxing — were mere history lessons. The future would happen visually.

"But we were wrong."

The columnist said she has since come to appreciate radio's greatest asset, the ability to enjoy it while doing something else — driving, working, jogging.

"I will never forget the stretch of road in which I first heard Bruce Springsteen sing 'The River,'" she wrote. "Or the Christmas Eve drive in which I heard Dar Williams sing 'The Christians and the Pagans.' If it hadn't been for a long trip through Western

## From the Editor



**Paul J. McLane**

Kentucky, I probably would never have paid much attention to the particulars of Supreme Court Justice David Souter's confirmation hearings, but listening to them enthralled me."

Her radio memories are linked to important or satisfying events. She enjoyed "Car Talk" while painting a new house with her husband; listened, entranced, to WHAS late at night; and pulled her car off an Illinois interstate to better concentrate on a distant broadcast of the Belmont Stakes.

She became a fan of Johnny Cash when she heard a radio interview while out walking (here's a woman after my own heart — long live the Man in Black!).

We who make our living in radio should listen to such listeners more often. We should look past Arbitron ratings and antenna patterns and remember that radio touches the lives of real people.

Programmers, GMs and engineers would do well to understand that radio retains great power to attract and seduce.

How delightful to read the words of a communicator whose own medium is print:

"There is something that seems strangely intimate about radio. Watch a game on television and it seems unremarkable. But tune it in on a scratchy radio station that is almost out of reach and you feel as if the nice announcers are doing you an extraordinary favor — that they are whispering in your ear especially."

She notes the promises of digital, satellite and the Net, but Bartlett treasures our medium as it is, and the way it allows us keep our eyes free and our minds engaged.

"It is," she wrote, "just about perfect."

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# iBiquity Integrates Staff, Board

iBiquity Digital Corp. has completed the integration of what were two companies, USA Digital Radio and Lucent Digital Radio. About 80 people work full-time for iBiquity, with about 55 percent based in Columbia, Md., and the other 45 percent in Warren, N.J.

The company has worked out employee duties, merged strategies such as marketing, and combined mundane but necessary items such as e-mail and computer systems.

"Now we're through that and moving forward to commercialization," said iBiquity Senior Vice President Jeffrey Jury.

The newly merged iBiquity board of directors held its first meeting in late November 2000. The board members and officers of the merged company are listed below.

## Management Team

**Robert J. Struble**  
President, CEO and Co-Chair of the Board

**O'Connell J. (Ben) Benjamin**  
Senior Vice President

**Jeffrey P. Jury**  
Senior Vice President

**David Mansour**  
Senior Vice President

**Judith L. Kennedy**  
VP, Human Resources and Administration

**Richard E. Martinson**  
Vice President, Development



Robert J. Struble



Mel Karmazin



Suren Pai



Paula Norton, Norton Photography

Al Kenyon

**David B. Salemi**  
Vice President, Marketing

**E. Glynn Walden**  
Vice President, Broadcast Engineering

**Patrick M. Walsh**  
Vice President, Wireless Data Business Development

**Gerald B. Marcovsky**  
General Counsel

## Board of Directors

**Frank A. Adams**  
President and CEO, Grotech Capital Group

**Daniel S. Ehrman, Jr.**  
Vice President, Planning and Development, Gannett Co., Inc.

**Mel Karmazin**  
President and COO, Viacom Inc.  
Chairman, President and CEO, Infinity Broadcasting

**Al Kenyon**  
Vice President, Technology,  
Clear Channel Radio

**Alfred C. Liggins, III**  
President and CEO, Radio One Inc.

**Suren Pai**  
Co-Chairman of the Board, iBiquity Digital Corp.

**Jerry Poch**  
Principal, Pequot Capital

**Gregory C. Simon**  
President and CEO, Simon Strategies Inc.

**Robert J. Struble**  
President, CEO and Co-Chairman of the Board, iBiquity Digital Corp.

**Thomas M. Uhlman**  
President, New Ventures Group of Lucent Technologies

**Fred Wilson**  
Managing Partner, Flatiron Partners

## NEWS WATCH

### Supreme Court Denies Radio, TV Coverage

**WASHINGTON** The Supreme Court did not allow live or even taped radio and TV coverage of election proceedings before the court in November.

The Florida Association of Broadcasters had asked the justices to allow pool broadcast coverage of the oral arguments of the case titled "George W. Bush vs. Palm Beach County Canvassing Board."

"A majority of the court remains of the view that that we should adhere to our present practice of allowing public attendance and print media coverage of argument sessions, but not allow camera or audio coverage," wrote Chief Justice William Rehnquist in a letter to the FAB.

Justice Rehnquist said due to the public interest in the case, the court would release a tape of the arguments "promptly."

Florida has allowed radio and TV coverage of its appellate and trial courts for two decades.

## DIGITAL NEWS

# FM Digital Tests Ready

by Leslie Stimson

**WASHINGTON** The National Radio Systems Committee has finalized FM testing criteria for iBiquity's in-band, on-channel digital audio broadcasting system. The lab, field and subjective tests will be conducted in the first quarter of this year under the scrutiny of the NRSC.

The standards-setting body will use the tests result to determine if IBOC DAB performs better than analog.

Previously, USA Digital Radio and Lucent Digital Radio performed lab and field tests on their separate systems and submitted the results to the NRSC for review. Those two companies merged last year.

At the time, the NRSC said those results looked promising, but committee members could not determine whether IBOC would work based on those tests alone.

The previous test criteria have been re-vamped and new criteria added now that only one system will be tested. The goal of the tests remains the same: to determine the compatibility of an IBOC system with its analog station host and to determine if a station's signal coverage area remains the same.

The tests will be performed using the MPEG-2 AAC audio codec from

the former USADR system. iBiquity has told the NRSC it could take up to a year to fully integrate the PAC codec into the channel-processing portion of its system. Additional tests are planned once PAC is implemented in the iBiquity system, expected by November of 2001, sources said.

Of the eight station field test sites, four tests involve FM subcarrier performance at 67 and 92 kHz analog and two digital subcarriers.

The Advanced Television Technology Center will conduct the lab tests. Field tests will be conducted in a joint effort between the NRSC, ATTC, iBiquity and an independent test auditor.

There will be a subjective evaluation of audio material recorded during tests. Several labs will test whether groups of average listeners and groups of broadcasting and receiver manufacturers hear impairments in the audio.

Subjective evaluations were included in the previous tests, but NRSC DAB Subcommittee Chairman Milford Smith said these evaluations would comprise a larger sample of listeners.

The NRSC believes the subjective tests are "vital," said Smith because "engineers are sensitive to impairments."

AM test criteria are still being developed.

# Value

## Quality, Simplicity, Dependability

If you ask me, they're all connected. And, when you find



something you like - it's because it has them all.

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clock, audio distribution

amplifier or phone hybrid - they're

always great. Radio Systems



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# Keeler

► Continued from page 1  
selection.

In addition to teaching, Keeler directs the school's radio station, produces and directs a weekly community service television program and advises the school's student Radio and Television Guild.

"This award is really a huge validation of the work we do at Cayuga," Keeler said. "That's because no one could be educator of the year without the support of colleagues and the institution."

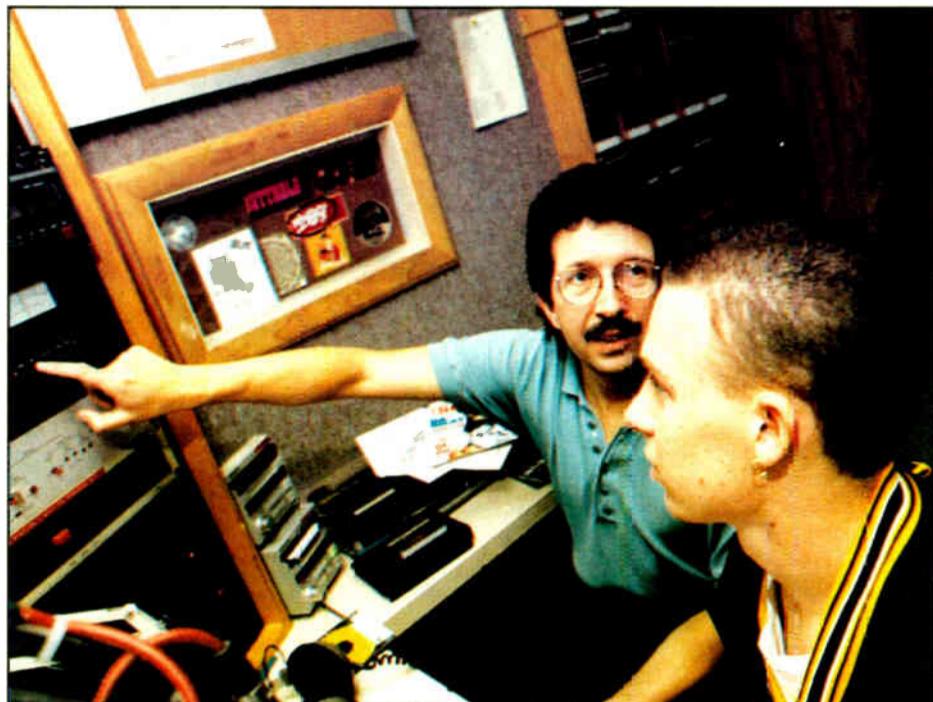
team effort and certainly SBE Chapter 22 is a part of that success."

It was his desire to help young people and a wish to find an environment that fostered teamwork that drew Keeler to a life as an educator.

## Education

After earning his bachelor's degree at the University of Buffalo and his master's degree at Syracuse University's Newhouse School of Public Communications, Keeler worked as an executive producer and production manager for New Channels Corp. (now Time Warner Cable) in Syracuse.

In 1987, Keeler joined Cayuga,



Keeler helps students at the Cayuga Community College station

**This award is really a huge validation of the work we do at Cayuga.**

— Steven Keeler

Keeler credits the local engineering community of central New York, which includes the Syracuse area, for helping him and the school grow to its recognized status. "This is really a

which is part of the State University of New York educational system and has 3,000 students. He immediately began the challenge of building what broadcast engineering observers say is a

highly respected telecommunications and broadcasting program at the school.

Keeler described the school's facilities as a "living laboratory" with students working on transmitters and studio equipment. Students in Cayuga's telecommunications technology program begin hands-on work the very first day of class.

## Building over time

"They receive a basic grounding in both analog and digital electronics, computer networking, computer science and data communications, RF technology, broadcast systems operations and maintenance and broadcast theory," Keeler said. A heavy emphasis is placed on math skills, he said.

program at Cayuga has more than 100 students, with 16 students enrolled in the technology specialty. About half of those who graduate with the two-year associate's degree in telecommunications technology will immediately enter the workforce, while the other half typically pursue electrical engineering or telecommunications management degrees from four-year institutions.

Students who receive an associate's degree in telecommunication technology from Cayuga are eligible to be certified as a broadcast technologist without having to take the SBE exam.

"The SBE certification is something that is very important to (Cayuga)," Keeler said. "It's an acknowledgement

## THE SOURCE FOR SOLUTIONS

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### HIGHLY RELIABLE SINGLE TUBE GROUNDED GRID FM TRANSMITTERS

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### SINGLE PHASE HIGH POWER FM TRANSMITTERS

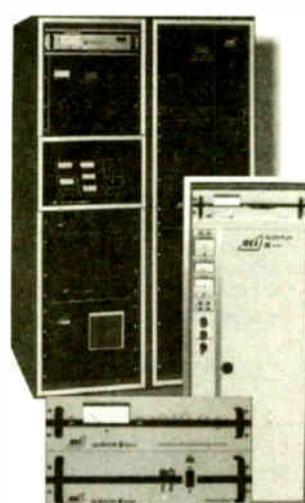
QEI was the first broadcast equipment supplier to offer high-power FM transmitters able to operate from single phase AC power sources. These products allow the development of many transmitter locations where providing 3 phase power would be cost prohibitive.

### COST EFFECTIVE SOLID-STATE FM TRANSMITTERS

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**Now the school hears from companies like Clear Channel about possible openings.**

— Steven Keeler

Over the years, Keeler has guided Cayuga's radio station, WDW(FM), Auburn, through license renewals, power upgrades and transmitter moves. The station is a 3 kW eclectic format operation with Webcasting capability. Students staff the station 24 hours a day, seven days a week.

In addition to WDW, students in the technology program work in two production studios, a multitrack recording studio and a 20-computer workstation lab.

Students get the chance to work on both the digital and analog equipment at the school, Keeler said. WDW features a Wheatstone A-50 console and a Broadcast Electronics AudioVault digital system. The station plays music on CD. The two production studios are equipped with Arrakis 2000SC consoles and SAWPlus32 digital editing software.

Keeler said the telecommunications

of the work we are doing here."

Criteria for SBE program certification include an on-site inspection of facilities, program review, school involvement with the local SBE and the success of students upon graduation, Keeler said.

## SBE local chapters

Keeler works closely with SBE Chapter 22 in Syracuse, about 20 miles from campus. Several members of the chapter serve on an advisory committee at the school.

"I rely on them to advise me on what should be taught to the students for them to be successful. Several members teach at the school. They have been incredibly supportive and an integral part of the program," he said.

The local support of broadcast engineers has reaffirmed Keeler's philosophy of the importance of technical

See KEELER, page 7 ▶



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ENGINEERING

INNOVATION

# Keeler

► Continued from page 6  
 experts to the broadcast industry. "Engineering is the one segment of broadcasting that I have the most respect for, especially in light of consolidation."

"Broadcasters in this post-consolidation era have tended to think engineering departments cost them money. That was okay for a while, but with everyone going digital, companies have begun to realize they need people with engineering skills," Keeler said.

That belief is what makes Keeler optimistic about the future of his students who choose careers in broadcasting. "I think we are seeing a few more openings now than the past five years. It seems like many radio engineers are nearing retirement age, so that helps," he said. "Now the school hears from

## What They're Saying About Keeler

Steve has tried to keep pace with the ever-changing broadcast field by establishing a multimedia laboratory, a certification program for Web design and excellent contacts for student internship requirements. He maintains a philosophy of looking to future technologies to prepare students for excellent employment opportunities.

*Stephen Roder  
Chief Engineer/Operations  
Manager WDWN(FM)  
Auburn, N.Y.*

Steve has done a remarkable job in building a two-year technical program that prepares students for technical employment in the broadcast, cable and production industries.

There are few programs anywhere in the United States that focus on the technical disciplines necessary to secure a technical job in the radio and television mediums.

*Jim Marco, CSTE, CBNT  
Director of Engineering  
WSTM-TV  
Syracuse, N.Y.*

I have known Steve for almost 20 years. When he was hired by Cayuga Community College, the program was very small and had a lot of potential for growth. Steve has helped the program to grow and prosper. His contributions to SBE local Chapter 22 are invaluable.

*Vinny Lopez, CEV, CBNT  
System Technician  
WSYT/WNYS TV  
Syracuse, N.Y.  
Chairman of SBE Chapter 22  
Member of the SBE National  
Board of Directors*

companies like Clear Channel about possible openings. They are starting to wonder just where the next generation of engineers will come from."

More job openings should mean more students from high school becoming attracted to a career in the broadcast field, Keeler said.

### Qualified pool?

"Here is the only problem. With our heavy emphasis on math and electronics, I think we have a shrinking pool of students who are qualified to enter programs like ours out of high school. We also need to do a better job of letting high school students know of the career options available to them," Keeler said.

Keeler's plans for the telecom department include efforts to stay

ahead of technology development.

"The whole convergence between broadcasting, the Internet and cable, it really has created a need for engineers who have a handle on it. By addressing those technology needs we can make our students even more desirable for employers," he said.

Keeler considers himself part teacher and part technician. He normally teaches three classes a semester in addition to overseeing the telecommunications and broadcasting programs at Cayuga.

"The best part of teaching is watching students learn and grow," he said. "It's very rewarding to watch students acquire the skills they'll need to become successful engineers."

Keeler lives with his wife and two children in Marcellus, N.Y. ☀



Steven Keeler

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# LPFM

► Continued from page 1

It passed Congress and was signed into law by President Clinton (RW, Jan. 3).

The LPFM language was attached to an appropriations measure funding the Departments of Commerce, Justice and State, the Judiciary and other agencies. The bill was dominated by provisions the president wanted to pass. Clinton stressed his support for the LPFM concept even as he signed the bill to limit the service.

The number of possible LPFM stations has been reduced severely. If the commission wants to eliminate or change the parameters of channel protection requirements for the service in the future, it must seek approval from Congress — a rare case of lawmakers overriding the FCC's authority to manage broadcast spectrum.

Lawmakers directed the commission to have an independent entity test stations in nine markets for potential interference from LPFMs, and include a test of an FM station that carries a radio reading service on its subcarrier.

The subcarrier test is important to the International Association Audio Information Services, which represents radio reading services. The group filed a Freedom of Information request in its effort to get the commission to release its initial test results on 14 subsidiary communications authorization receivers.

In a letter to Dave Noble, chief of the IAAIS LPFM Task Force, Dale Hatfield, who was then chief of the FCC's Office of Engineering and Technology, wrote, "This study found many radio reading service receivers ... capably resist the effects of third-adjacent signals, and thus would operate effectively in an environment that does not include third-adjacent channel separations."

But other tested SCA receivers did not perform well, wrote Hatfield, and "could have their performance unacceptably degraded by the introduction of third-adjacent channel signals."

## Better filters?

Although deficiencies in the poorly performing receivers could be resolved with better antennas and filters, according to the report, the FCC still recommended protecting the reception capabilities for radio reading services.

In an Internet chat group, participating engineers of noncommercial stations disputed that filters and antennas would solve the performance problem.

In lobbying on the issue, IAAIS and National Public Radio joined forces in protecting FM translators and radio reading services from interference they said would occur if third-adjacent channel protection was eliminated to fit in new LPFM stations.

"We have consistently called for appropriate field testing," stated NPR President and Chief Executive Officer Kevin Klose and IAAIS President Ben Martin.

Although four tests of potential interference to existing stations by LPFMs have been conducted, the tests had different standards of determining how much interference the average radio listener would find objectionable.

The new tests would determine LPFM's effect on existing stations' abil-

ity to make the digital transition and include an economic analysis of LPFM's potential impact on minority-owned and small-market stations.

Tests results are to be made public so interested parties can comment on the findings. Language in the bill directed the FCC to have the tests completed by Feb. 1, but one commission source said he doubted that deadline was realistic.

LPFM advocates said the action by Congress severely reduced the number of stations that would have been allowed if third-adjacent protection had been eliminated as planned by the FCC.

"There is a remarkable contrast between the open, public debate held at the FCC to establish these rules and the back-door deal-making that led to the program being gutted," stated Michael Bracy, head of the Low Power Radio Coalition.

"Congress micromanaged a highly technical proceeding at the FCC based on lobbyists' scare tactics," said Cheryl Leanza, deputy director, Media Access Project.

## Two-year effort

NAB had waged a two-year effort to either scale back or kill LPFM. NAB President and Chief Executive Officer Eddie Fritts said NPR, the National Religious Broadcasters and the IAAIS shared NAB's interference concerns. NAB has a petition pending in a Washington federal appeals court, saying what Congress passed makes the FCC LPFM rules unlawful. NAB says the required tests mean the FCC should reassess the costs and benefits of LPFM.

Despite the intense debate over the new service, it's never been clear just how many LPFM frequencies could eventually be allocated.

Even before Congress changed the FCC program, commission staffers were reluctant to state a definite number of stations that would be created. They said it would depend on how many frequencies could fit in each market and on the demand for those frequencies.

Of the 1,200 applications it received from 20 states in the first two filing windows, the agency said about 255 are eligible for a license. These licenses are for frequencies not sought after by more than one party. Additional eligible applicants from the initial 20 states whose applications conflict with others filed in the same area would be announced later.

None of the 255 eligible applicants has operated an unauthorized station, and all of the proposed stations would protect existing FMs and FM translators on third-adjacent channels, the FCC said.

The list, available at the Web site [www.fcc.gov/mmb](http://www.fcc.gov/mmb), reveals California is eligible for the most LPFMs at 53 allocations, with Michigan next at 24, followed by Georgia (21), Alaska (20), Virginia (16), Indiana (15), Kansas (14), Louisiana (10) and the rest in 11 other states.

Many schools and churches are represented in the list of eligible allocations, including one titled "Fellowship of the Holy Hip Hop" in New Atlanta, Ga.

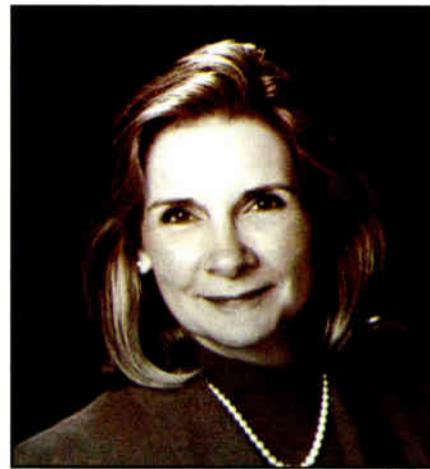
"Now we will demonstrate that low power can work on a smaller scale," said Leanza.

Petitions to deny from the first group of 255 must be filed by Jan. 22, which is also the day the third window to file low-power FM applications closes (Jan. 16-22). ■

# NRB

► Continued from page 3  
by Intercristo; the World Fellowship Luncheon, sponsored by PickSat Inc. also on Monday; and the Women's Luncheon, sponsored by Nelson/World Ministry Services, scheduled for Tuesday Feb. 13.

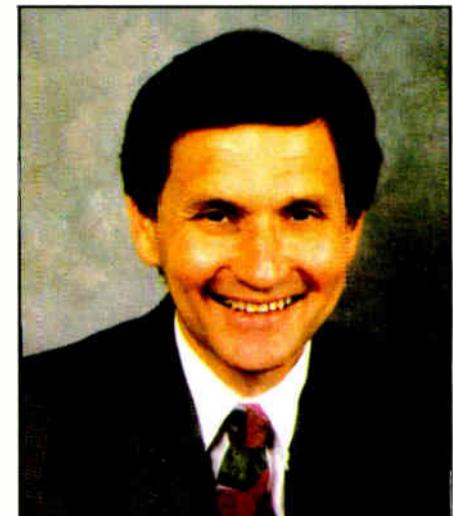
Networking is probably the biggest unwritten benefit at an event such as this.



Janet Parshall

"People come to connect with others," said Pederson. "That's what folks most look forward to. It helps them do a more effective and efficient job in Christian media."

The exhibit floor is expected to have about 250 companies. Although



Wayne Pederson

it will have a strong program and services feel, there will also be many hardware and technology vendors. Among them: Armstrong Transmitter, Audioarts Engineering, Broadcasters General Store, Broadcast Electronics, CBSI/Wicks, Comrex, Crouse-Kimzey, Dalet Digital, Energy-Onix, Harris Corp., Kathrein/Scala, LPB Communications, MediaTouch, NSN Network Services, OMB America, Propagation Systems/PSI, QEI, Radio Computer Services/RCS, RFS Broadcast, RF Specialties, Shively Labs, SpaceCom Systems, Superior Broadcast Products and SWR.

For a complete vendor list, visit [www.nrb.org/exh01.htm](http://www.nrb.org/exh01.htm). ■

## ◆ NEWSWATCH ◆

► NEWSWATCH, continued from page 2

### Ness to Remain At FCC

**WASHINGTON** President Bill Clinton has appointed Susan Ness to serve out a recess term as FCC commissioner.

Ness, a Democrat, may remain until the end of the first session of the 107th session of Congress this fall, if she's not replaced earlier by a Republican nominee of President-elect George W. Bush. NAB President/CEO Eddie Fritts said, "Her leadership on digital television will be important as the DTV transition continues."

### Kennard Touts Minority Programs

**WASHINGTON** FCC Chairman Bill Kennard has proposed four ways to promote broadcast ownership by women and minorities in light of market studies showing continuing market-entry barriers including lack of access to capital.

Kennard has again supported bringing back a version of the minority tax certificate, which provided tax incentives for owners and buyers of stations when the buyer was a minor-

ity. Kennard has suggested expanding the concept to include women.

Other proposals included increased funding of the Telecom Development Fund, an FCC review of the criteria used to determine minority station ownership and a joint effort by the commission, industry and public interest groups to promote ownership opportunities for women and minorities in new media.

### NAB Fights Copyright Decision

**WASHINGTON** NAB continues to fight efforts by record companies to impose on stations what the association says amounts to double music licensing fees.

The U.S. Copyright Office sided with record companies in December, and said broadcasters should pay separate performance royalties when streaming their programming over the Internet.

NAB has a lawsuit on the issue pending in federal court.

"Broadcasters currently pay hundreds of millions of dollars annually to the licensing societies representing the authors, composers and publishers, and have never been required to pay additional fees to the record companies and artists," said NAB President and CEO Eddie Fritts. ■

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WIRED FOR SOUND

# Starquad All Over the Place

**Steve Lampen**

We left our last installment (Dec. 20, 2000) right in the middle of a discussion of starquad microphone cable and how it does such a great job of rejecting noise at a broad range of frequencies.

Of course, there's one other factor: the equipment to which the cable is attached. The "balance" of the source and destination devices is critical to good noise rejection. There are two kinds of balanced line circuits: passive balance and active balance.

Passive balance uses a transformer.

Active balance is a circuit that electronically mimics a transformer. While active balanced devices are very good, and like all technology are improving every day, there's nothing like a well-wound transformer for common-mode rejection.

Active balancing has fantastic frequency response and is a whole lot cheaper than a top-of-the-line transformer. But if you want RFI/EMI noise rejection, a transformer is where it's at. Your choice.

**Capacitance**

However, starquad does have a downside, and it is capacitance. Because you

are combining wires, you are effectively doubling the metallic area of the "capacitor." This is why starquad has generally double the capacitance of a single twisted pair cable, usually around 50 to 60 pF per foot compared to the 30 pF/ft of a single twisted-pair microphone cable.

This just reinforces the fact that this is microphone cable. Microphone cable is intended for short runs where flexibility, ruggedness and low self-noise are essential — that is to say, running down a mic boom to the console input jack. Or running on a studio floor, or stage, until it gets to a floor-mounted jack. After that jack, you make a transition to install cable.

If the install side is not in conduit, why not put in starquad install cable? Well, you have the same problem: capacitance. Most of the run will be in the "install" portion. So why compromise performance?

Double the capacitance will mean high-frequency roll-off in less distance than with standard cable. How big that distance is depends on the source and destination impedance of the devices.

have a balanced line at either end, you get no added noise rejection.

For instance, if you use starquad to wire up a stereo microphone, that is you use two conductors for each half of the microphone, you will have no added noise rejection. In fact, this is a poor choice of cable for a stereo microphone because you don't even have two twisted pairs, so you also have little balanced line noise rejection. Better to use a dual twisted-pair cable, and attach one pair to each side of the stereo mic.

**Remote control**

For non-audio uses, starquad makes a great remote-control cable. It's flexible and yet rugged, and you can wire up four functions with the shield as a common ground. Stop, start, fast-forward, rewind. This is why some starquad cables are marked so you can identify all four conductors.

Often, there are two blue conductors and two white conductors, to show you how to wire it up for low-noise microphone applications. Just combine the blue wires into one conductor, and combine the white wires into the other conductor. Some manufacturers put a white stripe on one of the blue wires and a blue stripe on one of the white wires, for those non-microphone applications.

There are several other interesting

## The thing about starquad cable that always surprises me is how few people who use it understand it.

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The one thing about starquad cable that always surprises me is how few people who use it understand it. I play on the Internet a lot and there is a whole camp of audiophiles who are combining all four conductor into one, for unbalanced interconnects in home audio, and extolling how quiet the signal is.

Of course, the joke is on them. Because they don't have a balanced line, and have combined all the conductors, they have one of the world's worst coax cables, and an expensive one at that!

I've even seen starquad speaker cable. Power amps are not balanced-line devices. One side is hot, the other is ground, no noise rejection is possible. They're not balanced!

Of course, you could use such a cable for bi-amp wiring. In fact, there are common four-conductor speaker cables, including some intended for special speaker connectors such as Neutrik Speakon connectors. Just don't expect any extra noise reduction from using such a cable.

And why would anyone need noise reduction in speaker cable? There are many amps of current travelling down a speaker cable. What effect would a few millivolts of noise make? Not much. So all of these people using shielded speaker cable are wasting their money too. And, if you attach the shield to the chassis of your amplifier, where do you attach it on the speaker? And, even if the speaker was metal, it's certainly not grounded.

That's not to say that you can't use starquad for other applications. It's just that, if you don't combine the conductors in the required way, and you don't

options available with starquad. For instance, there are a number of sizes available. Realize that, as the size gets smaller, so does the gage of the conductors. Therefore, ruggedness and strength also go down.

Of course, if you're wiring up a microphone boom, you have to use a cable that will fit. Therefore, a mid-sized starquad might be a better choice than full-sized. In that particular application, leave a loop, or at least some extra cable, where the boom bends.

This little extra cable will add years to the "flex-life" of that cable. And rewiring those booms is no simple task.

There are also some CM (NEC rated) versions, for those who have no choice and will be putting them in conduit. Finally, there are miniature versions.

Miniature quad sometimes is made with a bronze alloy, for added strength. The alloy, called CT37, is so strong that miniature quad is as strong as a full-size starquad cable.

The first customer I had for miniature starquad used it not for microphones, but for headphones. He was tired of the jocks forgetting their headphones were on their head and ripping the cord out of the plug. With bronze alloy starquad, they either unplugged the headphones the hard way or the headphones were pulled off their heads!

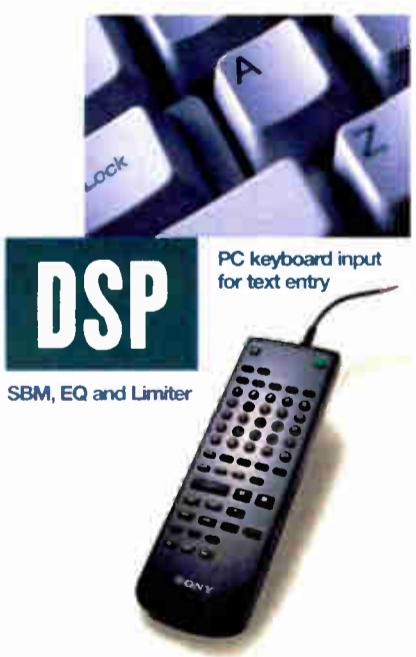
*Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill. Reach him at shlampen@aol.com*

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# FM IBOC Antenna Choices Ahead

**Richard J. Fry, CPBE**

The current implementation concept of FM IBOC includes an interim period during which the digital component of IBOC will be transmitted at a reduced carrier ratio along with the present analog FM broadcast service.

Two antenna configurations have been proposed for FM IBOC. The choice of antenna configurations available to a given broadcaster depends on the method used to generate and combine the analog and digital components of the IBOC signal, outlined below.

**Single Antenna:** (A) Common Amplification. A single transmitter gener-

ates both digital and analog components. (B) Separate Amplification. Separate transmitters are used for the analog and digital components. The outputs of the transmitters are combined after the transmitter output connectors. In both cases, a single antenna radiates all components of the FM IBOC signal.

**Separate Antennas:** A combining variation exists for separate amplification systems where the digital and analog transmitters radiate their components via separate antenna systems, or "space combining."

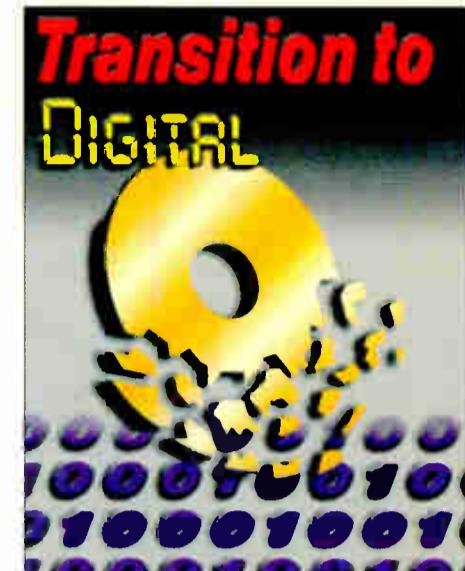
This method has the advantage of eliminating the high-power combiner used in separate amplification systems. As this

combiner can be quite lossy (especially for the digital component), space combining has an additional benefit because it may allow the use of a smaller, less expensive digital transmitter — as well as eliminate the cost and installation space of the combiner. Of course, there is a corollary cost involved in this approach to provide the second antenna system.

Space combining has not been used widely for FM broadcast systems. Following is an overview of space-combining considerations, and the implications for FM IBOC.

**Carrier Ratio** — For reasons of compatibility, FM IBOC requires that a certain carrier ratio must be maintained between its digital and analog components. At first, it seems that all that would be needed for space combining would be to correctly specify the analog and digital transmitter output powers, accounting for any combining losses and antenna system gains for the two components.

However, when separate antennas are



located on the same support and at the same radiation center as an eight-bay antenna. The eight-bay antenna radiates the analog signal, and the two-bay radiates the digital signal.

This configuration might be a fairly typical approach to space combining. The plot shows the elevation patterns of the two antennas, along with the changes in radiated carrier ratios that result from the

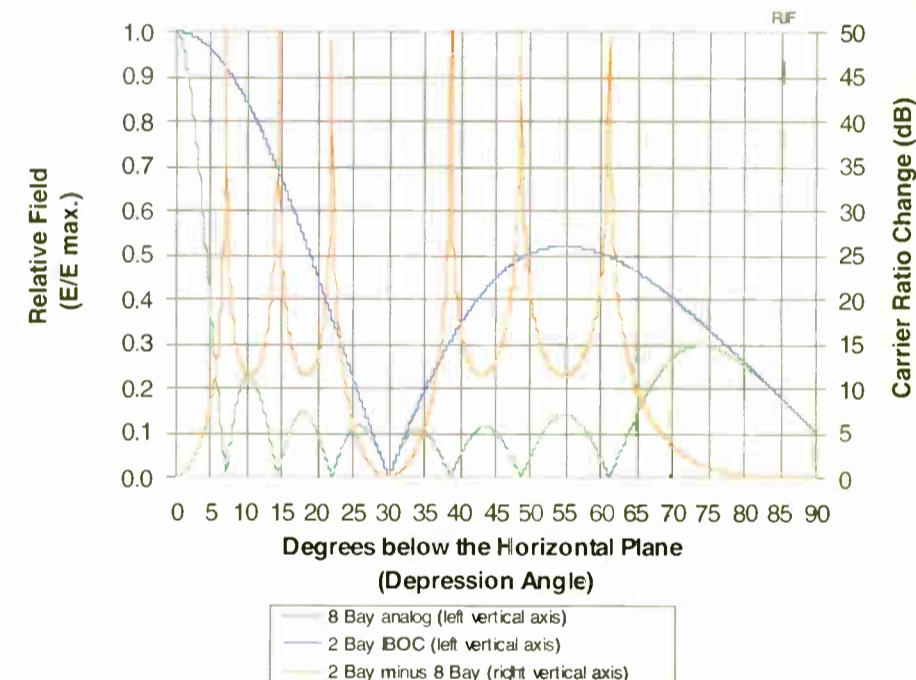


Fig. 1: Change in digital to analog carrier ratios as a function of depression angle for two typical full-wave spaced antennas at equal radiation center elevations. Calculated data.

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involved, the azimuth and elevation radiation patterns of the antennas also are a factor in setting the ratio between the analog and digital components seen at the receiver. This situation adds constraints on the use of this method.

The effect of space-combining FM IBOC components can be quite significant. It almost certainly eliminates any possibility of using one antenna site for the analog component and another one some distance away for the digital component, because it will be virtually impossible for radiated fields from separated sites to track each other at the required carrier ratio over an adequate amount of the service area.

Even the radiation patterns of separate antennas installed on the same tower typically will not match each other well at many azimuth and elevation angles, which will change the carrier ratios seen by receivers in the areas affected. This point is explored further in the following paragraphs.

**Elevation Patterns** — Fig. 1 shows the results of a space-combined FM IBOC system where a two-bay antenna is co-

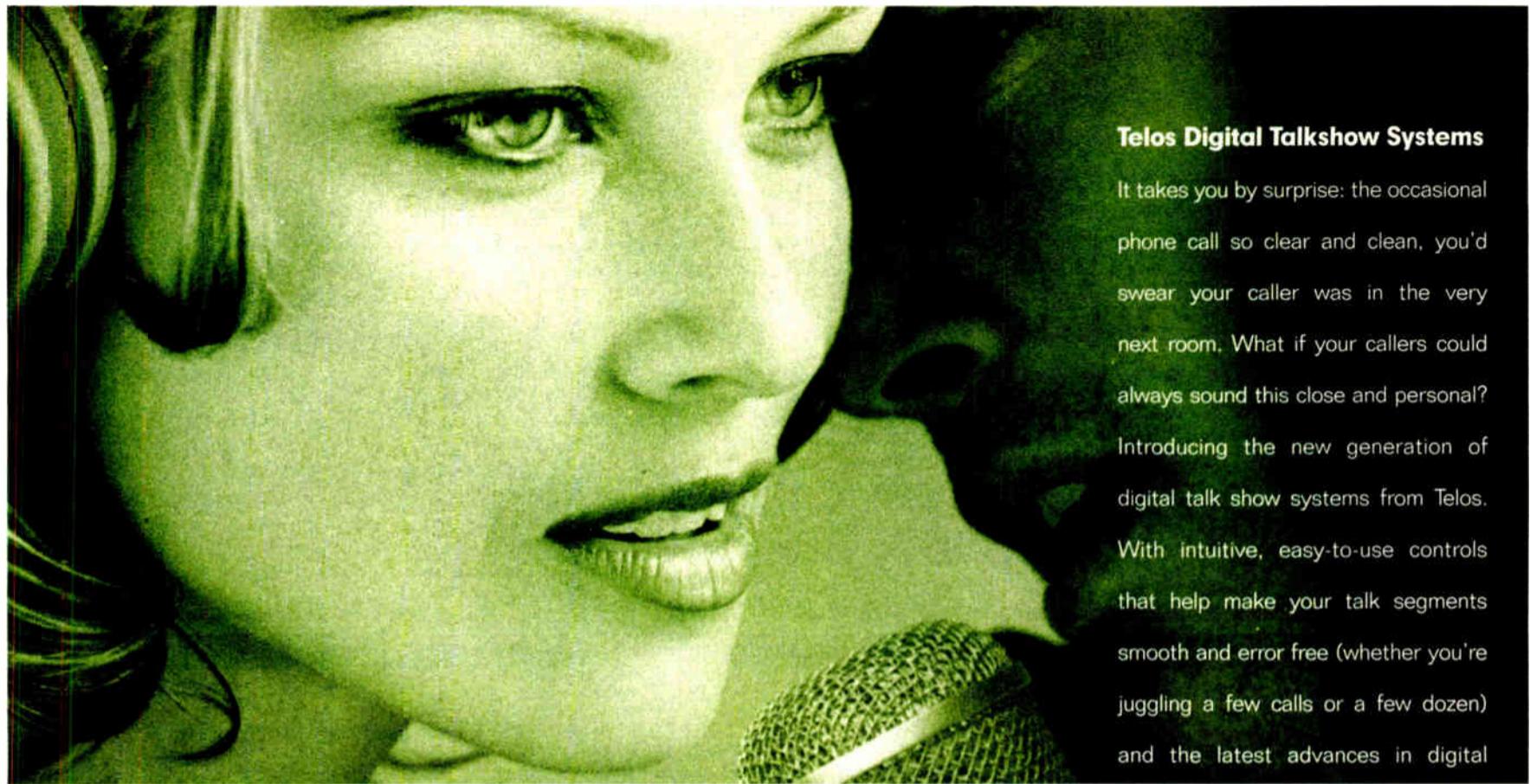
pattern differences.

The calculated changes in carrier ratios in Fig. 1 are significant: from 6 dB to >50 dB for some depression angles greater than about four degrees. While the nulls of installed FM antennas typically are not as deep in reality as they are in theory, their effects on the performance of FM IBOC could be an issue for highly elevated antennas, and/or where best close-in performance is required.

**Azimuth Patterns** — Another factor affecting received carrier ratios is the azimuth pattern of the separate antennas. Azimuth patterns vary markedly when antennas are side-mounted on a large cross-section support, and independently so for the two antennas.

Variations in the azimuth pattern of an "omnidirectional" sidemounted FM antenna can be 10 dB peak-to-peak or more, depending on the mounting structure and other factors. With circularly polarized antennas, the horizontally and vertically polarized fields also vary independently. Azimuth patterns can vary with elevation

See IBOC, page 24 ▶



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# Allen Was Talk Radio Pioneer

**Ken R.**

On Nov. 30, 2000, entertainer Steve Allen was visiting his son Bill. The senior Allen said he was tired, went to lie down and passed away in his sleep at the age of 78.

Most people are familiar with Allen's brilliant television work, which began in the late 1940s, as well as his songwriting career, his movie appearances and his prolific book publishing.

But many don't realize that Steve Allen was also a ground-breaking radio broadcaster.

#### Wellesian influence

Young Allen's first brush with the power of radio was the Halloween 1938 Mercury Theatre on the Air broadcast during which Orson Welles terrified the nation with make-believe Martians. When the radio blared that observers had seen Martians over Cleveland, Detroit and Chicago, it caught the attention of Steve, his mother and his Aunt Mag, who lived in Chicago at the time.

In his autobiography, "Hi-Ho, Steverino," Allen described the panic that ensued as his family hurried themselves out of their apartment, down the elevator and into the street.

"My mother and aunt ran down the hall. I followed at a slower pace, not because I was trying to maintain a shred of discretion, but because I was too stunned to move with speed."



Steve Allen at KNX in 1948

When it became obvious that there were no Martian vessels in the skies over the Windy City, Allen and his mother felt terribly embarrassed about

panicking the poor elevator operator and the folks in their lobby.

"We spent a restless night, alternately laughing and repeating 'We'll never be able to face all those people again.'"

Allen got his first taste of working in radio in 1941 as a freshman at Drake University where he took a course in radio production. In the early war years, he determined that a career in newspapers would be demanding but "anyone not cursed with an annoying speaking voice could find work in radio."

His theory was put to the test a year later when he entered Arizona State Teachers College in Tempe, now known as Arizona State University. He quit school to take a full-time job at KOY(AM). This allowed him to do some announcing, writing, playing the piano and even acting in radio dramas.

Hijinks ensued as Allen made his own sound effects, inserted bogus commercials into the studio copy book for unsuspecting fellow announcers and added his own phony public address announcements during the empty spaces in political broadcasts ("Will Mr. Ray Busey of Phoenix, Arizona, please go to the parking lot, back of the auditorium. Someone has just covered your car with whipped cream.")

Two highlights of his early days included the challenge of describing a parade which for some reason stood still in front of him for 15 minutes, and the rodeo event a young Allen erroneously called a "steer milking."

#### Seeds of the future

One little bit of experience Allen picked up in Phoenix would serve him well.

Many of his shows involved chatting with folks standing around a supermarket where a remote broadcast was taking place, exchanging quips with studio audiences, and "man on the street" surveys that ended up being much less serious than planned. Overcoming his initial shyness, Allen was able to create entertaining radio without a script, a live band or fellow announcers.

As World War II wound down, Allen headed for Hollywood, where he worked at KFAC(AM), KMTR(AM) and the CBS network, where he eventually had a national program.

When the network show ended its run, Allen took a job at KNX(AM), hosting a nightly 30-minute music and talk program. When singing guest Doris Day didn't show one night, Allen filled the hour by chatting casually with audience members. Over time the show evolved to feature a lot more talk, with musical interludes. The popularity of the program necessitated a move to larger and larger studios to accommodate the audiences. Because KNX had a 50 kW signal, Allen received fan mail from as far away as Florida.

In 1949 Allen was given a more traditional early evening radio comedy and later a quiz show called "Earn Your Vacation." By 1950 he was handling replacement shows on the CBS network for Eve Arden. His career, like that of many other radio performers, then moved on to television and other media.

He did return to radio, though. In 1988 Allen joined WNEW(AM) in New York with a comedy show that eventually was syndicated by NBC Radio. A number of fellow funnymen were his frequent visitors.

But radio as it has evolved was not always to Allen's liking. He became a vocal critic of modern broadcast standards. Indeed, after a profile of Allen appeared in Radio World in January of 1999, he wrote to the editor:

"Now that you have mentioned the growing tidal wave of the shock-schlock and general sleaze that is so typical of modern entertainment, I'm writing to ask if you have addressed this specific subject before," Allen wrote. "And if by chance your paper has not previously taken up this issue, may I strongly suggest that you do so. I can assure you that a majority of our nation's listeners are thoroughly revolted by some of what is now permitted to be broadcast."

The radio world of 2001 is a different place from that of the late 1940s. But the style Allen created as he went along influenced generations of television and radio practitioners. ☀

#### Inside Jokes Caught DJs Offguard

Did you ever hear the piano stylings of Buck Hammer? How about Mary Ann Jackson or Marcel Valentino? In truth, the albums released by these "artists" were a giant hoax perpetrated on radio disk jockeys by comedian and talk host Steve Allen.

Bill Schurk, professor and sound recording archivist at Bowling Green State University in Ohio, is a collector of such musical trivia. He presides over tens of thousands of albums, singles and 78s housed in his multistory resource center.

"Steve Allen donated a lot of his personal recordings to us as well as records by other artists," said Schurk. "I got to meet him when he came to BGSU in the early '90s to receive an honorary degree from the university."

"Steve was a master of the put-on" said Schurk, "and he released several albums using aliases."

The first of these was "The Discovery of Buck Hammer" on the Hanover label in 1959. It featured boogie woogie and jazz piano music and came complete with phony liner notes by "Ralph Goldman." Time magazine eventually "outed" Allen by disclosing the real identity of Buck Hammer.

Allen soon struck again by releasing a jazz album using the name Mary Anne Jackson, who in real life happened to be Allen's cleaning lady. Jackson's picture graced the album cover, but Allen did the playing.

Allen pulled this stunt one final time in 1970 with the release of "Bossa Nova de Paris," a collection of romantic songs ostensibly recorded in France by Marcel Valentino. Valentino was Allen's middle name. The album artwork featured a picture of a handsome gentleman with a pencil-thin mustache. It was a very young Steve Allen.

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# RW: Help Screen for a Generation

**Barry Mishkind**

As part of the 25th anniversary of IMAS Publishing this year and Radio World next year, we've asked valued contributors to reflect on changes in radio during that time.

Over the years, my pile of Radio World newspapers has grown rather large. While my collection doesn't include the very first ones (from the days it was called Broadcast Equipment Exchange), RW became a welcome companion and a valuable resource from the first moment I saw it.

Over the years, it has helped me and an entire generation of engineers and managers deal with the changes in technology, regulation and industry practices.

And the changes have been dramatic, in each of these areas. A whole generation barely remembers what a turntable was, much less the rather spirited discussions and competition to produce the best sounding phono pre-amps reported in this newspaper.

The decline of turntables is only one of the more obvious changes in control rooms the past 25 years. Actually, in comparing some of today's new studios with setups from the 1970s, only the microphone would give it away as a sound room.

**Computers take over**

Clearly, the most important change in broadcasting has been the penetration of computers and microprocessors in the physical plant. Computers have allowed broadcasting to do so much more, and do it better, than at any time in its history.

From traffic and billing systems to transmitter control, the computer has been instrumental in the changes. In fact, the first article I was asked to write for RW discussed a program I wrote to rapidly tabulate and analyze the daily



Id. 6, No. 4 April 1982 \$2.00 Per Copy

## NAB/Dallas '82 Solid Again

by Barry Mishkind/CE  
KMY/Tucson

Dallas TX ... As expected, the FCC "non-decision" on the matter of what AM stereo system we all will be using generated the most discussion, confusion, and downright frustration, during the 60th Annual Convention of the National Association of Broadcasters, held here in the Dallas Convention Center, April 3-7. The convention, which drew over 20,000 broadcasters from all over the world, had as its main theme 1st amendment rights and the movement of the FCC out of the business of telling broadcasters what they can and cannot do.

For engineers, this was felt rather directly in the area of AM stereo, as the "marketplace" was asked to make the decision as to which system will prevail in the US, and probably in the rest of the world as well. This decision is not being made any easier by the confusing, and frequently contradictory, statements made by the various proponents as they try to line up sta-

tions and otherwise promote their systems.

For those not intensely involved in AM stereo, there was still a whole lot to see. Over 425,000 square feet of display area was filled with everything from the latest in solid state transmitters to boxes for every possible audio effect. There were also just plain toys to make life easier for the engineer.

Technical sessions, including the inevitable AM stereo panel (followed by a Q&A period), plus hospitality suites where one could relax and discuss the highlights of the day's activities, rounded out the show for most of us. About the only thing missing was a shoe store where the tired of foot

could trade in their shoes for something more comfortable!

The NAB show provided a valuable chance for the engineer to get acquainted with all the available models of any type of equipment he may have been considering. If there was not always enough opportunity to A-B each

(continued on page 12)

## AM Stereo: Main Topic

by Rob Meuser/Tech Dir  
CHAM/Hamilton Ont

Dallas TX ... The major topic of conversation among engineers at the NAB show was AM stereo. The manufacturers spent a lot of money and time trying to insert themselves at the head of the line in the minds of engineers and station owners. However, the decision may have already been made if we are to take the word of the receiver manufacturers.

During the AM stereo session on

Tuesday afternoon, it became apparent that the receiver manufacturers were starting to line up behind Magnavox, National Semiconductor and Pioneer, particularly, were of the opinion that AM stereo had only a 6 month window to become viable.

They felt that the Magnavox system was the only one ready to go into production fast enough to get units into the hands of consumers before the enthusiasm wears off. On the other hand, Harris and Kahn seemed to have the most committed stations on their

respective sides.

The worst news for AM stations was the reluctance of the receiver manufacturers to consider upgrading their detectors to let the public hear a flat audio band. There was a constant refrain of "the public will not pay for a better receiver," and, "the public doesn't care." As to synchronous detection, the manufacturers were willing to talk about it, but only after the radio stations developed a demand for the product.

One of the chilling factors was the

AM stereo was in the headlines when Barry Mishkind covered the NAB show for RW in 1982

readings at directional stations.

Who would have predicted we would see a day when an entire radio station could consist of a microphone and computer attached to a transmitter? Yet, more than a few stations are just that. Even more operate from a series of computers and screens in the control room, with a console to link them. The station mouse has moved from the transmitter room to the control room!

Oddly enough, when I was still in school (before the InstaCart), it seemed reasonable to believe that in the future, playlist control would come from songs delivered to stations on IC chips. These would then be placed on a motherboard and played by an announcer pressing buttons in front of him as he announced the top 40.

Who'd have thought I'd be so close.

Too bad I didn't have any Intel stock.

Of course, some radio stations are still operating with equipment originally installed in the 1960s, or even before. But the time of tape machines, carousels and spring reverb units is nearly over. Anyone who has tried to get parts for some popular gear from the 1970s may find it a frustrating experience.

Another major component of the 1970s-era radio station has been relegated to dusty shelves in the back room: tubes.

In 1975, solid-state transmitters basically were curiosity pieces. Heavy metal and tubes were still the order of the day. Even in the studio, solid-state devices had not completely taken over. Computers? Nope. Not yet.

**Ah, tubes**

Replaced by a small drawer of transistors, tubes represent one of the more "romantic" aspects of the business, missed more in form than function. Most any long-time engineer will wax nearly poetic about the glowing tubes in the transmitter. Yet, here we are, on the verge of the new century, and the growth of solid-state transmitters has made it harder and harder to find some of the older transmitting tubes.

Speaking of the transmission chain, while modern audio processing began to affect the industry in the 1960s, it was in the 1970s that multiband processing matured, raising the bar from an average 30 percent to nearly 100 percent modulation. Indeed, one of the factors that clouded the AM stereo debate and prevented the development of a single standard was the effect of high levels of processing.

Here is a quick quiz. Can you name the four major transmitter companies in 1975? Or the three major audio processor companies?

Is there anyone in the room who remembers the half-hour meter reading

See MISHKIND, page 18 ▶

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## GUEST COMMENTARY

# Sidelobe-Free Benefits Are Proven

Ali R. Mahnad

The Oct. 25, 2000, issue of Radio World included the *Guest Commentary* "To Sidelobe or Not to Sidelobe" by Mr. Richard J. Fry. I find it misleading at best.

The intention in the above article, as I see it, is not to add to your readers' understanding of the subject matter, rather it is to create confusion and contest the advantages of the reduced-sidelobe antennas.

To start with, the proven advantages of sidelobe-free antennas are well beyond dispute. It may be of practical interest to your readers to know that in every case that I have replaced any type of FM antennas by a sidelobe-free antenna, the improvement has been beyond expectation.

Phrases like "it does not work" or "it cannot be done" have, too many times in the history of engineering, been used to curb curiosity, and this one is no exception.

It is not a secret anymore that use of this type of antenna will drastically improve the coverage and performance of FM stations. It would have been prudent for the author, as a demonstration of his professional impartiality and integrity, to include, or at least inquire about, data that we have collected on the subject since the idea was introduced to FM radio industry few years ago.

But apparently personal biases have somehow interfered with objectivity. Aside from practical disagreement between the facts and subjective interpretation of Mr. Fry, here are technical difficulties that I see in the body of his presentation.

The author uses a comparison between a "six-bay full-wave (-length) antenna," a "six-bay half-wave (-length) antenna" and a "six-bay reduced-sidelobe antenna" to demonstrate the differences between the three types of antennas, i.e. full-wave spaced, half-wave spaced and suppressed-sidelobe antennas.

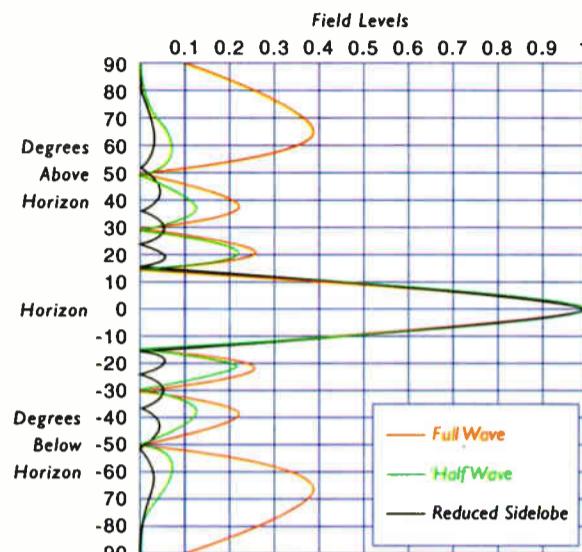


Fig. 1: Elevation Patterns

Referring to the first figure in his article, a graph showing power density vs. horizontal distance, he argues that because the main beam is wider in the case of reduced-sidelobe antennas, the field levels are higher at distances near 1,600 feet.

Obviously, a person with even a minimal understanding of antennas would testify that the major difference in aperture size and the gain of full-wave and half-wave antennas makes any comparison of the two irrelevant. The problem with this approach of analysis is that he arbitrarily decides that one simply should take a six-bay full-wave and replace it with a six-bay half-wave and expect a fair comparison.

This is a gross misrepresentation of

actual practices in the industry. In cases where a full-wave is replaced by a half-wave spaced antenna, the aperture is maintained the same, i.e. the number of bays is automatically doubled.

If we are to compare the impact of sidelobes of different antennas on the coverage, it is necessary to assume that all other parameters are kept the same. In other words, if one is studying the impact of sidelobes, one should assume that the beam width is the same for all configurations. Otherwise the comparison will be between "uncorrelated sets of data" and does not have technical merits.

To demonstrate the point, I have chosen the case of a four-bay full-wave antenna, an eight-bay half-wave antenna, and a 10-bay suppressed-sidelobe antenna (25 dB sidelobe suppression). See Figure 1.

**Beam widths**

These antennas have reasonably close gain and reasonably close aperture. But most important, because we are interested in comparing the impact of sidelobes and not the main beam, they all have reasonably close beam widths. Obviously a simple examination of this figure demonstrates the advantage of the suppressed-sidelobe array over the other two.

Notice that, to make the correlation meaningful, all three antennas have the same beam width. Figure 2 demonstrates the comparison in power vs. distance from the tower. The assumed ERP of 50 kW ERP and the tower height of 500 feet are the same as before.

By simple comparison of this graph and the first figure presented in Mr. Fry's paper, we can see the difference in clarity between the two presentations. Because of proper correlation between the curves in Figure 2, it provides valuable information with clarity and meaning.

See MAHNAD, page 20 ▶

## GUEST COMMENTARY

# FM Antenna Sidelobes Revisited

Leroy C. Granlund

The Oct. 25, 2000, issue of Radio World included a *Guest Commentary* by Richard J. Fry in which he presented his knowledge and views regarding a relatively new family of FM broadcast antennas.

The first of these, known as the Ultra Tracker, was introduced in 1995 by Antenna Concepts, and similar antennas are now available from Jampro, ERI and TCI.

The primary difference between these and "conventional" FM antennas is the precise control of elevation pattern, most notably in reduction or elimination of "sidelobes." Virtually all transmitted energy is contained in a single "main lobe" directed toward the horizon, and the desired service area, reducing the RF level below (and above) the antenna by as much as 40 dB. There are more than 100 of these new FM antennas in service in the United States and other countries.

**False results**

Mr. Fry's article described his comparison of standard full-wave and half-wave spaced six-bay FM antennas with a six-bay "zero sidelobe" antenna. Like the classic comparison of a horse and a "horseless carriage," this produced some predictably false and misleading results.

In order to compare two antennas, they must be selected to have similar specifications, such as power gain and

See GRANLUND, page 20 ▶

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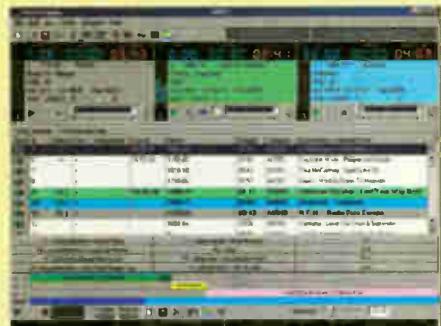


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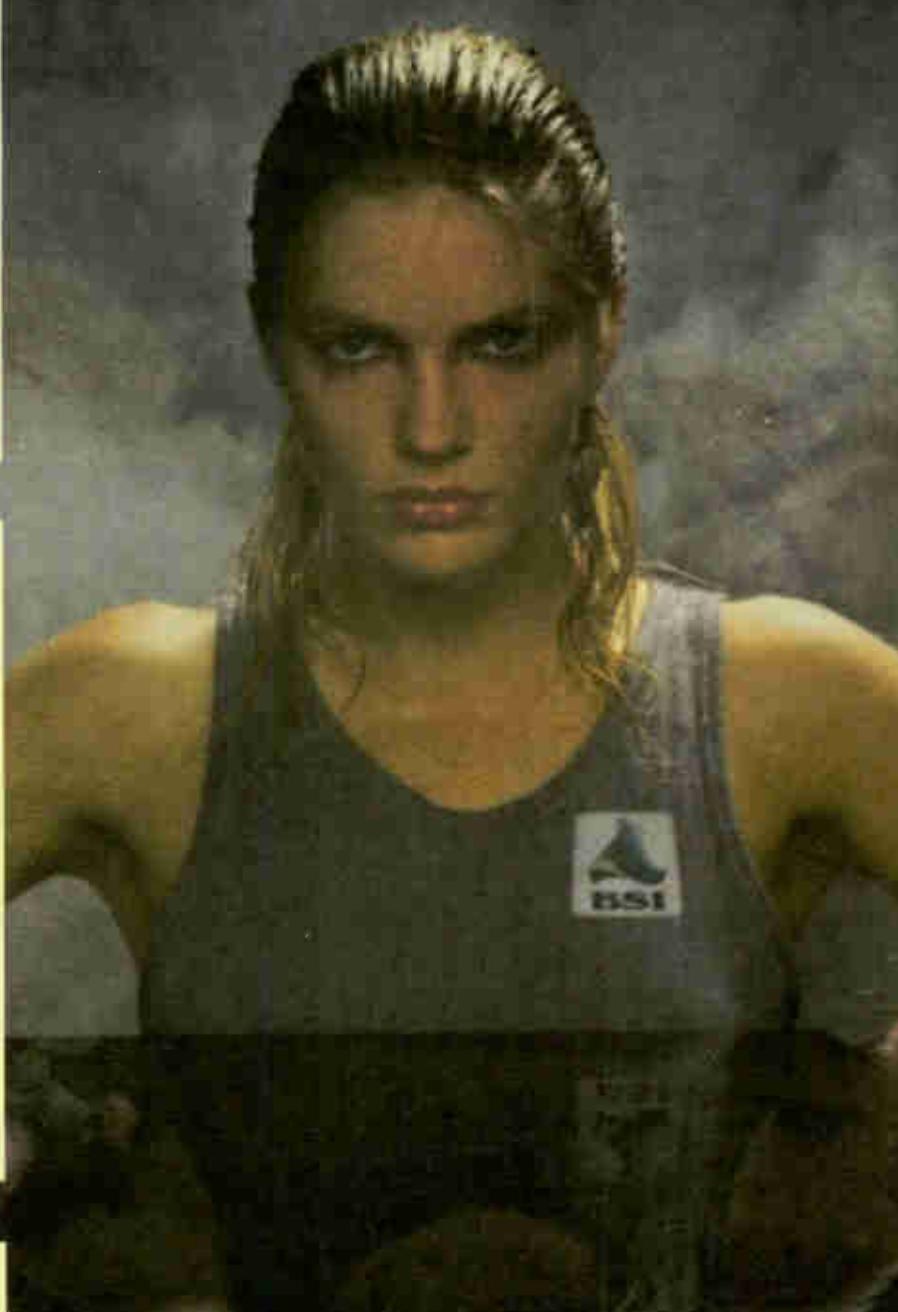
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# Mishkind

► Continued from page 15

cycle? How about the monthly chore of updating the station copy of the FCC Rules? OK ... how about the First Class Radiotelephone Operator License?

These and other changes came about through the deregulation that has occurred on this newspaper's watch.

By following the reporting in these pages, the industry has kept abreast of the effects of the changes in the FCC Rules and Regulations that swept away long-standing regulations, replacing them with "marketplace" pressures.

For instance, stations no longer need to take transmitter readings every half hour, with high power and directional

stations being required to use "First Phone Operators." Thermocouple meters have been replaced with toroid units. Even directional station sampling systems have improved in accuracy and stability to the point that the FCC decided to relax the constant measurements necessary to ensure the station radiation was within limits.

## Different standards

EPMs, or Equipment Performance Measurements, mandated a level of audio quality. They have been replaced by bandwidth limits and an assumption that stations will make "clean" audio, or at least as clean as their audience demands. Similarly, modulation monitors have been deregulated.

Even the First Phone is long gone. I got my lifetime "General" ticket in 1985.

## FEATURES

And instead of a licensed technician, stations are allowed to use anyone they want to work on their plant.

Some of the pressure for knowledge has been shifted to the manufacturers, with sophisticated printed circuit (the old meaning of PC) boards and microprocessors. Yet, with the changes in the industry — including mergers, buyouts and "lost" manufacturers — the working engineer often finds himself troubleshooting these circuits, sometimes with little or no documentation.

And, as in other areas, computers have changed the way we deal with the FCC. No longer must we sort through the pages in our copies of the rules. CD and online versions keep us up to date. Search functions help us to quickly find the various rules and commentary.

Even dealing with the FCC has

changed. Today, it is possible to get a fair amount of information from the FCC Web site (although the accuracy varies from good to obsolete), and even make some filings online.

Various articles and many letters to the editor in RW have appeared over the years, commenting on the effects of deregulation — the good, the bad, the seemingly foolish.

AM stereo was the big story in the early 1980s. RW covered the trials, the implementations, the lawsuits and the gradual fading of AM stereo. And then there was the NRSC pre-emphasis and filtering battle. A lot of technical expertise went into trying to help AM compete with FM in sound quality. We all read about it here.

The way the EBS system morphed into the EAS system now in use created a lot of discussion, argumentation, testing and improvement. However, the final story on EAS, like that of low-power FM, still has not been written.

Arguably the most important change affecting working conditions for the technical community was the death of the 7-7-7 and three-year holding rules. Companies could own no more than seven stations in each class, AM/FM/TV, and had to hold a station at least three years before selling it. The former regulatory system has given way to the multi-mega-merger-buyout atmosphere today.

One source has produced a chart demonstrating that since the Telecommunications Act of 1996, 75 broadcasting groups have been bought, merged and reduced to two megapolices.

## Diligent engineers

Certainly, the NAB show has changed to reflect the industry.

The radio portion of the spring convention is quite different from its 1975 version. I can still remember the Dallas convention in 1982, when I was the first NAB coverage "team" for Radio World, with assistance from Rob Meuser. In the years since, NAB coverage has exploded in RW, but the number of radio exhibitors has fallen, and hospitality suites have virtually disappeared.

Is this a result of the consolidation, where fewer engineers make the buying decisions? Or are there just fewer engineers?

In 1975, many stations still had manned transmitter sites. When engineers got together, there was often discussion of how many engineers were on staff at this station or that station. Today, the manned radio transmitter site is almost unheard of, except for a few fortunate folks that manage to live without rent payments.

For many working engineers, deregulation has meant taking care of as many as six or eight stations at once. Some of these companies have provided additional engineering staff, but also have added the maintenance of the computer systems and networks into the mix.

Many engineers are working harder than ever, and not a few have fled to other industries, where the time demands are less and the monetary rewards are greater.

As we head into the next century, perhaps the biggest challenge for the broadcast industry will be where to find replacements for engineers who have passed away or run away.

We welcome your reflections on radio in the past quarter-century to radioworld@imaspub.com or the address on the inside last page.



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# Mahnad

► Continued from page 16

This graphic clearly demonstrates that the power due to the main beam starts to appear around 2,000 feet from the tower and is reasonably the same for all three types. Notice again the obvious advan-

is a minor difference of power between the full- and half-wave antennas beyond 500 feet from the tower, while the difference between those and the suppressed-sidelobe antenna is larger than an order of magnitude.

### Improved coverage

Elimination of sidelobes has practically proven to improve the coverage

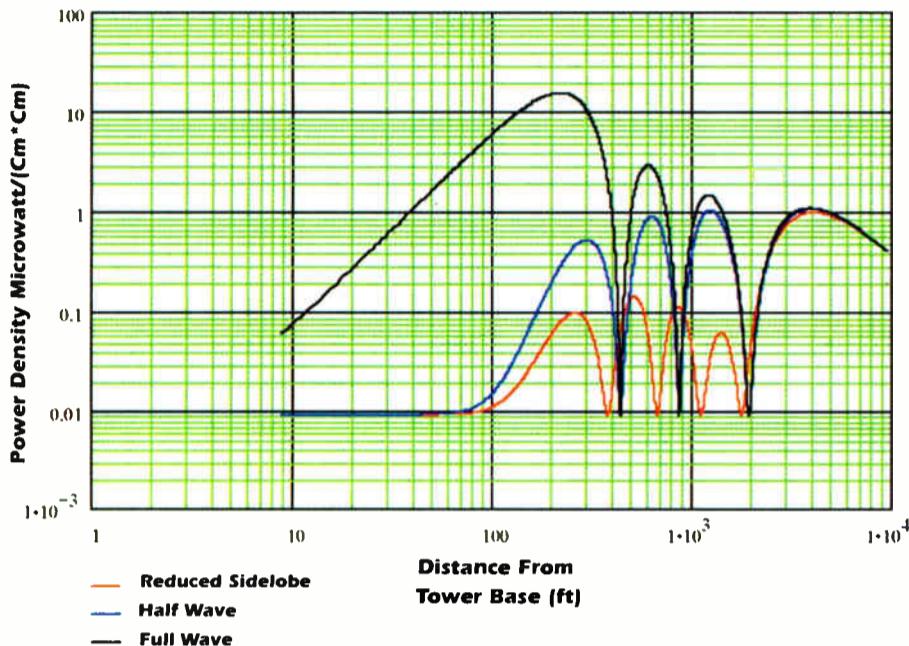


Fig. 2: Power Density vs. Distance (feet)

tage of the suppressed-sidelobe antenna over the other two.

It is interesting to note that the there

significantly. I have tried in my presentations, as referenced in the article by Mr. Fry, to explain, to some extent,

## FEATURES

some of the factors that could be credited for the extraordinary improvement in signal quality and coverage in sidelobe-free antennas.

A more comprehensive explanation of such drastic improvement in performance may be a challenge to be undertaken by more data collection and theoretical analysis, as is the case in all

propagation models.

*Ali R. Mahnad, Ph.D.E.E., is an independent consultant who helped design the Ultra Tracker line of antennas for Antenna Concepts.*

*He can be reached via e-mail to mahnada@ns.net*

*RW welcomes other points of view.*

# Granlund

► Continued from page 16

basic pattern shape. These characteristics are dependent on the antenna's aperture dimensions, *not* the number of bays. A half-wave spaced antenna needs twice as many bays as a full-wave spaced antenna to produce the same gain, and a reduced-sidelobe antenna requires even more. (Improved performance easily offsets the cost of additional bays.)

tions that will soon share our coverage areas! The truth is, your FM signal occupies only a small part of your channel at any instant in time.

Even a weak signal (say, 30 dB down) elsewhere in your channel will be very noticeable in any receiver, even if it is a reflection of your own signal, delayed by a few hundred microseconds en route. (Tune up an FM exciter or booster on your own channel and check this out for yourself. I'll bet your station manager will ask you to turn it off very soon!)

Finally, you should learn about the

**There are more than 100 of these new FM antennas in service in the United States and other countries.**

Mr. Fry's article claims that a "zero sidelobe" antenna will have higher signal level on the ground than a "standard" six-bay antenna at a distance of 1,000 feet (double tower height) or greater. In reality, this never occurs, and signal level on the ground becomes equal to a "standard antenna" of *equal power gain* at a distance of three times tower height (1,500 feet in this case).

Please note that this is more than a quarter mile from the tower, beyond the critical zone for RFR and blanketing interference problems. A reduced-sidelobe antenna will *never* produce greater signal level on the ground than an equivalent "standard" antenna, *at any distance*.

Mr. Fry also claims that reflections of the FM station's signal (from the ground or from objects near the antenna site) will not cause reception problems as long as the reflected signal is at least 10 dB below the direct signal at the receiver.

If this is true, we have nothing to fear from the proposed low-power FM sta-

new reduced-sidelobe antennas from one of the above-named manufacturers, or from one of the 100 or more stations using this remarkable new tool. We would all be better informed if Mr. Fry had done so before writing his article.

Even 30 years of broadcast experience doesn't mean we can take old knowledge (and old methods) for granted. To make a meaningful evaluation of a new product, one must either test it or obtain the results of others who are using it. Let's not spread misinformation in our trade publications.

*The author is vice president of broadcast facilities development for Entravision Communications Corp. He pioneered the use of reduced-sidelobe antennas in FM broadcasting in conjunction with Z-Spanish Media, Ali Mahnad and Antenna Concepts and has practiced as a broadcast engineer since 1956. Past posts include director of engineering for Western Broadcast Services, United Broadcasting and Entercom, and vice president of engineering for Z-Spanish Media.*

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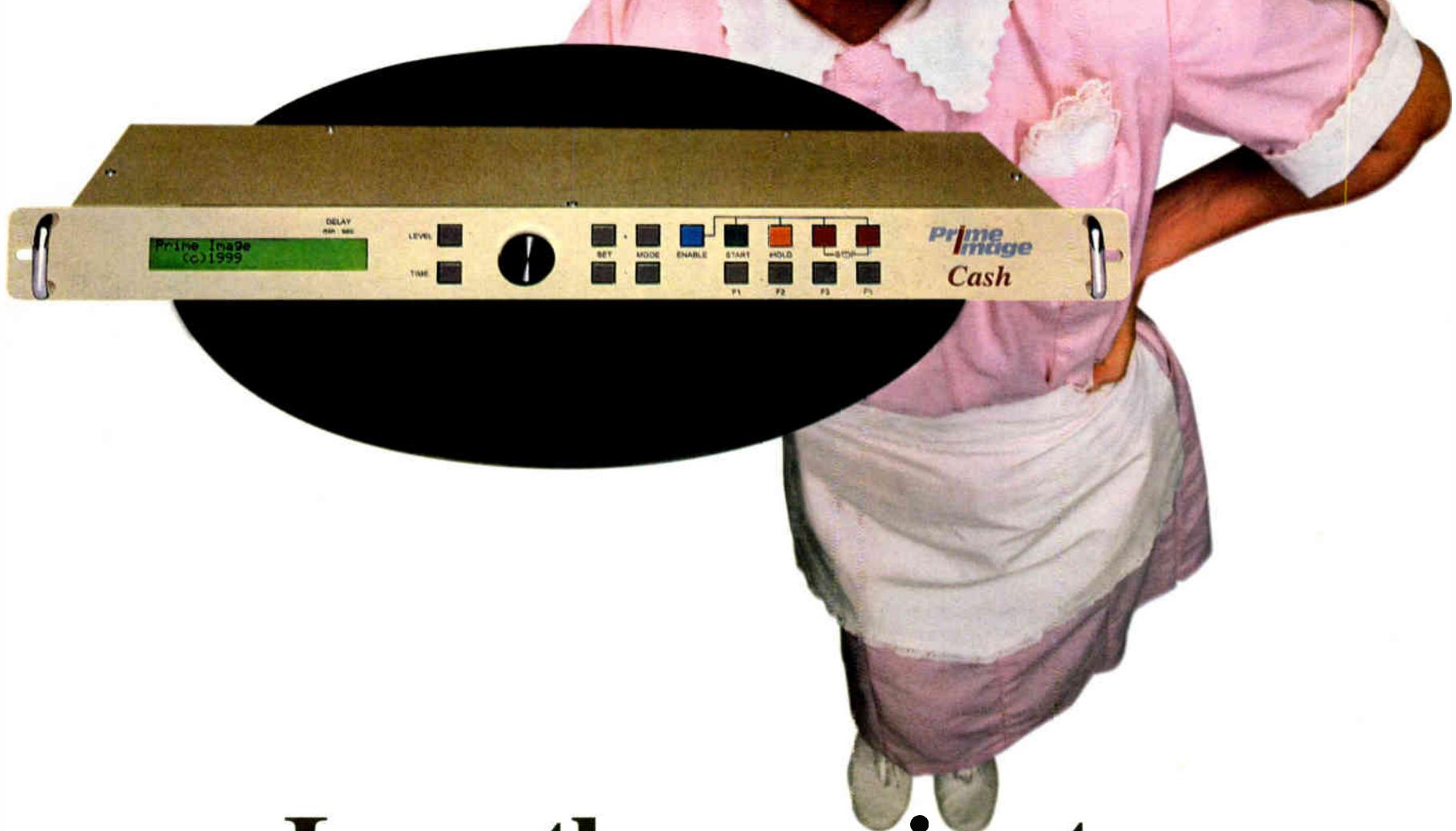


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# Workbench

Radio World, January 17, 2001

## Wiring? Try [www.pin-outs.com](http://www.pin-outs.com)

**John Bisset**

Ted Tait works for the BBC News Bureau in Washington. He recently came across a neat site on the Internet that he wants to share with *Workbench* readers.

Ted was looking for the correct wiring of an Ethernet RJ-45 connector and his search landed him at a useful site, [www.pin-outs.com](http://www.pin-outs.com). At the site, you'll find some nice drawings and pinouts for a variety of connectors and standards.

looking to "roll their own" interfaces to adapt hand-held cellular phones to broadcast service.

The trick in doing this is to make the signal from the equipment look like a signal from a microphone. That might require a 40 dB pad in some cases, or just an adapter from the mic level of the mixer.

To make the job easier, Plantronics makes hands-free headsets for cell phones, as well as adapters for them.

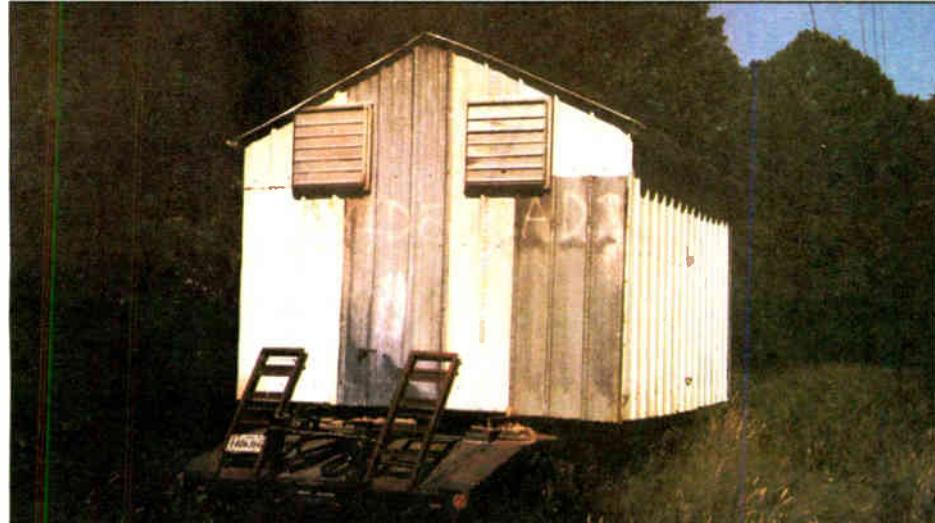


Fig. 1: Is it time to retire the old transmitter shack?

The Web page also provides links to a wide variety of technical issues, though generally computer related.

Bookmark the site for future reference!

★ ★ ★

Paul Kaminski is with the Motor Sports Radio Network and has a lot of contact with his affiliates. It's been his experience that many broadcasters are

They are in Santa Cruz, Calif., at (800) 544-4660 or [www.plantronics.com](http://www.plantronics.com)

The adapters usually are 2.5mm microplugs, with the following wiring convention:

TIP: Transmit  
RING: Receive  
SLEEVE: Ground

For one of their typical headsets, Plantronics gives transmit specs of

-46dBV/Pa sensitivity @ 1 kHz, and an output impedance of 3.3 kohms. The Receive specs are 11 dBPa/V and an input

your transmitter clean. Routinely changing filters may have been commonplace 10 years ago, but with one engineer handling a multitude of transmitter sites, studios, and even remotes, the time for such maintenance slips away. When filters aren't changed, the equipment gets dirty.

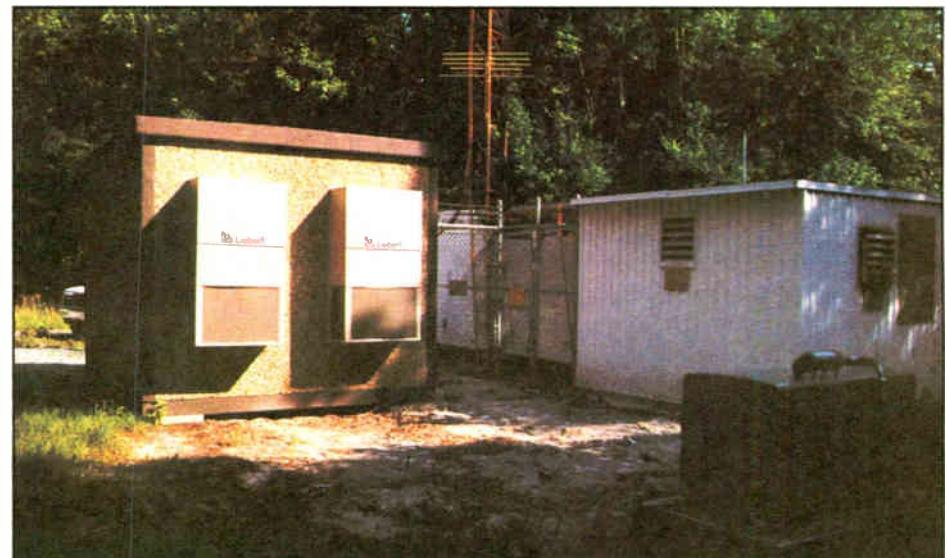


Fig. 2: Prefab buildings offer improved cooling, security and weather-tight seals

impedance of 150 ohms. Once you buy an adapter, you've won half the battle.

You see, the plus for the interface is a 2.5mm microjack. Such a device has great use for disaster backup, remote origination and field news gathering. It also makes the engineer an instant hero!

★ ★ ★

It's a new year, and perhaps your capital budget includes the replacement of your transmitter building. How does replacement of the old "shack" save money?

There are a number of ways. First, shed-type structures make cooling difficult. When forced-air cooling is used, a good filtering system is necessary to keep

Security is another issue, especially in remote areas. Vandals with guns can cause severe damage to sheet metal structures. Without an inner wall to deter theft, a side can be torn open and the building contents quickly removed.

New prefab buildings are not only inexpensive, but can be ordered with every option — including the kitchen sink! In Figure 2, the building to the left was provided with dual redundant air conditioning. The cooling issue can be easily addressed, as can the problem of insects and rodents. The equipment stays cleaner, and will last longer.

Prefab building prices depend on the options, and the manufacturers can do as much or as little as you require.

See WORKBENCH, page 24 ▶

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# IBOC

► Continued from page 12  
angle, as well — again, independently so for the two antennas.

With separate antennas for analog and digital IBOC components, all of this introduces further levels of uncertainty and difficulty in maintaining the desired IBOC carrier ratio at the receiver.

**Cross Coupling** — Using co-located separate antennas for the digital and analog components of IBOC also requires consideration of the cross coupling between them.

The transmitter most affected will be the IBOC transmitter, because the effective radiated power of the analog system is many times higher than that of the digital system. Depending on the gains of the two antennas and their installation geometry, it may be possible for the analog power present at the output connector of the IBOC transmitter to force the IBOC system into a VSWR foldback mode.

Due to lack of accurate near-field performance data for FM antennas and the need for specific siting information, the amount and performance impact of cross coupling will be difficult to predict. Problems may be recognizable only after operations have begun, and their resolution could require additional time and cost.

**IBOC Single Antennas** — Although the radiation patterns from the installed antenna may vary widely from their "free space" values, the affect of the patterns will be the same on all components of the IBOC signal. Therefore the single antenna approach will assure that IBOC radiated carrier ratio will be a constant in every direction, and that the compatibility assumptions of FM IBOC will not be compromised by the radiation pattern characteristics of the antenna system.

In conclusion, several methods are available for generating and combining the analog and digital components of FM IBOC, each with its own set of costs and performance issues. However, the data presented show that the most predictable performance of FM IBOC will be achieved by using a single antenna to radiate both components.

The information provided should be useful to those making long-range plans to implement FM IBOC into their operations.

RW welcomes other points of view. 

# Workbench

► Continued from page 23

Can't afford a new building? Here's an inexpensive solution to reduce insects, rodents and dirt from entering your building. Work a trade deal with a local landscaper. Have them kill all the grass and weeds growing in a 6-to-10-foot perimeter around the building. Lay down a layer of landscape fabric, to prevent growth from returning. Then, cover the area with crushed stone.

Ken Sleeman, transmitter engineer for Bonneville's Washington properties, has seen the problem of mice and insects drop to near zero after employing this maintenance service. The grasses and weeds that usually grow next to transmitter buildings provide an ideal haven for snakes and rodents. Remove the shelter, and the problem goes away!

★★★

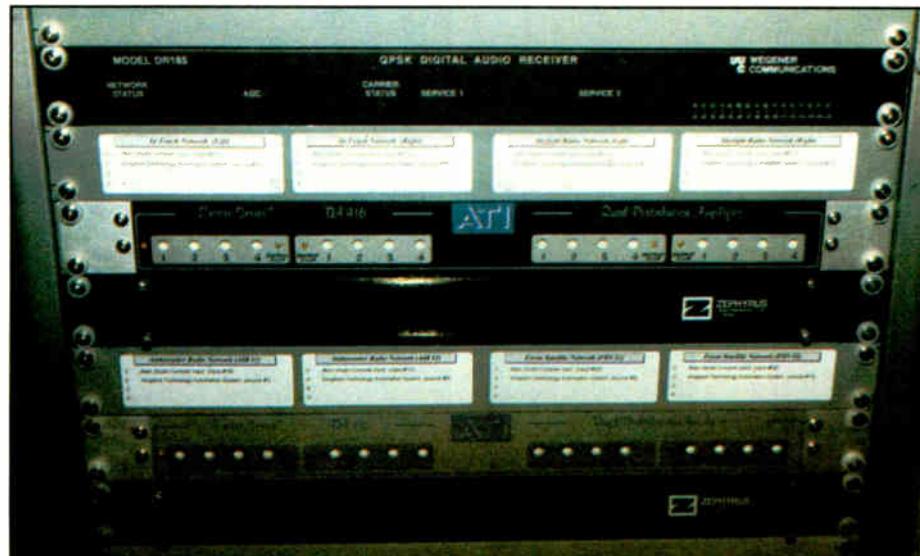


Fig. 4: Labeling distribution amps simplifies adjustment

One could make a career simplifying things for the jocks. Some are simple conveniences, perhaps gleaned from your own on-the-air experiences. Others not only make life simpler, but keep you legal too.

Our next tip falls into the latter category. I've lost count of the number of engineers who struggle to get their on-air staff familiar with sending and relaying EAS tests. Chris Kelly, the market chief for Clear Channel's Salisbury, Md., stations, and a frequent contributor to this column, had a panel of remote switches added to his console.

Buttons fire Header and EOM mes-



Fig. 3: Remote EAS controls

sages. Another switch forwards the required monthly test. Chris added a button for sending the weekly tests.

The process is so simple that, well, even a jock can figure it out! The switches keep fingers away from the wrong buttons

Figure 4 shows an inexpensive way to label DAs.

Using pressure sensitive mailing labels, Mark Bohnett of WOLC in Princess Anne, Md., used his word processor to generate the labels to identify DA inputs. Each satellite receiver audio output is inputted to a DA, and routed to either a studio or automation system switcher.

The process is inexpensive, but looks professional, and ensures the right pot is tweaked when adjustments are necessary.

★★★

While we're on the topic of satellite receivers, we're all familiar with program providers going to addressable one-format satellite receivers. Gone are the days of the single receiver with interchangeable crystals or channel switches to permit selection of a variety of programs.

Going to single receivers can pose a problem, however, because splitting the dish RF may degrade your signal. Jerry Weddle of Harris, my employer, told me of a solution: satellite RF DAs. These distribution amps work just like the audio counterparts, dividing and amplifying the RF signal so multiple receivers can be connected with no loss. If you have a need, contact Jerry at (800) 622-0022.

*John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.*

*Submissions for this column are encouraged, and qualify for SBE recertification credit.*

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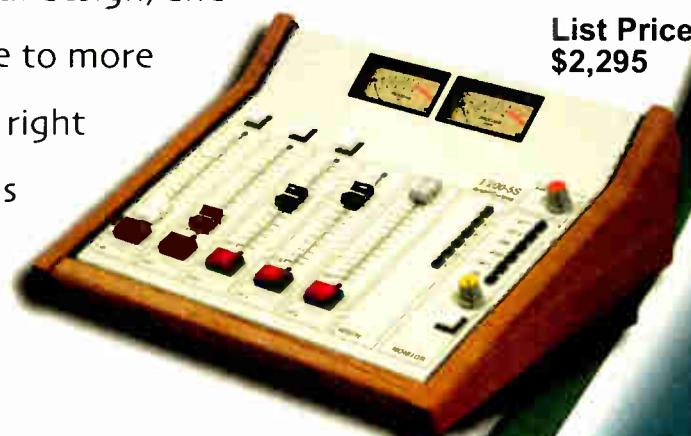
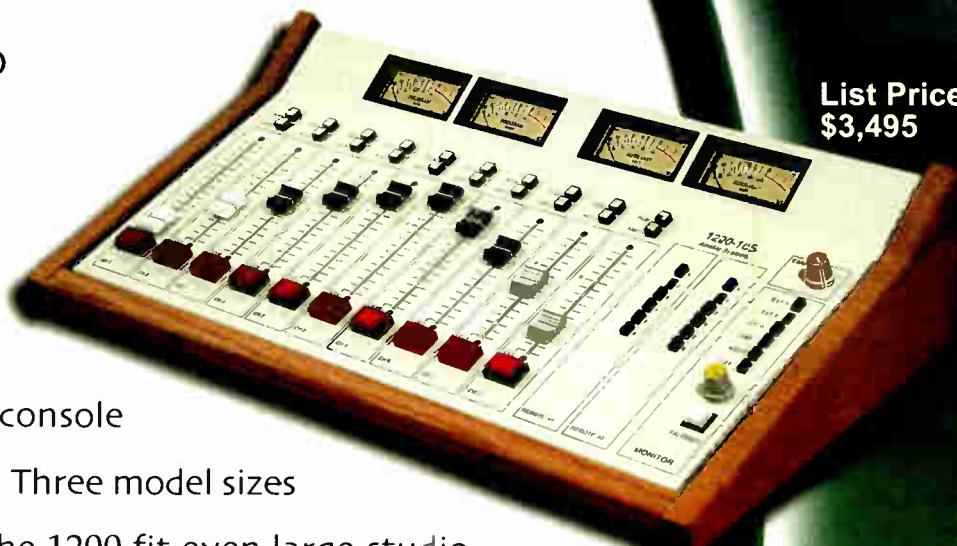
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**OWNER PROFILE**

## NextMedia Group: Diving for Pearls

**Steve Sullivan**

Skip Weller calls them "black pearls. All they need is a little polishing." The president and co-COO of NextMedia Group LLC was referring to the medium and small markets where the company is establishing its reputation.

As of late 2000, the group had acquired 55 stations in 12 markets. The majority of NextMedia's holdings are in markets No. 31 (Milwaukee-Racine, Wis.) to 255 (Decatur, Ill.). The company also owns 11 stations in the Chicago area and at press time was about to acquire two more.

**Deep funding**

The group's first purchase came in August 1999 with the \$15 million acquisition of Rambaldo Communications' four stations in Erie, Pa.

While the Denver-based company targets small markets, its foundation has

been built by some big names in the industry. NextMedia's founders include Weller, who was an executive vice president and regional manager for Chancellor Media Corp., former Chancellor founder Steven Dinetz and the former owner of Omni America, Carl Hirsch.

Weston Presidio, along with Thomas Weisel Capital Partners and Alta Communications, backed that round, worth an estimated \$100 million.

The company has also secured a \$125 million credit facility led by Deutsche Bank and underwritten by Credit Suisse



Skip Weller

**The group has pursued a strategy focusing on smaller markets. The exception: Chicago.**

**Clarification**

"Move It or Lose It: The Texas Way" in the Dec. 20, 2000 issue omitted one owner involved in several of the move-ins mentioned.

Hunt Broadcasting of Colorado owned KNKI(FM) in Sherman, Texas, when it applied to upgrade to Class C. First Broadcasting bought the station after the upgrade had been granted, and built the new facility before selling it to ABC. Hunt was also the licensee of the Class A 101.7 facility in Denison when its upgrade and move were granted.

Paul Reynolds of Reynolds Technical Associates handled the engineering for both Hunt and First, as well as many of the other Dallas-area move-ins.

"Dinetz and Hirsch were very successful operators many years ago and made a lot of money," said analyst Mark O'Brien, vice president for the BIA Financial Network. "Back in the days when these two started operating stations there were limits on how many stations you could own. But the Telecom Act of 1996 transformed radio into a very different business. I'm sure they recognized that. Clearly Wall Street recognizes it, too."

While many startups have found it difficult to secure funding as the market has tightened, NextMedia seems to have earned the confidence of the venture capitalists.

NextMedia launched in July 1999 with a hefty \$30 million contribution from the founders' own pockets. In March 2000, NextMedia closed an initial \$14.5 million round of private equity funding from Weston Presidio Capital. A second round of equity funding closed in August 2000.

First Boston, Lehman Brothers, Salomon Smith Barney and the Union Bank California.

BIA's O'Brien points out that investors' money goes a lot further outside the large markets. "If you go out and raise a hundred million dollars on Wall Street, you can buy a lot more radio stations in the smaller and medium markets. Buying more stations with the same amount of money also lets you spread your risk out across more stations."

**Big vs. small**

But O'Brien also surmises that the smaller market approach may simply be the only way a new company can enter today's radio ownership mix.

"Pretty much the only way to get hold of a decent cluster in major markets is to buy an existing cluster. That's because any desirable properties in the larger markets are already sold to one of the

large radio consolidator companies, and they have no plans to sell."

Even in the smaller markets, Weller concedes that building an attractive cluster can be a challenge.

"There are a lot of companies out there that currently own huge assets, whether it be Clear Channel, Infinity, Citadel or Cumulus. There's not a tremendous amount of inventory out there, but there are still some moms and pops that own stations. Each market is different. We've had 14 different acquisitions, and in most we've created clusters where we've had to put together two companies in a market."

Weller points to Myrtle Beach, S.C., as a case in point.

"We bought Pinnacle, which had four markets. But the assets Pinnacle had in Myrtle Beach weren't necessarily the assets we wanted to end up with. So we also purchased Hirsh Broadcasting (no relation to Carl Hirsch) and took those two companies and melded them together.

"Because that put us over the government's ownership limit, we sold one station to Cumulus and one to a mom-and-pop company in Myrtle Beach. We created what we think to be the best sticks, meaning the best technical facilities, and the best format in Myrtle Beach. In the long term, we'll have a

See NEXT MEDIA, page 38 ►

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# RAB2001 Set for Dallas

**Ken R.**

"Bigger, Better, Stronger, Faster" is the theme of the Radio Advertising Bureau's annual Management and Leadership Conference slated for Feb. 1-4 at the Adam's Mark Hotel in Dallas.

RAB2001 will feature a number of nationally known motivational and business speakers who will address the entire assemblage. There will also be a series of smaller sessions, which will address management, sales, promotion, non-traditional revenue and Internet topics.

"We have special discussion groups planned which will focus on small mar-

ket, Hispanic and advanced learning ideas," said Renee Cassis, director, corporate marketing for Radio Advertising Bureau.

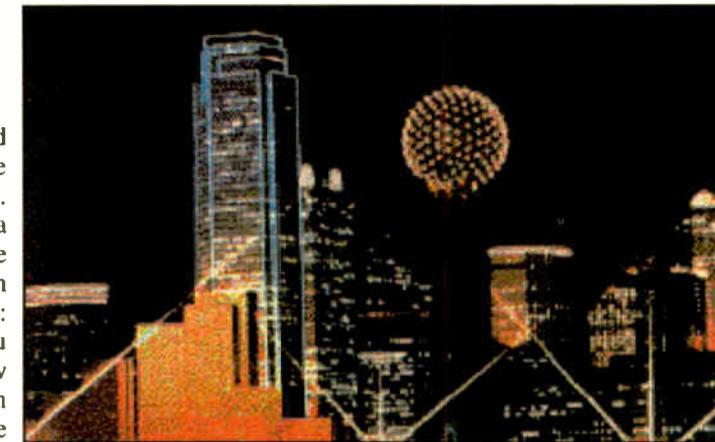
Opening keynote speaker Roger Crawford is a man who has not let physical challenges keep him from achieving success in life. Born without hands and later having one leg amputated, Crawford still became captain of his high school tennis team. He believes that resilience is an important part of moving forward.

"Standing still is a great risk," said Crawford. "Every time I begin to coast I go downhill, and I've never coasted uphill."

When Crawford was crossing the border into the U.S. returning from a trip to Canada, the guard asked him three questions: "Where are you coming from, how long have you been there, and where are you going?"

"These are powerful questions that can provide a lot of answers in your daily life," said Crawford.

Referring to his disabilities, Crawford



Dallas skyline at night

said that people are not always responsible for everything that happens to them.

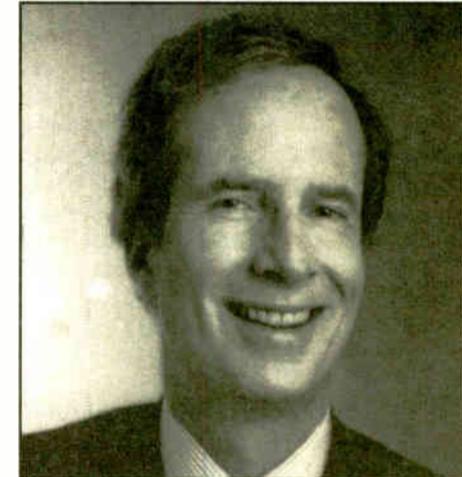
"But they are responsible for their response to those things," said Crawford.

One of the other main speakers will be Mark Feldman, Ph.D., author of "Five Frogs on a Log," a best-selling book on the acceleration of mergers and the attendant gut-wrenching change that follows. Feldman is managing director of Shoreline Pacific Equity Ltd. and has more than 20 years of experience in the field.

## Deadly sins

In his program he will address topics including the seven deadly sins of transition and why job performance deteriorates. Feldman will also expand on his ideas in a workshop following his speech.

Allen Fahden, CEO of Innovation on Demand, is also on the schedule as a speaker at the February conference. Fahden said that the old ways of managing radio simply don't work in the current climate of consolidation.



Allen Fahden

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"If you're a square peg in a round hole, management usually sends you to roundness training, which almost never works," said Fahden. "I will introduce a work model that allows people to access close to 100 percent of their strengths and talents."

The author's concept takes Henry Ford's assembly line one step further. Fahden believes that completing a project is more like running a relay race, and that the characteristics of the various runners are important to success.

"Each task needs creators who come up with the ideas, advancers who set priorities, refiners to serve as devil's advocates, and executors to handle the details," said Fahden. "You have to make sure you get the right people for each slot."

Fahden, like Feldman, is an author. His newest book is called "Hell Is Still Hell, No Matter How Often You Remodel."

See RAB, page 38 ▶

# Take Time to Plan Exec Compensation

## Bill Mann

With more radio managers getting — and giving out — stock options from their parent companies, you may be wondering, what exactly are options? And what's a company stock-purchase plan?

Increasingly, a gold watch to show appreciation for a valuable employee's work just won't cut it. More workers now want equity in the company, and they're getting it.

A recent panel at The NAB Radio Show was designed to let radio execs know how options work, some tax pitfalls to avoid surrounding them, and how stock options are increasingly used as incentives to radio employees.

## Take the time

Not surprisingly, a lot of harried managers today haven't taken time to find out about options and purchase plans — and it could cost them thousands of dollars in taxes and lost future income, according to many sources.

Sam Bush, CFO of Saga Communications, said, "Even some of our top GMs don't understand the nuances of these two, and they handle millions of dollars in billings."

Bush said SPPs are widely used at Saga, "and our employees love them.

## A Primer to Stock-Based Benefits

Here are some basic definitions that will help you to understand the terms common to many stock-based benefits offered to managers:

- Option:** The right given to you by your employer to buy shares of the company at a pre-set price.

- Stock Purchase Plan:** Money spent today to buy your company's stock at a given price, usually discounted from the trading price.

- Grant:** the act of giving employees the right to buy stock options.

- Strike Price:** the price at which you have the right to buy the stock. The Strike Price can be figured two ways: discount or fair market price.

- Exercise Period:** The period of time when you may buy options at the agreed-upon price.

- Vesting:** How long you have to be at the company to have full right to buy an option.

However, the Internal Revenue Service said you can only issue them at 85 percent of the stock's fair market value or otherwise they're taxed as straight income, so be careful."

## National phenomenon

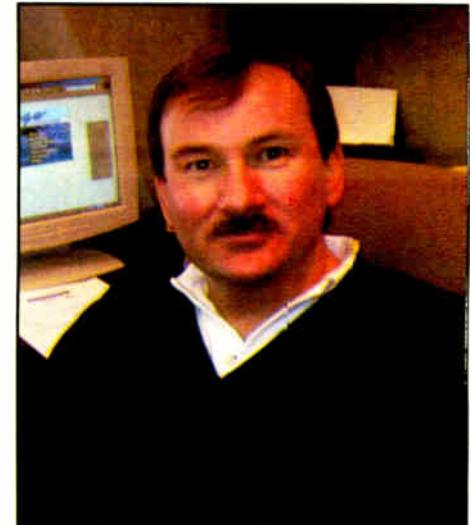
Bush said that giving employees equity in their companies is a fast-growing national phenomenon:

"Employees now own 8.3 percent of corporate equity. Ten years ago, it was only 2 percent. When you give an

of options."

Then there are additional performance awards at Infinity, "which are options not just given to GMs, GSMS and PDs, but to receptionists, clerks, you name it. They can retire from this company with quite a nest egg."

Gehron said these performance options are granted to the company's star performers — "the people we don't want to lose. At the end of the year, we ask all our managers, 'Who are the people who move the needle?'



Sam Bush

ny stock, there may be a time period — typically, six months to a year — that you must hold on to the stock before selling it. And when and if you do sell, all the panelists stressed again, be sure to check out the tax consequences. If you hold stock over a year, it's taxed as a long-term capital gain at a lower, 20-percent rate.

So, if you have them, your company's stock options could be worth a lot. "As an employer who's giving them, you look at the long-term," said Bush. "From December of 1992 to December 1999, Saga's stock produced a 29-percent annual return."

That's a lot better than you'll get at your local bank.

Bill Mann is a San Francisco correspondent for Radio World. 

**We believe in sharing the wealth with key employees by using options.**

— David Field

employee part of the company," said Bush, "they tend to stay longer and be more productive."

There are two types of options, non-qualified and incentive, Bush said. The latter is linked directly to performance. "And with both, if you don't manage options right, it can cost you lots of money in taxes."

## Options

Always check with your tax accountant first, he said, to find out if your options will be taxed as normal income, or at the lower capital-gains rate of 20 percent. Or, they may be tax-deferred in a 401(k).

David Field, a former investment banker who's now COO of Entercom Communications, agreed with Bush that managers should strongly consider giving options to their employees.

"It creates a greater sense of the company."

Field said Entercom ties its options grants to employee performance.

"This is worth potentially a lot of money to our people and we review every employee once a year and award options after the review."

Field said Entercom also weighs how the company did relative to its competitors — "we use that as a benchmark" — in deciding how many options to award company-wide, an incentive to all employees.

"We believe in sharing the wealth with key employees by using options," Field said.

John Gehron, Infinity's senior vice president said of his boss, Mel Karmazin.

"His philosophy is that we use options aggressively to reward performance." Infinity uses both options and stock-purchase plans to increase productivity and profitability.

Gehron said Infinity offers a stock purchase plan through its 401(k) that allows employees to buy discounted company stock, as well as a "Fund the Future" plan which is "the equivalent of 10 percent of every employee's salary given to them in the form

# Radio World

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**Mark Lapidus**

Who is the biggest advertiser on your radio station? You are!

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You probably already know where I'm headed: scheduling, writing and creating promotional announcements become so routine for most programming and marketing departments that they forget what an awesome responsibility it is to be the station's biggest client.

One of the most important tune-ups you can do in the first quarter is to confirm that you're making the most of your promotional inventory and that your creative is on target.

**Scheduling**

Many programmers guess how many announcements it takes to build effective weekly schedules. Do you know how many times you have to air a promotional announcement on your radio station to reach both your 12-plus and target audience?

Grab one of your account executives and have 'em run you a schedule. If you have access to research, you may be able to run this information through your actual Arbitron results and compare this information with what you get back from

your sales buddy.

Even being armed with this information, it takes major willpower to stick to schedules that work. Why? Because you'll often have too much going on at one time.

For another thing, due to the nature of tying clients into promotional announcements, you will have commitments to advertisers that you'll have to include in certain numbers of promos.

**You're the biggest advertiser on your radio station, and you should behave that way.**

As you discuss 2001 and how you might improve your scheduling, try to determine how many announcements you need each week to hit your minimum of three frequency for four different promotional announcements.

Your final consideration should be trafficking announcements. In this

computer age, there are still major-market stations where announcements are logged by hand.

This often stems from not investing in the proper software or from simply engaging your own traffic department to schedule promotional announcements with the rest of the commercials.

The argument that PDs often make for keeping scheduling in a manual system is that it allows for more spontaneity. While there is some truth to this, even with a computerized system you can always "write" something on a printed paper log.

**Writing**

While it's easiest to write promotional copy alone, it also is quite dangerous. Most of us are happy to deceive ourselves into believing we know exactly what our audience thinks is cool, relevant and funny.

Unfortunately, few program and marketing directors have this unique gift. When you write with a partner or group, an open exchange will help you come up with better copy. It's true magic when you develop a group of writers who will fairly critique what the other has just put down on paper and who will laugh out loud when another has hit on a great punch line.

After you've assembled folks with good chemistry, always allow them plenty of time to get it together. Telling this group they've got 20 minutes to write an award-winning promo is not going to get you anything but poor results.

While a team approach is great for writing, it often fails when applied to producing spots. Too much compromise in the production room can be similar to having more than one artist working on a painting; the styles may not match.

Creative services directors should be given the green light to do whatever they feel is best. Saving the work parts of any spot is helpful, though — as last-minute tweaking by a programming or marketing person may be necessary or you may have copy changes.

Creative services directors, especially inexperienced ones, often are bitter about last-minute changes, but it is a frequent occurrence that must be expected.

So who is in charge of promotional inventory, writing and creating? I strongly believe this is a team effort involving program director, marketing director, promotion director, traffic director and creative services director.

Sometimes program directors take it all upon themselves. This stems from a time in radio when these other positions didn't exist and computers were unknown.

You're the biggest advertiser on your own radio station, and you should behave that way.

*Mark Lapidus is president, Lapidus Media. Contact him via e-mail at marklapidus@yahoo.com*

## Radio Had A Stellar Year 2000

Radio revenues for 2000 would exceed \$20 billion, predicted Interep CEO and chairman Ralph Guild.

Guild also reported that for the first nine months of 2000, local and national radio revenue was up 16 percent. Interep's forecast for the end of the year was "approximately in the 15-percent range," Guild said.

The impact of the Internet on the radio industry was a topic under discussion in the "New Beginnings" session at the investment bank UBS Warburg's 28th Annual Media Conference in New York in December.

Guild also pointed out that in spite of the emergence of several emerging media formats that could be directly competitive to radio, the industry has doubled its revenue since 1994.

Drops in dot-com ads have not dampened Guild's enthusiasm for the radio industry's future. He said that despite a nearly 50 percent decline in dot-com spending during the second half of 2000, dot-coms will still place among the top five categories for national radio spending for the period.

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# How to Create Emotion in Radio

**Bill Mann**

Virtually all consumer decisions are based on emotions, not hard facts — and the radio manager who understands listener psychology and emotions will be ahead of the game.

That was the clear message delivered to managers at a recent panel called, "Make Them Laugh, Make Them Cry — How to Create Emotion on the Radio."

Air personalities who draw on personal experiences can also reach deep levels of human emotions. This can achieve bonding with — and forgiveness from — audiences and create fierce listener loyalty.

"The key is understanding the psycholo-

gy of your target, and the being able to strike the right emotional chord," said Michelle Stevens, senior vice president of programming of Nassau Broadcasting Partners in Princeton, N.J., who spoke at the panel during the NAB Radio Show.

"This is something you should constantly be reviewing in your station staff meetings."

#### Classic technique

Creating an emotional experience for the customer may be the greatest brand-building strategy of all. Leveraging the emotional qualities of a brand is the key to creating emotion and bonding the product with the consumer.

Stevens said studies have identified the three levels of branding: First, the functional aspects of the product, which, she noted, "isn't enough to build a competitive advantage"; second, the product's emotional benefits — having the product makes the consumer "feel successful"; and third, the product's self-expression benefits, which makes the consumer take action.

She said the second and third, the emotional segments of the formula, are the determining factors in the vast majority of consumer decisions.

"These three make the consumer perform better, feel successful and prove him/her successful," said Stevens. She added that the formula works for any prod-

uct. She used an example of Harley-Davidson motorcycles to show how human emotions carry the day over the brain.

"While the Harley may perform well compared to its competitors," she said, "the reason almost everyone ultimately buys one is because of the emotional benefits they receive from owning one plus the self-expression it brings."

Stevens quoted trends strategist Scott Talgo: "The brand that captures your mind gains behavior. A brand that captures your heart gains commitment."

Fourteen-time Grammy Award winner David Foster, who's written hit songs for Diana Ross, Barbra Streisand, Michael Jackson, Whitney Houston and Phil Collins, among many others, agrees with Stevens that capturing listeners' emotions is the key to commercial success.

"Even though with one possible exception, I never set out to write a song that's a hit. When I've tried to sit down and write a hit, I've failed."

"In every hit song I've had," Foster said, "there's that one emotional high point, a moment that hits the listener and makes the song a hit. And when the song is performed in public, it's always that moment when the audience applauds."

In other words, it's the emotional moment that makes them take action on their feelings.

Popular, revelatory Dallas morning man Kidd Kraddick of KHKS(FM) said he long ago decided that instead of playing the role of a character on his morning show, he'd open himself up to listeners instead and show his emotional vulnerability.

"I told a story once about how I wet the bed," he said. "It was a humiliating experience for me and very emotional. I couldn't believe the audience feedback."

But to do this kind of emotionally involving radio, he cautioned, "Air personalities have to know themselves as well or better than they know the audience. You must speak with your heart. Believe me, the audience knows when you don't."

Kraddick agreed with Foster.

"The best songs weren't meant to be hits ... they come from within you."

The Dallas DJ recalled one example that caught his heart — and his listeners' — that stands out. "A terminally ill little girl had moved here from Wisconsin, and she wanted to see snow one last time. We had listeners bring in six tons of it and put it in her yard. She weighed only 28 pounds, and I walked her out to her front yard. They'd even put ice in the trees. It was unbelievable moment, not just for her, but also for the audience. I cried for an hour."

Kraddick said he convinced one colleague who'd just been diagnosed with diabetes to talk about it on the air.

"At first, he resisted and wouldn't do it. He thought it was exploitative. I told him it wasn't exploitative to share his life with his listeners, not just selected parts of it."

"You have to go beyond USA Today or what's in the daily papers," Kraddick said. "Get away from those stale, pre-prepared and predictable bits so many jocks today do. We try to come up with bits that reach an audience on a deep emotional level."

"Doing these kind of things, opening yourself up," said Kraddick, "gives you a level of forgiveness you wouldn't otherwise have with your audience. I can mess up or go way over the edge now, and the audience will chalk it up as a mistake in judgment rather than a defining show."

Kraddick said, "You have to give it all up — no matter how humiliating or embarrassing it is. If you do, I guarantee your audience will bond with you."

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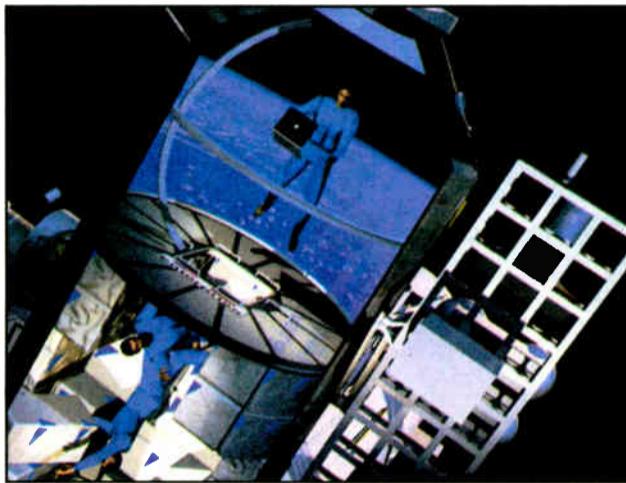
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### 'Hollywood Hamilton's Weekend Top 30'

"Hollywood Hamilton's Weekend Top 30" is a contemporary hit radio countdown show that features the biggest names in CHR, hosted by the former radio pirate-turned radio jock, Hollywood Hamilton.

Recent guests have included Nelly, Janet Jackson, N'Sync, Destiny's Child, Madonna, KC & JoJo and Mya. NBG Radio, which syndicates the show nationwide, said that upcoming guests will include Shaggy, Christina Aguilera Dream and Lil' Bow Wow.

"Hollywood" provides opportunities for affiliate station personalities to interview guests back stage during the show. NBG said that Hamilton is credited for introducing the concept of affiliate interaction to the countdown show format.

Hamilton was just 16 when the FCC closed down his illegal pirate station.

Since then, according to NBG, Hamilton has earned No. 1 ratings across the country as he worked as a jock at WHTZ(FM) in New York, KIIS(FM) in Los Angeles and then back again to New York at WKTU(FM).

NBG signed the "Hollywood Hamilton Weekend Top 30" show last fall to a three-year syndication agreement. The company said that a mainstream version of the show would be introduced early this year as a complement to the current rhythmic version.

For more information contact Ollie Holmes at NBG Radio Networks in Oregon at (800) 572-4624 or via e-mail to [ollie@nbgradio.com](mailto:ollie@nbgradio.com)



Hollywood Hamilton

### Motor Trend Magazine Hits the Air

Motor Trend Magazine has launched two weekend radio programs that will feature mechanic's advice, tips on buying and selling cars, on-location broadcasts from major international auto shows, listener call-ins and interviews with Motor Trend's editors, industry leaders and celebrity drivers.

Allan Taylor, former host of the radio program's "Auto Talk" and "Cruisin' America," will host both of the new programs, "Motor Trend Radio Magazine" and "Motor Trend Weekend."

Talk Radio Network will syndicate the shows, which debuted in November 2000 in more than 100 markets.

Meguiar's, an automotive care products manufacturer, sponsors both shows.

"We are excited to be involved with one of the world's most trusted and widely read automotive publications and to bring its pages to the airwaves," said Barry Meguiar, president and CEO of Meguiar's.

For more information contact Mike Lofrano at Talk Radio Network in Oregon at (541) 474-2297.



(left to right) Lou Mohn, president of Motor Trend Group; Paul Sisia, vice president of marketing for Motor Trend; Alan Taylor, host of 'Motor Trend Radio Magazine' and 'Motor Trend Weekend' and Barry Meguiar, president and CEO of Meguiar's

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BROADCAST & COMMUNICATIONS

# Next Media

► Continued from page 27  
great annuity in those products."

Weller said that NextMedia is selective about the markets it enters.

"A market has to fit our strategy. We want to be in growth markets. We want to be in markets that have cash-flow potential of a minimum of \$1 million. Those are financial dictates that we stay disciplined on. We want to make sure we have the right 'sticks,' or technical facilities, that can make us the No. 1 or No. 2 player in the market."

## Windy City

The one apparent incongruity in NextMedia's treasure chest is Chicago. In July 2000, the company spent more than \$66 million for 11 stations in the nation's No. 3 market. Nine of the stations (six FM, three AM) came from Pride Communications at a cost of nearly \$57 million. NextMedia paid \$9.4 million for one AM and one FM from Marathon Media affiliate Belvidere Broadcasting.

Of its 11 holdings in the Chicago area, only one station — WAIT(FM) — actually operates within the Chicago city limits. The other stations are located in primarily well-to-do and growing suburbs.

"It's an incredible opportunity when you surround a market like Chicago that does more than \$500 million in radio revenues. We're in the suburbs, reaching people who are affluent right where the retail stores are," Weller said.

"If you're Home Depot, where are you going to be? You're going to be in Schaumburg or Joliet or Lake County (Illinois). When you add up the 11 stations we currently have in the Chicago suburban marketplace, we score very high in the Chicago metro Arbitron."

In late December 2000, NextMedia agreed to buy two more suburban Chicago stations, according to published reports: WKD-AM-FM, from Salter Communications. That brings its holdings in the Chicago area to 13.

## \$1 million per market

Weller said all of NextMedia's stations look to grab the usual assortment of advertisers. But he says they also attempt to use their local networks to attract non-traditional advertisers.

"A lot of traditional newspaper advertisers tend to buy bigger ads. We try to get them to use a media mix and still continue to use the traditional advertising tools they use. We show them they can reach more people with more frequency if they use both of those mediums in combination without necessarily spending more dollars. We also emphasize that frequency does work on radio and that it's a 'call-to-action' medium that they can get immediate response to."

The company is anticipating revenues in excess of \$54 million for 2000, which is closely in tune with its "\$1-million-per-market" dictate. More than 85 percent of that will come from its radio operations. The rest comes from its two advertising companies, Gas Station Advertising (GSA) and AJ Indoor. As it continues to mature, however, NextMedia anticipates a larger percentage of its overall revenue will come from its advertising group.

"We expect both lines of business

(radio and advertising) to continue growing," said Chief Financial Officer Sean

15 percent it now represents. However, we will always anticipate radio to be the

looking forward to polishing their black pearls and they're willing to put in the time needed to do so.

"We're in the baby stages of building a big company. But there's a difference between building a big company and building a great company. We want to build a great company that people want to come work for. These are small- and medium-size markets. They're great markets, many of them undervalued. They take time to nurture. You don't get those things turned around in 12 months."

*Steve Sullivan, co-founder of the Advanced Interactive Media Group LLC, lives near Austin, Texas. Reach him at (512) 260-3313 or via e-mail at sullicom@aol.com*

## If you're Home Depot, where are you going to be? ... Schaumburg or Joliet or Lake County.

— Skip Weller

Stover. "But over time we would expect our advertising unit to grow beyond the

largest part of our portfolio."

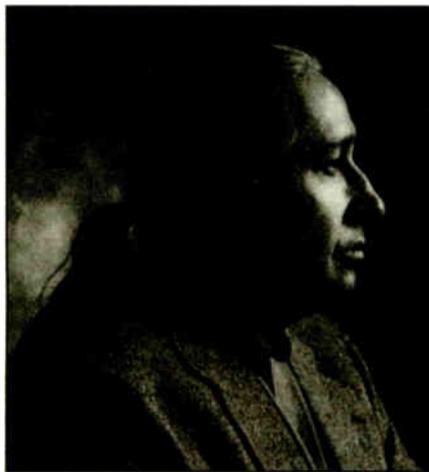
Weller said he and his partners are

# RAB

► Continued from page 28

The RAB is dedicated to helping the radio industry become even more prosperous, and part of that mandate calls for creative thinking. Michael Gelb is an internationally recognized pioneer in that area and will be another of the speakers.

His Washington-based company, High Performance Learning Center, leads seminars for organizations such as AT&T and Xerox.



Abe 'Walking Bear' Sanchez

A former juggler, Gelb will discuss "How to Think Like DaVinci: Seven Steps to Genius Every Day." His speech will cover topics such as managing ambiguity and change, sharpening the senses, systems thinking and whole brain thinking.

After his address, Gelb will participate in the five-hour "Presentation Grad School," which will provide tips on establishing and maintaining rapport with an audience, using fluent body language, transforming fear and nervousness and applying the secrets of the great communicators.

Twenty years ago, Nancy Rosanoff pioneered the study of intuition as a credible and practical field. Since that time she has worked as a consultant in that field and has developed techniques that strengthen the links between thinking and intuition.

At RAB2001, Rosanoff will present two forums on "Intuitive Leadership." Attendees will learn how to improve and access their intuitive power, how to create high performance teams, the best ways to manage effectively, solve problems creatively and how to become a successful sales manager.

Abe "Walking Bear" Sanchez, a

Pueblo descendent, began his career in 1967 as a "repo man." From there he moved up to finance manager, collection agency owner and finally to corporate credit manager for a large distribution company. In 1982 he formed the consulting and training firm known as A/R Management.

Sanchez will address RAB2001 on the topic "Your Hidden Profit Center," and will provide advice on speeding up cash flow, increasing sales and reducing costs in the radio industry. Attendees will also learn his "Process Cycle," which is comprised of vision, policies, procedures and monitoring.

RAB2001 will feature a number of "Learning Tracks" comprised of smaller sessions focusing on specific areas. Sales people can pick up tips on mastering the Palm Pilot and evaluating ratings. Managers can attend seminars on compensation, obtaining national business and electronic data interchange.

Promotion managers can learn more about jingles, building the perfect sales promotion and how to structure presentations.

The non-traditional revenue track will deal with sponsorship of events, pricing station services and the different NTR approaches for different size markets.

There is a group of meetings dealing with Internet for beginners; one devoted entirely to Hispanic radio and other forums designed to teach more about other aspects of the radio industry.

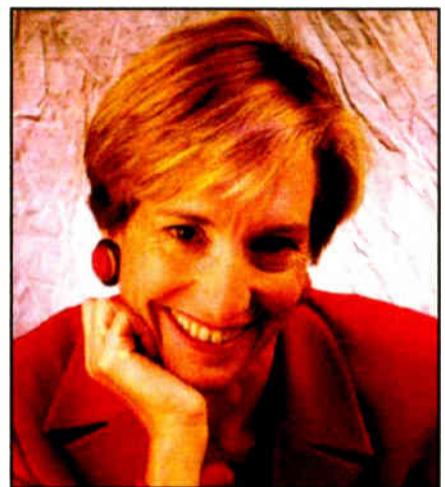
In addition there are a number of specialized workshops dealing with cause-related marketing, treatment of clients, research, streaming and ad insertion, psychology of radio sales and hiring techniques. The full agenda is posted on the RAB Web site listed below.

A number of Net sessions are scheduled, according to Dave Casper, senior vice president, Internet Services. "We have several geared toward general managers and sales managers who have to make a lot of decisions," said Casper.

One of these sessions, "Internet: The Next Wave," will be moderated by Casper and Mike Mahone, executive vice president of Internet Services at RAB. "It's no secret that the Internet had a shaky year, but the fact remains that it is an incredible opportunity for broadcasters to develop new revenue streams and marketing opportunities," said Casper.

"We're going to be talking a lot about the new Internet-enabled portable devices and the conversion to a wireless world."

Other management sessions will be conducted by Jim Taszarek, president of



Nancy Rosanoff

Tazmania and Marijane Milton, vice president of sales and training at Innuity.

In addition to the Internet management sessions, there will be several meetings geared toward nuts and bolts operational issues.

"We have come to the point where we're starting to see what works in the Internet world," said Lindsay Woods Davis, executive vice president of meetings, "and now we have to figure out how to help keep these areas performing."

There will be sessions on Net sponsorships and other forms of advertising, local retail opportunities, streaming and ad insertion, Web technology for the non-tech manager, and even a session on how to program station Web sites.

## Shhhhhh

Last year RAB's silent auction raised more than \$8,400 for the Ronald McDonald House Charities. This year's auction will benefit the Broadcasters' Foundation, which assists families with acute financial needs.

The Roaring Fork Conservancy in Basalt, Colo., a local environmental organization, will also receive a portion of the auction's proceeds.

RAB is requesting donations of goods and services for this year's effort. For each item donated to the auction of at least \$50 in value, the donor's name will be placed in a drawing for prizes including free registration for RAB2002, which will be held in Orlando, Fla.

Donations can be set up by calling Wendy Green, convention marketing coordinator, at (208) 253-4678, in Idaho (Pacific Standard Time). Or send an e-mail to [wendygreen@rab.com](mailto:wendygreen@rab.com). Donations will be accepted until Jan. 15.

To register for RAB2001 call (800) 917-4269, fax (972) 753-6802, or register online at [www.rab.com](http://www.rab.com).

# Studio Sessions

Radio World

Resource for Radio On-Air, Production and Recording

January 17, 2001

## PRODUCT EVALUATION

### Sony Pops New MD in Your Pocket

Paul Kaminski

I needed a backup MiniDisc recorder, and did not have an unlimited budget. So when the Sony MZ-R37SP was offered at a sale price, my interest piqued.

This unit is the lowest-priced field MiniDisc recorder offered by Sony, with a list price of \$179.

I bought mine on sale at a department store for \$170. That was a significant savings over the Sony MZ-R30 I bought more than two years ago for \$349.95 (and which is still working fine).

Though the unit is priced within the replacement budget of almost any broadcast operation, it performs in the manner we have come to know and appreciate.

#### Pocket-sized

The MZ-R37SP is a bit smaller than the MZ-R30, at 4-5/8 inches by 3/4 inches by 3 inches. With two batteries, it weighs 7.8 ounces. The machine is small enough to slip securely and comfortably into a pocket or to hold in one hand while holding a mic in the other.

Supplied accessories include a set of stereo headphones with an 1/8-inch adapter and an optical cable. Other optional accessories include the remote control, nickel metal hydride AA batteries and charger, and a USB interface to transfer audio to or from a workstation with audio editing software.

Some MZ-R37 MDs have these bundled in a package. All the options are available from Sony Parts.

The unit uses 1/8-inch mini stereo unbalanced inputs for mic and line, also for the line output and headphone output.

With my Shure SM-63 omni and Shure SM-77 cardioid mics, I use a Radio Shack 1/8-inch TRS plug with spring strain relief, Belden 1804 StarQuad mic cable and a Switchcraft XLR female connector.

If the connection is wired as an unbalanced connector — XLR Pin 2 wired to tip and ring and the shield for Pin 1 and two white wires for Pin 3 tied together on the sleeve and ground of the mini plug — there would be no hum or other artifacts and no need for a blocking transformer.

The MZ-R37 will also power my "doomsday" backup mic: a 98-cent omni electret mic element shrink-wrapped and connected to an 1/8-inch TRS mini-plug.

With a published audio frequency response of 20 Hz to 20 kHz, this recorder will attune your ears to extraneous noises in a hurry. You will begin to notice things like hum and crackles coming off that multibox, and other little things you never

noticed with a cassette.

Many of my recordings are made at a racetrack — a demanding environment. I do not have lots of time to mess around, so I leave the recording level setting on Automatic mode and have hardly noticed any problems.

If you are recording music, you may wish to set the machine to Manual Record. This cannot be done while in Record mode, so take care of that before engaging the unit to record.

Editing is straightforward with the MZ-R37. As with any MD, edits are made by marking, moving, combining and erasing tracks.

The controls used most frequently are on the front of the machine, including record,

ished an interview. I could not have done this wrap as fast with a cassette machine.

I also use the MZ-R37SP as a source machine in the studio and as a source machine in the field. With male-to-male mini-plug patchcord, I can dub at analog line level to an archive MiniDisc in my MZ-R30 or other machine capable of recording a line level input.

#### Dubbing

From my studio-editing machine, a Sony JE-520, I can also dub to the MZ-R37 SP with the optical digital fiber-optic connector.

With a 10k-ohm line-level output, it is a great candidate for inputs with a Henry Matchbox. If you use a Mackie 1202 or 1402 VLZ mixer, simply turn the pot up to around two o'clock and there is plenty of clean signal to work with.

For \$179, a budget-conscious user can replace cassette machines with a sonically superior, field-proven format that will

How Fast Is Fast?  
Page 42



stop, pause, end search — the button pushed after a recording is finished so the data is not overwritten — fast forward and reverse.

The edit and track mark controls are on the bottom of the case. Once I got accustomed to using them, moving tracks to their final position was done quickly.

The MZ-R37 makes the task of recording a news conference easier. The Auto recording mode pauses and restarts the machine when it detects audio, which saves me time when I'm evaluating and editing later.

This unit allows the user to do some rough editing, such as taking out "and-uhs," pauses of more than a second, which is nearly impossible with a cassette or DAT.

I use the MZ-R37 to cover races and news events as part of my field kit. The unit performs as I had expected.

This recorder does not have all the bells and whistles of the higher-end MD machines, but it gives up nothing in sound quality or utility. I powered the unit with Ray-O-Vac rechargeable alkaline AA cells. I can get about two weekends' worth of recording before I need to recharge batteries.

In 99 of 100 instances, editing and feeding sound back to your studio — faster than your colleague with the cassette recorder — is much better with the MD. That speed and flexibility is crucial when you are on a tight deadline covering a breaking news story.

With this unit, I was able to produce a wrap for a top-of-the-hour CBS Radio newscast in 10 minutes from the time I fin-

#### Product Capsule:

Sony MZ-R37SP MiniDisc

##### Thumbs Up

- ✓ Excellent price
- ✓ Easy editing
- ✓ Small size

##### Thumbs Down

- ✓ Cannot adjust record level while recording
- ✓ Buttons for track mark and edit awkward to use at first

For more information contact Sony in New Jersey at (800) 222-SONY or visit the Web site at [www.sony.com](http://www.sony.com)

enhance the quality and speed of field newsgathering and production. The price lends itself to a quick payback and would be a good purchase for a bottom-line-conscious broadcaster.

Paul Kaminski is the news director for the Motor Sports Radio Network and can be reached via e-mail at [motorsportsradio@compuserve.com](mailto:motorsportsradio@compuserve.com)

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## STUDIO SESSIONS

# Travis Returns to the AES Show

*The L.A. Show Brought Back Excitement, Nostalgia And Sadness Surrounding the Loss of Analog*

## Travis

Years ago, before I decided to become a voice-over professional, I owned a small recording studio. Back then, whenever the Audio Engineering Society put on one of its conventions, I always went to see what was new in the audio industry.

A visit to the convention's technical exhibits was an exciting adventure for anyone in my business. I'd go there and dream of buying the latest tape recorders with more tracks, hot new microphones and some of the new audio processing gear, along with new tools to make my job of recording audio more exciting.

When my studio closed, and I made the decision to make the move to the "other side of the glass," my visits to the AES show became much less frequent. I still had an interest in audio, so I always intended to go, but it seemed that there were always more important matters to attend to.

Even though my own little studio could always use some upgrading — and it's always fun to play with new audio toys — I never had the time to spend an afternoon at the convention until last fall in Los Angeles.

### Afternoon audio fun

Since I had a free afternoon and a free pass, I headed off to see how things had changed since my last visit, more than a decade ago. When I owned my studio, digital recording was just beginning to become accepted.

Even though CDs had become the new standard, almost all recording was on analog tape. Digital recording was just for the "rich guys." At that time, the convention was filled with multitrack analog recorders.

Because my current "mini-studio" is fully digital — with computers, CD recorders, high-speed Internet connections and so on — I feel I am pretty much up-to-speed on current technology.

But this time I felt sad because I saw only two analog reel-to-reel machines at the convention. In addition, I missed the sense of "the more tracks you have, the more important you are," which used to permeate the industry.

Today, of course, one can easily assemble a system with a thousand tracks for under a couple of grand, so nobody was touting track numbers.

I also missed the "small" booths that were operated by small companies. That was where real innovation usually was found.

Many of those small companies have simply been absorbed by larger firms.

In the past, the preponderance of small booths made getting around the convention much easier. I used to start at one end of the show, and work my way up one aisle and down another. The two or three big exhibits by companies such as Ampex and Neve didn't upset the sense of "rows" to navigate. Today, there are so many huge exhibits that I have to take considerable care not to miss a row of exhibits.

One thing I really hoped to experience at the show was hearing the new audio formats.

To my ear, 16-bit 44.1 Hz digital audio has never been quite good enough. When CD audio first appeared on the scene, everyone was impressed by the fact that there was no background tape hiss or wow and flutter.

However, CD audio has a very "harsh" sound — and a good number of people (myself included) sense a real lack of "subtlety" in digital recordings. Some of the underlying nuance seems simply to disappear from a recording.



AEA R44C

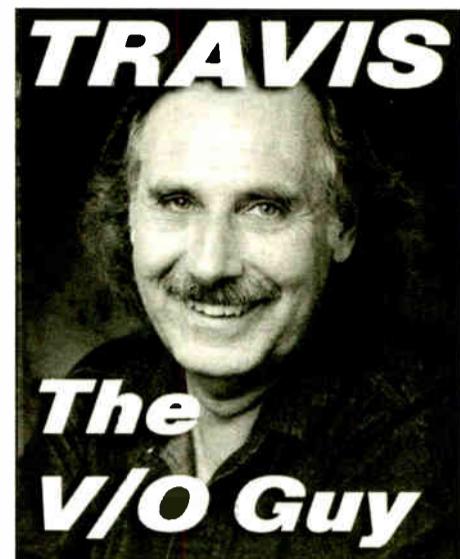
In the studio, in the analog days, I could always tell whether I was listening to sound directly from a microphone, or after it was recorded on tape. Besides the background tape hiss, the recording always sounded richer and fuller, and it exhibited a warmth that felt good to a listener.

Today, though I can't always tell you whether I'm listening to a live or digitally recorded event, I can tell you that there is a real difference in the way a digitally recorded sound feels.

When I listen to a voice-over performer on digital playback, they always sound a bit "meaner" in their delivery than they did in the monitor speakers while we were recording. When mixed with music or sound effects, the result is always harsher-sounding than it was in the analog days.

I find this to be true, even when sent through some of the new "warmth" processing or "tube" amplifiers.

For years, this less-than-ideal sound was blamed on the A-to-D converters and the filters in the digital recording system that are used to digitize the audio. Recording and playback systems now use oversampling and a bunch of



other techniques to reduce the digital sound, with only limited success.

If Marshall McLuhan is right and the medium is the message, one wonders if the harsh sound of 16-bit digital might be responsible for part of the trend toward harsher music, the loss of subtlety in new music and the disappearance of classical music.

After two decades of trying, the folks who create the standards for digital recording have finally decided that, indeed, 16-bit digital might not sound all that great after all, and are promoting some new digital audio formats that are supposed to sound much better.

Unfortunately, I couldn't find any demonstrations available to listen to these new digital audio formats at the show. Sony did have a demonstration of its Super Audio CD, but the show only started once each hour and I was never at the door at the right time.

Dolby was demonstrating its new seven-channel audio system, but they told me that the demo they had was 16-bit, 44.1 kHz — the 24-bit 96 kHz system was not yet ready for the show.

Perhaps next year, I'll get to find out if the new digital audio formats show any promise.

### Crowds on the floor

One demonstration I found exciting was a setup by Cerwin Vega. The company had 16 separate audio channels sent to 16 speakers, each speaker playing a different instrument in a big-band arrangement.

While the company rep could not explain to me any practical reason for this setup, the sound was absolutely superb. Perhaps someday, we'll all have 16- or 32-channel music systems in our homes.

AEA was selling "authentic" re-creations of the old RCA microphones and ran the most crowded exhibit on the floor. They had some recordings and I was amazed at how good they sounded.

I observed another really cool change: blue light-emitting diodes on audio processing equipment.

With my literature bag full of information that I really intend to read someday, I headed back for the parking garage. I'll come back to the show next year.

Travis the V/O guy is a veteran voice-over artist writing from California. Send e-mail to [vo-guy@voice-guy.com](mailto:vo-guy@voice-guy.com) or visit [www.voice-guy.com](http://www.voice-guy.com)

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technology for studio and broadcast production applications, you have a reliable and uniform operating environment ready to deliver superior sound quality using innovative, easy-to-use controls. The DN-C680 features dedicated buttons instead of dual purpose scroll menus, a wide range of connectivity options, easy-adjust output levels, and options like SMPTE — and that's just the beginning. Hear Denon for yourself. After all, the rest of the world has.



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World Radio History

PRODUCT EVALUATION

# Plextor Feeds Need for Speed

*The PlexWriter 12/10/32 Pulls Out All the Stops And Begs the Question: How Fast Can It Go?*

**Read Burgan**

Plextor Corp. has raised the bar several notches with the introduction of the PlexWriter 12/10/32 CD recorder drive in at least four ways.

First, it increased the CD-write speed from 8x to 12x.

Next, it hiked the CD-rewrite speed from 4x to a whopping 10x. Then it boosted the CD-read speed from 20x to 32, and finally it eliminated buffer

under-run errors with new "Burn-Proof" technology.

All of this sounds great on paper, but how does it fly in the real world?

I tested a PlexWriter 12/10/32 E-IDE (ATAPI) internal unit. It came with the necessary mounting hardware: EIDE cable, Adaptec Easy CD Creator and Direct CD software and the Plextor Manager 2000. My kit included CD-ResQ software but the standard retail kit does not. CD-ResQ

can be purchased for an additional \$34.95.

I have reviewed Plextor software in previous articles, so I won't discuss them here except to note that the updated versions have been given a facelift and perform even better than the predecessors.

My first unit did not work properly, recording at a lowly speed of 4x when it actually did record, and often giving various error readings. After consultation with the technical service department, it



seemed likely that the unit had been damaged in shipment.

When the replacement unit was installed, everything worked fine. I was able to copy a 56-minute audio CD in just five minutes and 32 seconds. That is really sailing — a 33 percent increase over my 8x PlexWriter.

The audio quality of the duplicated CD was paramount. I have found that some CDs duplicated at high speed will pop and click on playback, or even mistrack on older or inexpensive CD players.

## Playing the dupe

I tested the completed CD on my \$30 portable and my 1980s-vintage Toshiba player. In each case, the resulting sound matched the original flawlessly.

Next, I took the same audio CD and copied it using a rewriteable CD. Plextor's tech support had told me that if I set the system to "Auto," the software would test the medium and choose the most appropriate speed.

The software lists only the five settings (Auto, 12x, 8x, 4x and 1x) that are applicable to the CD-Write mode — so to get the highest rewrite speed, I selected 12x.

The Plextor DiscDuke utility was smart enough to write at the maximum 10x speed. Total time from the beginning of the burn to the ejection of the CD was six minutes and 43 seconds. For recording on a rewriteable CD, the PlexWriter was really cruising.

When rewriteable CDs first appeared, several problems cropped up that conspired to limit their usefulness: high cost of the media, slow recording speeds and the inability of most audio CD players to play the medium.

With the advent of the 12/10/32, only the latter problem remains and new generations of audio CD players should solve that.

## How much is too much

CD-RW discs that are certified to a speed of 10x may take time to find. Plextor supplied the CDs I used and sells them at the Web site for \$39.50.

I tried "forcing" the unit to record at a speed of 10x using a CD-RW disc certified to 4x, but it would only write at the 4x speed. The software tests the CD-RW media and will not write at a speed faster than its capability.

In the CD-Write mode, I have been able to record media certified for 8x at the 12x speed. The same was true of the earlier 8x PlexWriters; i.e., record discs certified for 4x at the 8x speed.

All of this caused me to wonder

See PLEXWRITER, page 48 ►

# 120,000 Attendees. One Official NAB Show Daily

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Space is limited. Contact Michele Inderrieden at 301-870-9840; fax 301-645-8090; email [minderrieden@imaspub.com](mailto:minderrieden@imaspub.com)

- Ad Space Close: **March 23, 2001**
- Ad Materials Due: **March 29, 2001**

### AM Edition

Published Monday, Tuesday and Wednesday, with distribution at NAB-designated hotel rooms, all AM editions will be distributed by hand and in racks at the Las Vegas Convention Center and the Sands Expo Center. Monday's issue will also be distributed on Saturday and Sunday at McCarran Airport. Every AM edition includes an exhibit map, the latest news, product coverage, exhibitor listings, session schedules and more.

### PM Edition

Published Monday, Tuesday and Wednesday afternoons, the PM edition is the source for up-to-the-minute news, making it a must-read "hot sheet" for the show. The afternoon edition will be distributed at both the Las Vegas Convention Center and the Sands Expo Center.

Reach the crowd that reaches for the only official on-site newspaper —

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## PRODUCT EVALUATION

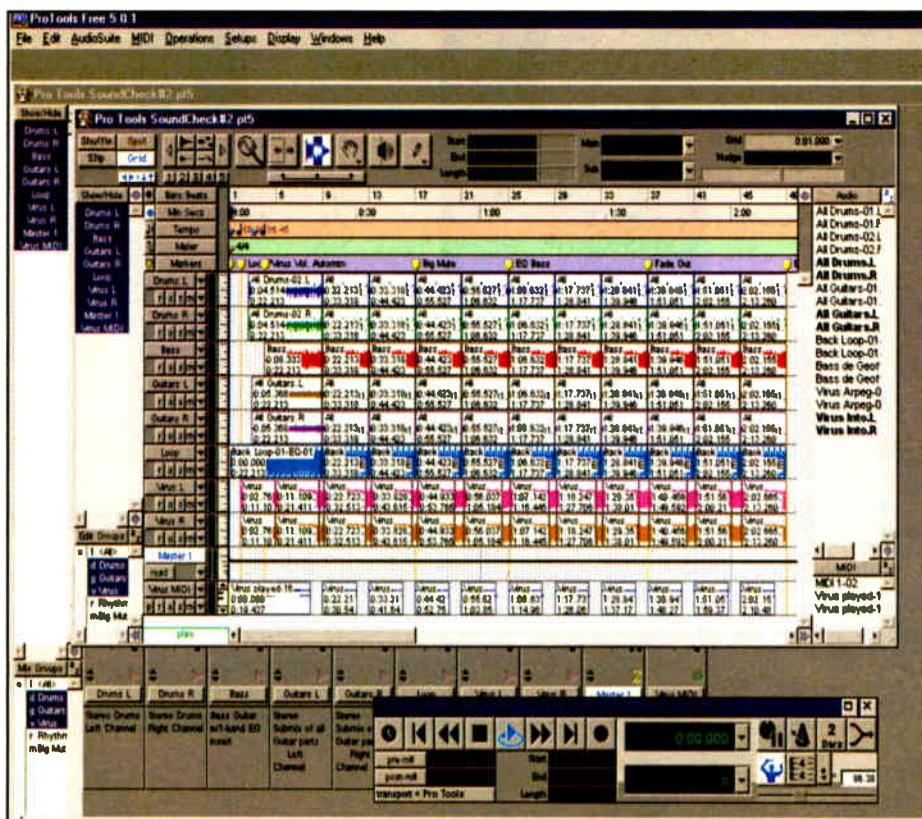
# Digidesign Pro Tools — Free

**Company Releases Limited Free Version of Pro Tools, Lambert Says: 'Just What the Digital Doctor Ordered'**

**Mei Lambert**

We are all too aware of that old adage about there being no such thing as a free lunch. Consider the recent spurge of publicity about Digidesign Pro Tools Free — a fully functional, eight-track version of the firm's industry-dominating digital audio workstation. Normally wary people would think there must be a catch.

Pro Tools Free is a fully functional version of Pro Tools LE 5.0.1, but with some minor restrictions on the number of tracks and inputs the software can handle. Sessions can be set up in 16- or 24-bit mode, with a maximum of eight input sources or eight disk tracks. The program routes audio through 16 subgroups to main left and right stereo outputs, with five auxiliary effects sends and returns.



Windows version

But after several weeks of day-to-day use on both Windows- and Mac OS-based systems, I can report that Pro Tools Free performs as advertised. The software is a unique combination of a powerful recording and editing package at a price that is bound to appeal.

In all seriousness, Pro Tools Free is close to perfect for a wide range of radio-production tasks, ranging from simple mono/stereo editing to an eight-track edit and mix session.

This special version of Pro Tools is available for download via the Internet from [www.digidesign.com/ptfree](http://www.digidesign.com/ptfree) and installs in just a couple of minutes.

The Windows version presents itself as a 10.1 MB self-extracting application. The Mac OS version runs to 14.4 MB plus 3.7 MB for the companion Opcode OMS program that handles 48-channel MIDI interfacing. Brief and extended documentation are available from Digidesign's Web site in Adobe Reader-compatible PDF formats.

My sources tell me that demand for the free version of Pro Tools far exceeded the company's expectations, with almost 25,000 downloads during its first day of availability and a sustained rate of nearly 1,000 downloads per hour. An additional downloadable option, available as a 30-day demo, enables users to create MP3 sound files directly from Pro Tools.

Sessions can run at 44.1 or 48 kHz sampling rates. The Mac/Windows application can only access DSP within the native system processor, which means the software cannot utilize processing horsepower available on external DSP cards. One exception does exist; Pro Tools Free works with the Digidesign Audiomedia III card under Windows 98.

**Demand far exceeded expectations, with almost 25,000 downloads during the first day.**

The program ships with a bunch of dynamics, EQ and delay plug-ins — up to five can be accessed per track — and is compatible with the majority of existing RTAS and AudioSuite plug-ins.

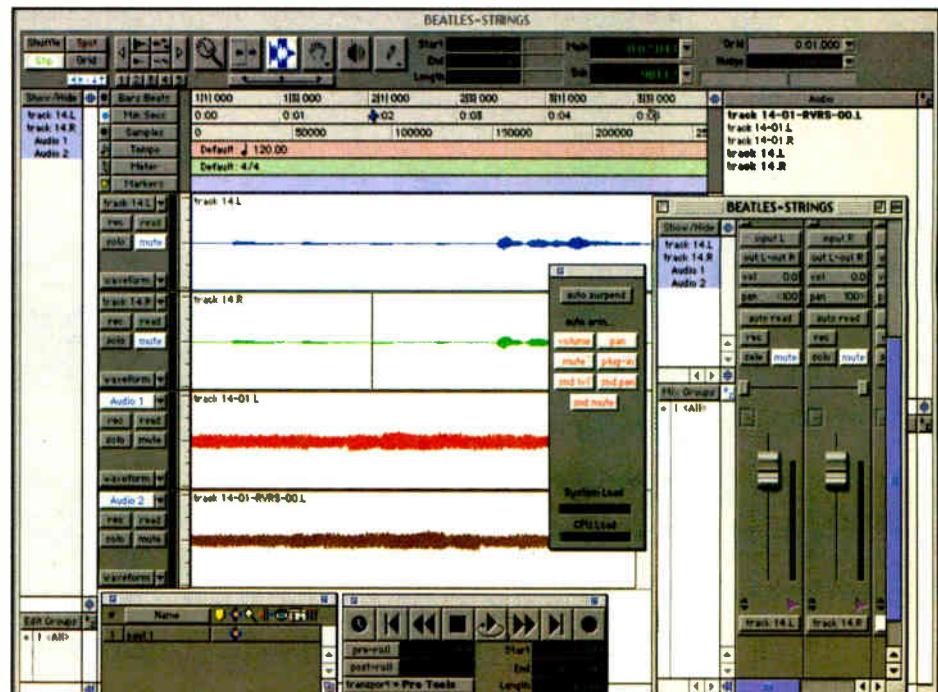
One possibly obvious note of warning: The program overwrites some

existing software components. As a result, installing Pro Tools Free on PCs that have already been configured with other Digidesign hardware systems will make the previous system inoperable. A complete re-installation of the original Pro Tools software is required.

Obviously, what can be achieved in terms of mixing and processing audio tracks depends heavily on the horsepower of the PC. In Mac-speak, Digidesign recommends a Power Macintosh — preferably a G3 or G4 — running under OS 8.6 or 9.0. At least 128 MB RAM is vital; 192 MB is the recommended configuration.

For Windows systems, the company recommends a Pentium III processor running Windows 98SE (second edition) or Windows Me. Again 128 MB RAM is favored; 192 MB recommended.

The system I used was a Sony PVC-E308DS VAIO Digital Studio, which features a 450 MHz PII and 128 MB of RAM. For the Macintosh trials, I have an iMac DV-SE running at 500



Mac version

MHz with 256 MB of RAM.

Both systems feature hard drives with sufficient pipelining capability; even my external FireWire Maxtor 80 GB drives were just about capable of handling eight tracks of simultaneous I/O.

Digidesign recommends use of drives with data transfer rates of 3 MB per second or faster, a spin speed of at least 7,200 rpm and an average seek time of 10 ms or better.

MIDI control is also a breeze, either to sampler or synthesizer modules or MIDI-based control surfaces such as the Mackie HUI, for example.

Pro Tools Free comes with a powerful demo session — SoundCheck 8-Trk, which is an eight-track project with plug-ins and sound files already set up. Just hit the space bar and you are off to the races. This feature is a great way of checking out I/O patching and two-channel monitoring.

While some Windows/Mac OS-compatible computers and sound cards offer digital inputs and outputs, Pro Tools Free does not support them. The PC's analog I/Os can be used or

## Product Capsule: Pro Tools Free

### Thumbs Up

- ✓ Similar interface to current versions of Pro Tools
- ✓ Operates on Windows 98/Me or Mac
- ✓ It's Pro Tools for free!

### Thumbs Down

- ✓ Windows version only compatible with Digidesign Audiomedia III DSP Card
- ✓ Not compatible with Windows 2000 or NT
- ✓ File exchange not supported
- ✓ G4 Cube USB speakers can cause playback difficulties

For more information contact Digidesign in California at (650) 842-7900, fax (650) 842-7999 or visit the Web site at [www.digidesign.com](http://www.digidesign.com)

import digitized data for direct access.

The interface to Pro Tools Free is identical to its more powerful brethren. Tracks can be massaged via the familiar Edit window and mixed/processed via the Mix window. Solo/mute and various modes of fader,

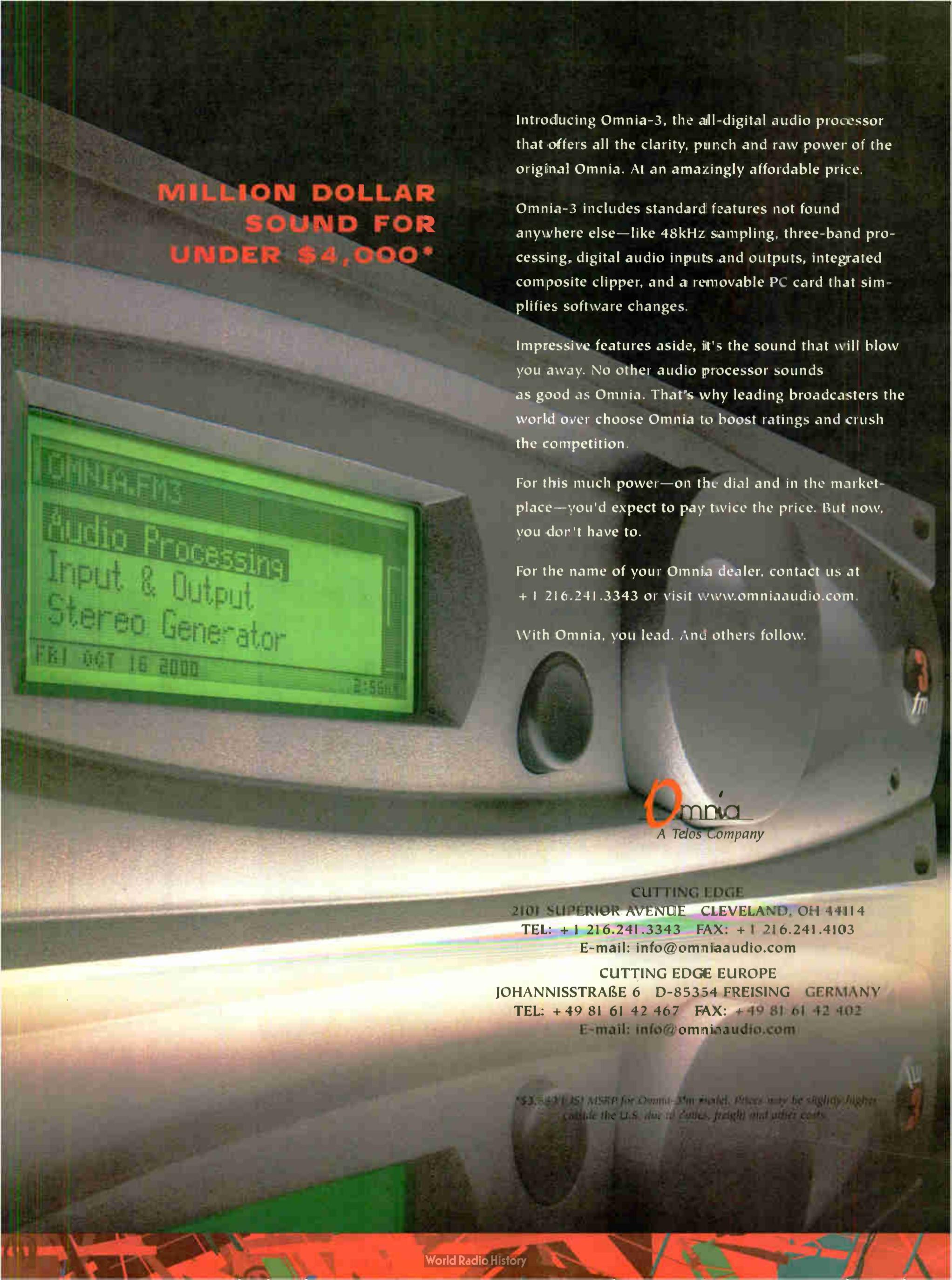
pan insert and switch automation are offered.

Against the advantages of Pro Tools Free are a couple of admittedly minor restrictions. First, cross-platform File Exchange is not supported on this current version, although users can exchange files with Pro Tools LE and TDM sessions from the same platform. Second, Pro Tools is incompatible with Windows NT and 2000, as well as Japanese versions of Windows 98/Me.

Finally, use of USB speakers with Apple's Power Macintosh G4 Cube can cause audio playback problems, so users are advised to connect the speakers to USB ports on the CPU rather than to those on the keyboard.

Space prevents me waxing more lyrical on the power of Pro Tools Free. The software sets a high water mark in terms of ease-of-use and a simple yet extremely powerful user interface.

I am not surprised that Pro Tools has become the standard throughout the music-recording and post-production industries. ■



## MILLION DOLLAR SOUND FOR UNDER \$4,000\*

Introducing Omnia-3, the all-digital audio processor that offers all the clarity, punch and raw power of the original Omnia. At an amazingly affordable price.

Omnia-3 includes standard features not found anywhere else—like 48kHz sampling, three-band processing, digital audio inputs and outputs, integrated composite clipper, and a removable PC card that simplifies software changes.

Impressive features aside, it's the sound that will blow you away. No other audio processor sounds as good as Omnia. That's why leading broadcasters the world over choose Omnia to boost ratings and crush the competition.

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For the name of your Omnia dealer, contact us at +1 216.241.3343 or visit [www.omniaaudio.com](http://www.omniaaudio.com).

With Omnia, you lead. And others follow.



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E-mail: [info@omniaaudio.com](mailto:info@omniaaudio.com)

\*\$3,495 U.S. MSRP for Omnia-3m model. Prices may be slightly higher outside the U.S. due to taxes, freight and other costs.

# ◆ PRODUCT GUIDE ◆

## Products for Radio Air & Production Studios

Mail info and photos to: RW Product Guide, P.O. Box 1214, Falls Church, VA 22041

### Pulizzi Receives Patent

A U.S. patent has been issued to Pulizzi Engineering for the TPC 2562 Series AC Power Distributor.

The product combines a redundant input, under voltage protection and rapid switching between sources. The series was designed for use in critical systems.

The unit accepts two AC power inputs — 120 VAC or 240 VAC at 16 amps — and is designed to protect

against power failure or severe brownout conditions.

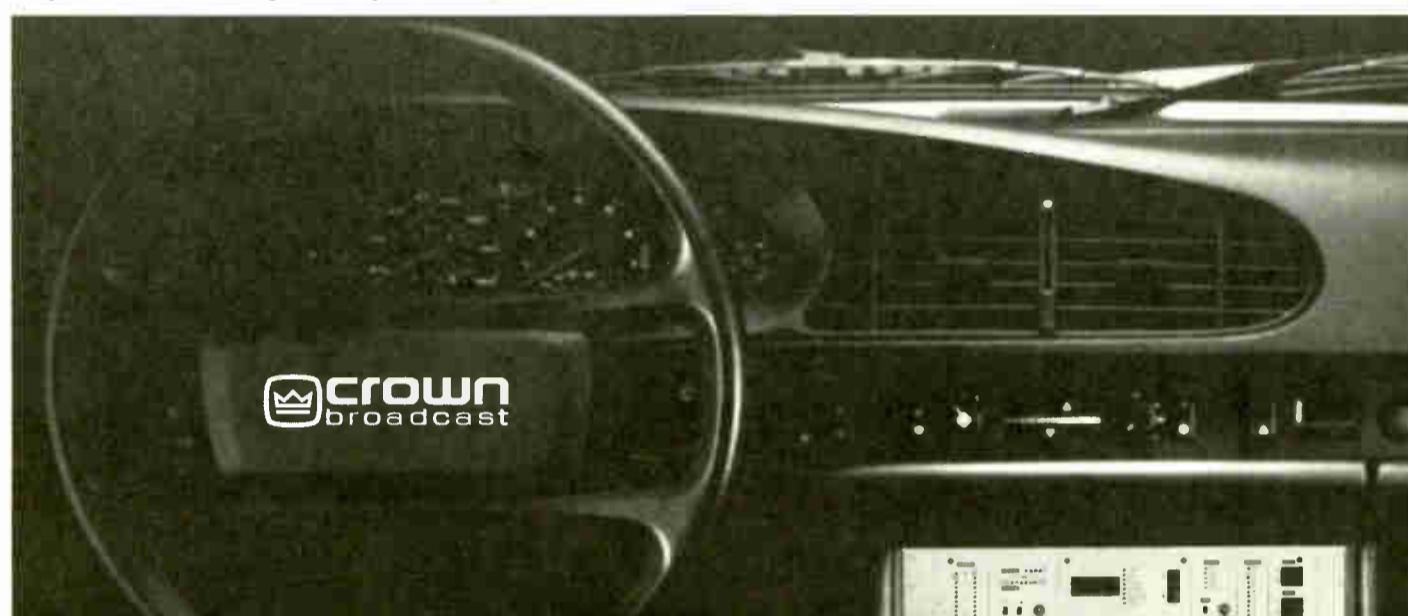
The 2562 monitors the input voltage and automatically switches over to the

secondary power source when the primary one fails and back to the primary when it is back on line. High-speed transfer rate testing has produced an 18 ms ±5 ms source-to-source transfer time.

Power input is through two IEC 60320, C20 power inlets located at the rear of the unit. Both inlets have integrated EMI/RFI protection, allowing noise to be isolated before entering the box. The inputs are equipped with inline fuses and surge protection for additional protection.

The unit is 1 rack unit high, 1 RU wide and 9.5 inches deep and retails for \$700.

For more information contact Pulizzi Engineering Inc. in California at (714) 540-4229, fax (714) 641-9062 or visit the Web site at [www.pulizzi.com](http://www.pulizzi.com)



## Drive this...

Just as a car needs a reliable driver, so does every radio broadcast transmitter. The Crown FM series excitors, drivers and low power transmitters offer reliability unsurpassed throughout the world. Incorporating standard features as an integral part of all power levels, the quality in workmanship standard is consistent for all of Crown Broadcast products.

The exciter/driver model offers high reliability as an RF driver while maintaining the audio purity associated with FM broadcasting today. The internal low pass filter allows the exciter to be placed directly on-air in the event of a main transmitter failure.

Crown transmitters are stand alone low power units and can be configured with optional stereo generator and audio processor. Thousands of broadcasters around the world have come to appreciate the rugged, reliability of the Crown Broadcast line of transmitters.

So when making your decision on a new exciter, RF driver or low power transmitter, reliability should be at the top of your list. Crown Broadcast builds reliable transmitters from 1 watt to 2 kilowatts.

Contact Crown for reliable, efficient broadcast transmitters.

## Get in the driver's seat



P.O. Box 2000 • Elkhart Indiana 46515-2000 • 219-294-8050 • 800-294-8050  
Fax 219-294-8222 • [www.crownbroadcast.com](http://www.crownbroadcast.com)

### Equipto Launches Cabinet Line

The Challenger line of electronic storage cabinets from Equipto Electronics Corp. is designed to let users customize their enclosures. The user can choose from the company's standard parts to create a cabinet that fits their needs.

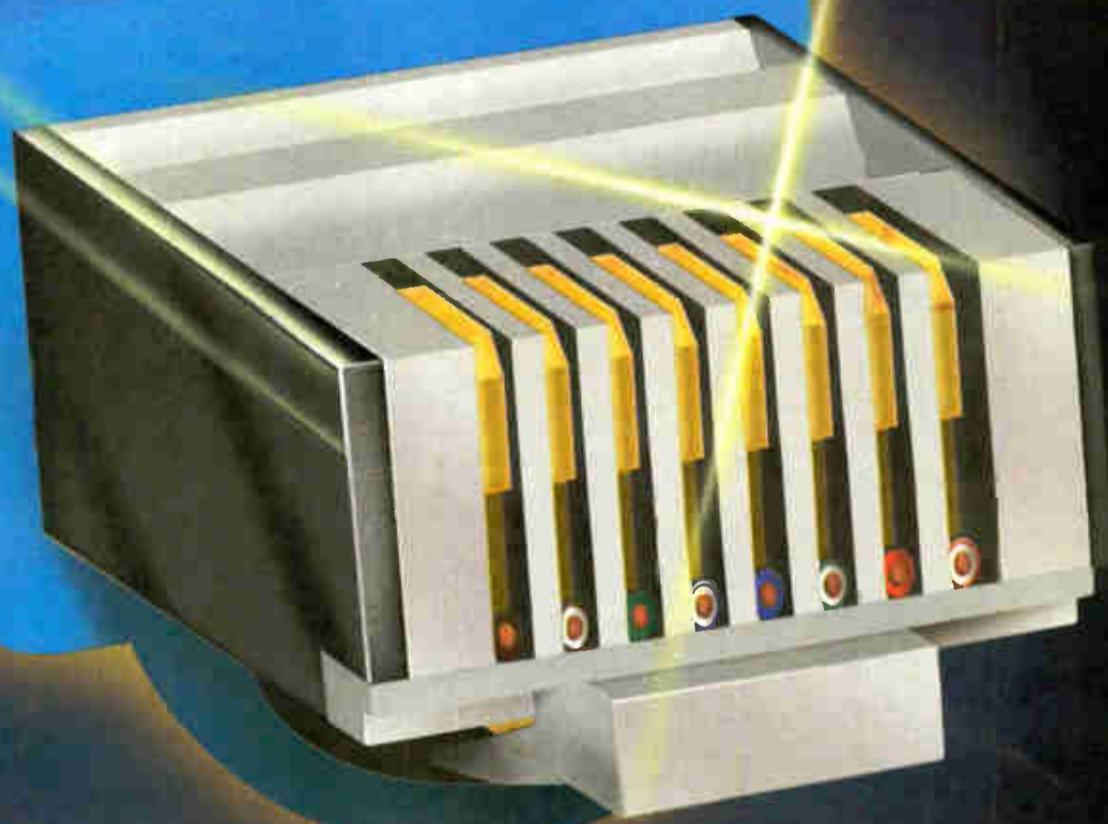


Vertical racks are available in two widths, four depths and 33 heights. Slope-front consoles come in 15-, 30- and 45-degree slopes, double slopes and low-profile configurations.

Among other options, the cabinets are available with a choice of nine trim kits and 132 standard color combinations. Custom colors also are available.

For more information contact Equipto Electronics Corp. in Illinois at (800) 204-RACK, fax (630) 897-5314 or visit the Web site at [www.equip toecl.com](http://www.equip toecl.com)

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# PlexWriter

► Continued from page 42

what is the practical speed limit for burning CDs? So when I had Robert Resovich from the Plexor technical service department on the phone, I posed the question to him.

He indicated that the media itself is the limiting factor and that he sees 16x recording speeds as the probable plateau.

However, he suggested that recording at 20x speed might be possible, but by the time that is reached, he expects today's CD to be replaced by another media, perhaps a form of DVD.

As blank CDs can be purchased for less than 50 cents and the recording

speed is already up to 12x, one can only wonder how long before the lowly audio cassette will be supplanted once and for all. A 12x recording speed is only 25 percent less than that of most high-speed cassette duplicators.

What about the unit's read speed? Adaptec Easy CD-Creator contains system checks. I ran the checks on the 12/10/32 drive to measure its play speeds. The system had an average speed of 1x for small files and an average play speed of 24x for large files. This gives an overall read speed of 14x.

It was also able to digitally extract (rip) files at a 15x speed. That speed is less than the maximum rated read of 32x.

I ran the same tests on two other Plexor products. The older 8/2/20 unit

had an overall read speed of 9x and the UltraPlex Wide rated at 40x max speed had an overall read speed of 18x. Given those figures, the 12/10/32 is right in the ballpark.

## Fire protection

For my money, the most revolutionary feature of the PlexWriter 12/10/32 is the "Burn-Proof" technology.

From the very launch of consumer CD recorders, buffer underrun errors have been their Achilles' heel.

A CD recorder requires a constant flow of data. Unfortunately, hard drive fragmentation, screen savers and other factors often interrupt the flow of data. When that happens, the CD burn is aborted and the disc is ruined.

Plextor's Burn-Proof technology senses when the buffer is running low,

## Product Capsule: PlexWriter

### Thumbs Up

- ✓ Records CD-R and CD-RW at high speeds
- ✓ Reads at a maximum speed of 32x
- ✓ Eliminates buffer underrun errors
- ✓ Includes lots of software

### Thumbs Down

- ↓ No play button on front
- ↓ 10x CD-RW discs may be hard to find

For more information contact  
Plexor Corp. in California at (408)  
980-1838, fax (408) 986-1010 or visit  
the Web site at [www.plexor.com](http://www.plexor.com)

and stops the burn, noting where in the track the burn stopped. It then waits until the buffer is again full and restarts the burn at that point.

It sounds good in theory and works beautifully in practice. I went out of my way to do things no reasonable person would ever do while burning a CD and still couldn't cause the burn to abort.

Using the Adaptec Easy CD Creator software, I set up the system to make a CD of a 300 MB WAV file on one of my hard drives. After starting the burn, I then opened Sound Forge and proceeded to load the 300 MB file into Sound Forge while the PlexWriter was attempting to copy it.

The buffer dropped from 100 percent to 1 percent, but the burn continued. I opened other programs and began using them during the burn without any adverse effect.

For the first time a person can burn a CD without the worry that it will abort three-quarters of the way through by a buffer underrun. This essentially assures that the consumer CD burner is as reliable as a toaster.

Maybe even more reliable, considering some toasters I've owned.

### Software catch

One caveat: The Burn-Proof technology is software-dependent. If you use third-party software, the Burn-Proof feature may not be supported. If you use third-party software to burn CDs, check with the manufacturer to ensure that the PlexWriter 12/10/32 is supported.

Missing from this PlexWriter is the ubiquitous Play button that has become such a familiar feature on previous Plexor products.

The front-panel play button enables you to play an audio CD by simply pressing the button. I use it frequently to play CDs while I do other work on my computer.

As far as I'm concerned, the PlexWriter 12/10/32 is an exceptional CD recorder with features that make it an incredible steal at \$379 for an internal drive and \$479 for an external.

A SCSI version is not available, although a 12/4/32 SCSI version is available for approximately \$325 for an internal unit and \$400 for an external unit.

*Burgan is a free-lance writer and a former public radio station manager who can be reached at (906) 296-0652 or through e-mail at [rgb@bresnanlink.net](mailto:rgb@bresnanlink.net).*

## The future of electronic media is going to be quite a ride.

[Please keep your arms and legs inside the vehicle at all times.]

Hold on to your hat, because the digital technology rules you learned today will be obsolete by morning.

In the future, the simple path from A to B will be filled with plenty of twists and turns. Long uphill climbs.

And gravity-defying descents.

If you're one of the fortunate few, you'll raise your hands in the air screaming, loving every minute of it.

Because you'll know — that in the future, nobody will just coast to success.

Plan today to be on the right track tomorrow.



# Buyer's Guide

Radio World

Internet Audio Streaming Tools

January 17, 2001

NEWS ANALYSIS

## Where the Web Things Are

by Bernie Cox

The word repeated over and over at recent trade shows is Internet. Consider last fall's NAB Radio Show. With the proliferation of new dot-coms at the convention and with established companies offering new Internet solutions, it's a wonder each attendee didn't walk out with a new Terabyte server, contracts with an ISP and a satellite service, and plans to deliver WAP programming to listeners.

However, accompanying all the excitement is a swell of anecdotal concern. At a recent holiday dinner of the Washington, D.C., SBE chapter, casual conversation turned to the Internet. Though interest abounded, two questions recurred: "How are we going to make money streaming broadcast content?" and "Are these companies going to stick around?"

At Radio World, our new *Internet Radio* section and this issue of *Buyer's Guide* are two more tools to aid broadcasters' awareness of emerging changes and trends. Ensuing issues of *Buyer's Guide* will continue to give readers information about Webcasting products that fit into the various topics we cover.

### TECH UPDATE

#### iBeam Delivers Broadcasting to Net

**iBeam Broadcasting** offers streaming media hosting and delivery. The company sends audio and video streams via satellite to the "edge" of the Internet in order to bypass Internet congestion to deliver clear and consistent streams.

The network comprises thousands of servers co-located with ISP and telecom facilities. Today, iBEAM simultaneously delivers 1 million streams and can scale to meet demands for larger audiences.

The company Radio Solution suite combines several services. Encoders are designed for Internet radio; the company installs these in radio stations to deliver the cleanest signal possible. The setup transfers a station's radio signal to the network through a private DSL line.

Then the signal is uplinked to the satellite from its private DSL network to stream audio signals out to users.

The company also has developed proprietary technology to replace radio airwave ads with targeted Internet-only ads. Stations can sell additional ad space at higher cost per 1,000 for targeted Internet transmissions.

iBeam offers ad sales through partnerships with radio ad rep firms, such as Katz and Interop.

In addition, the company has a pay-per-view service, which enables stations to charge access or usage fees for special offerings and features.

Another service, Syndication Manager, offers content distribution so a station can stream its radio and special content at other Web sites, while tracking and managing usage and providing complete billing information.

Stations can participate in Arbitron InfoStream rankings service and iBeam provides Arbitron-compliant logs at no extra charge.

Digital rights management enables stations to sell secure digital downloads — of music, or music videos — from the Web site or syndicated sites while songs are playing.

For more information contact iBeam Broadcasting in California at (408) 523-1650, e-mail [jfiske@ibeam.com](mailto:jfiske@ibeam.com) or visit the Web site at [www.ibeam.com](http://www.ibeam.com)

While compiling this section, we asked companies to chime in with impressions of what is to be expected in this marketplace. These are the companies that will provide broadcasters with elements they need to support and broadcast streaming content, if indeed they survive.

In addition, most of these companies,

coms be around for a little bit and know that they're real," said Scott Farr, president of OMT Technologies, developers of broadcastport.com.

"The interest level is very high. We're getting probably 20 to 30 requests a day. We're seeing a great division right now, it's almost 50/50 — 50 percent radio

**There's a lot of trepidation out there. I think people like to see dot-coms be around for a little bit and know that they're real.**

— Scott Farr, OMT Technologies

like broadcastport.com and RCS, are designed around producing income for Webcasters with elements like streaming ads, banner ads and non-traditional revenue items such as games or e-shopping. Even with all this support, not every broadcaster is banging down the Net door.

"I think that there's a lot of trepidation out there. I think people like to see dot-

broadcast and 50 percent corporate. Everybody has their own unique streaming needs."

So how does a broadcaster figure out what they need?

"Everything Webcasters need already exists. Just a question of really promoting it to users, using everything that is available — ad insertion, e-commerce, digital downloads, etc. — and generally going for it," said John Fiske, director of business planning at iBeam.

"Internet-only radio traffic is going to see slowed growth for the next half year; terrestrial rebroadcasters are going to have an opportunity to develop lasting

brands on the Web."

J. Michael Gregson, director of marketing at Industrial Bandwidth, sees a listener growth opportunity in the workplace.

"Internet radio will provide a new outlet for listeners at work. Up until now, the eight to 10 hours people spend at work were either non-listening hours, or everyone in the office was subjected to listening to a single station. Individuals can tune into the music that they want to hear. This will allow for more targeted advertising."

### Potholes in the superhighway

Amid this potential growth and enthusiasm there have been some dark clouds with licensing and rebroadcasting issues. Will terrestrial radio stations that are broadcasting on the Internet have to pay separate licensing fees? The courts haven't answered the question definitively but this presents a possible barrier to potential broadcasters.

"We're seeing an awful lot of current controversy regarding licensing and rights issues for the RF stream and the Internet stream as being two different licensing issues," said Farr. "We see that as being potentially disruptive over the short term but it cannot and will not damage the consumer demand for streaming media, be it audio or video or whatever new media may come along tomorrow."

"The desire and need for it is growing and there are definitely going to be a few small bumps before we get there. Hopefully the NAB will be able to prove their point because I think radio broadcasters belong out there (on the Internet). It's got to be affordable for them."



BROADCASTING

**Panasonic**  
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Panasonic is known worldwide for engineering high-performance products. Manufacturers rely on Panasonic test and measurement equipment for outstanding reliability, accuracy and performance. In fact, Panasonic equipment is used every day by many of the world's leading audio, electronics and automotive manufacturers.

Panasonic offers a complete line of audio and video testers, radio testers, audio analyzers and signal generators to cover all of your test and measurement needs.

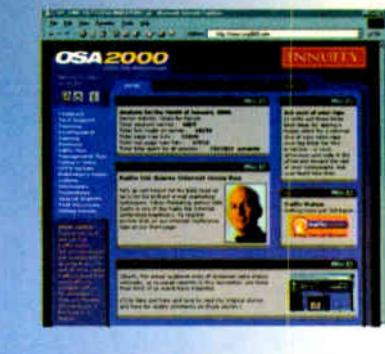
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## BUYER'S GUIDE

## TECH UPDATES

## MP3 Added to Xtrack Audio Suite 4

Digigram has upgraded Xtrack Audio Suite to allow users to import, export and edit MP3 files.

Xtrack 4.0 is able to merge a set of tracks, consisting of any combination of PCM, MPEG Layer I and Layer II, to generate a single MP3 file. Format, sampling frequency and bit rate conversions are executed through the export process.

The software also allows users to convert their MP3 files into a single PCM, Layer I or Layer II file. A wide range of compression is offered, from 8 kbps at 22.05 kHz to 320 kbps at 48 kHz.

Digigram sees this upgrade as a chance for users to create mobile audio workstations and original content audio for the Web and other Internet and intranet applications. The current version is compatible with Digigram laptop audio cards such as the PCXpocket 440.

*For more information contact Digigram Inc. in Virginia at (703) 875-9100, fax (703) 875-9161 or visit the Web site at [www.digigram.com](http://www.digigram.com)*



## CLBN Focuses on Internet Broadcast

On Dec. 14, 2000, Coollink Broadcast Network sold its ISP division, Coollink.com, to EarthLink. The company said it will now focus on Internet broadcast solutions.

The CLBN Internet Broadcast Solution includes an audio/video stream; marketing through interactive and synchronized media ad insertion; DemoTrak real-time demographic and psychographic profiling; delivery of content over a private streaming network; and online back-end tracking, auditing and billing.

*For more information contact Coollink Broadcast Network in Texas at (469) 737-4500 or visit the Web site at [www.cln.com](http://www.cln.com)*

## RealNetworks Fits With Broadcast

The Real Broadcast Network from RealNetworks Inc. features the ability to generate in-stream advertising as well as e-commerce revenues through CD sales.

The network also can verify advertising and traffic numbers through third-party measurement firms. The system offers custom-filtered digital content — local and national news, sports and weather to end-users.

With RBN Radio Business Applications, radio broadcasters are able to provide user presentations within RealPlayer that synchronize song title, artist and album art information and allows for one-click access for the listener to purchase the CD that is playing.

With the partnership with ScreamingMedia, users can access digital content including local and national news, weather and sports reports, from approximately 3,000 publications.

Radio broadcasters can replace on-air audio advertisements with Internet-only audio ads that are linked to a visual image or call to action.

RBN customers will be Arbitron- and Measurecast-ready so streams can be measured by these firms. The RealNetworks Ad Sales force is available to RBN's radio station clients to represent and sell new ad inventory.

In addition, automation system vendors such as Broadcast Electronics, Computer Concepts, Dalet and Scott Studios have announced support for RBN's Radio Business Applications.

*For more information contact Real Networks in Washington state at (206) 674-2700 or visit the Web sites at [www.realnetworks.com](http://www.realnetworks.com) or [www.rbn.com](http://www.rbn.com)*



TM

## SiteShell Offers Stations Shelter

SiteShell Corp. is an Internet Web site network company that licenses updated, customizable sites to local radio stations on a turnkey basis.

The WebSites are locally branded and feature format-specific content packages that include local news, weather, movie and concert listings, feature stories, games and contests. The sites include the company's contextual merchandising system, which presents visitors with opportunities to buy the merchandise featured in the WebSite content.

Through its partnership with Verio, SiteShell provides several Internet products to its station affiliates, which, in turn, stations can offer to visitors. Among the products provided are e-commerce, Web hosting and domain name registration.

*For more information contact SiteShell in Connecticut at (203) 929-9101, fax (203) 929-9442 or visit the Web site at [www.siteshell.com](http://www.siteshell.com)*

**site shell** com  
Home of the BlueDot WebSite Network

## Lightningcast Makes Mark With Ads

Lightningcast Inc. inserts targeted advertising into streaming media. The service allows management of advertising schedules as well as follow-up auditing of the spots once they have aired.



each ad message reaches the desired target.

Techniques for profiling are used to target individuals based on age, gender, geography, radio station and personal music preferences. In addition, audience measurement functions confirm ad delivery by frequency, time and by listener profile information.

*For more information contact Lightningcast Inc. in Virginia at (800) 259-6679 or visit the Web site at [www.lightningcast.com](http://www.lightningcast.com)*

Lightningcast benefits Webcasters and online publishers by providing them with revenue-generating tools. In conjunction with this technology, the company will broker advertising time through its affiliate network on behalf of the Webcaster or online publisher.

Instead of the traditional broadcast approach, the streaming ad technology allows a "narrowcast" approach whereby

## Mediapassage Finds Path to Radio

Mediapassage is an end-to-end system for processing print media transactions. Recently the company merged with broadcastspots.com, an Internet company that facilitates the real-time purchase of broadcast media.

The system offers media buyers and sellers a single source through which transactions can be executed for both electronic and print media. This is done from a user's desktop, without the need for additional hardware or software.

For broadcast transactions, users can send an avail request to every radio and TV station in the country or make a real-time purchase on hundreds of radio stations in various markets coast-to-coast.

Through Mediapassage, buyers can access market and media data, distribute avails or insertion orders, develop media plans, distribute estimates and purchase media in one system.

In addition, with the back-office system, the company handles order confirmation, checking of affidavits and tearsheets, distribution of creative materials, invoicing, reconciliation and payment.

*For more information contact Mediapassage in Illinois at (630) 654-0222, fax (630) 789-0102 or visit the Web site at [www.mediapassage.com](http://www.mediapassage.com)*

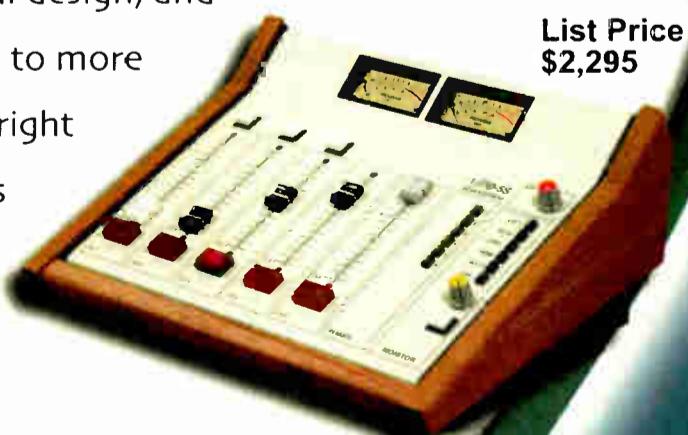
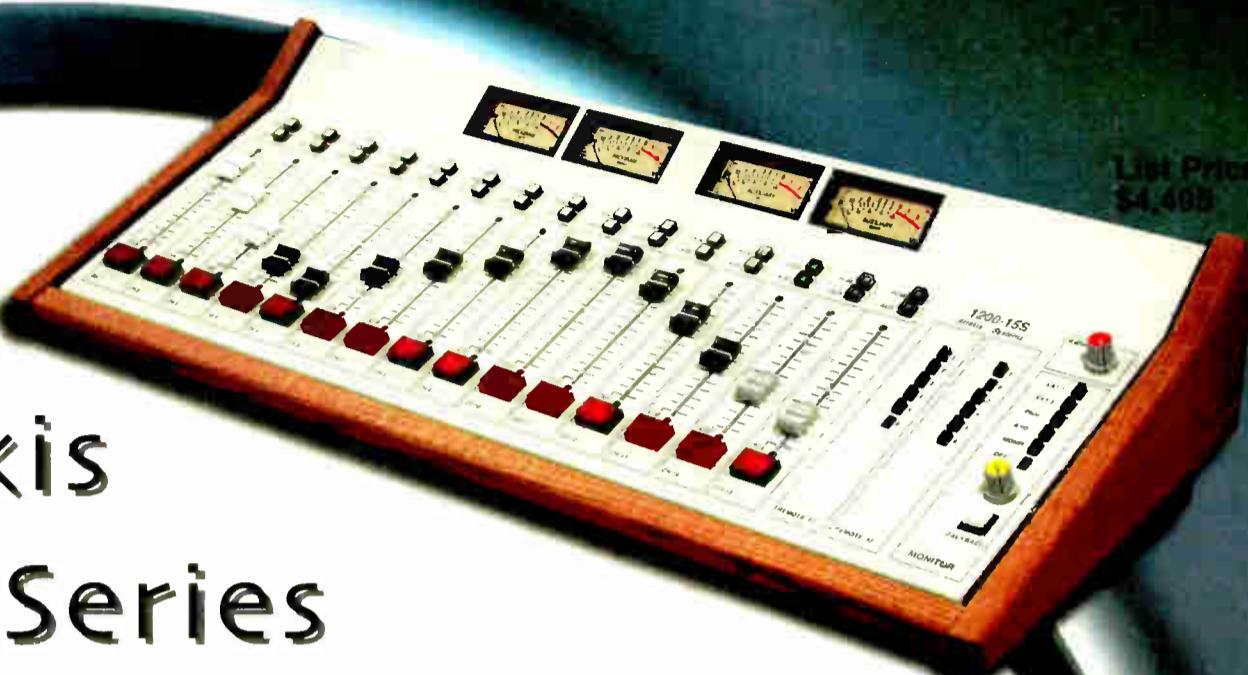


# The Ideal Analog Console . . .

## The Arrakis 1200 Series

- Ideal for On Air, Production, Talk & News
- High Performance Analog Design
- Reliable DC Control of Audio
- Fast & Easy Installation

The Arrakis 1200 Series console is the culmination of more than 20 years of analog console design & manufacture by Arrakis Systems, inc. Three model sizes going all the way up to 15 channels, makes the 1200 fit even large studio applications. The console can be table top or thru-table mounted, and it's low profile is attractive and useful for talk studios. The clamshell design opens to provide quick access to the interior of the console for installation, setup, reconfiguration, or repair. The 1200 is a blend of thoughtful design, and quality components. Better by design due to more than 20 years of experience, the 1200 is the right choice for you . . . as it has been for hundreds of broadcasters around the world.



For more information contact BSW at: (800) 426-8434



## Telos Thinks Out of the Box

The combination of the Omnia-3net audio processor, right, the Audioactive MPEG Realtime Hardware Encoder, below, and GMV Network's AudioEdge server is the Telos Systems answer to streaming for Web.

In this chain, audio is fed first from the program output of the studio console to the Omnia-3net for dynamics processing.

Clark Novak of Telos said, "A huge debate currently rages over the necessity of preprocessing audio for streaming, but there are several advantages to doing so. The desktop listening environment is very volatile, ranging from noisy shared workspaces to quiet doctors' offices to at-home listening."



"Transmission bandwidth is limited, and speakers used for final output are likely to be of dicey quality. In light of these limitations, preprocessing your audio stream to limit the dynamic range of the program material and compensate for the audio effects of bitrate reduction becomes indispensable."



After processing, the audio is converted to an MP3 stream through the Audioactive MPEG Realtime Hardware Encoder. The Audioactive Encoder features a user selectable output bitrate — from 8 kbps to 128 kbps — and a choice of mono or stereo stream from a front-panel menu.

The final step in the Telos streaming chain is the AudioEdge server from GMV Network. This unit is housed in an Internet Service Provider's co-location facility and can be controlled by remote.

The AudioEdge server takes the MP3 stream provided by the Audioactive Encoder and puts it in a digital "wrapper" for playback on a range of software players. Additionally, the AudioEdge server supports up to 1,000 concurrent 28.8 kbps streams.

*For more information contact Telos in Ohio at (216) 241-7225, fax (216) 241-4103 or visit the Web site at [www.telos-systems.com](http://www.telos-systems.com)*

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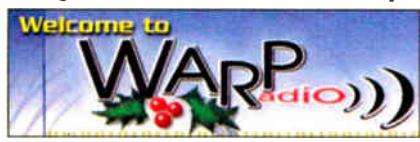
## TECH UPDATES

**Internet Radio Speeds at Warp**

**WarpRadio.com** focuses on the radio broadcast industry and streaming technologies. The founders of the company spent three years researching and developing the radio portal model. The business model is aimed at exchanging minimal advertising inventory for 24-hour seven-day-a-week audio streaming.

The search portal is a central element of WarpRadio.com. The portal hosts an Internet listing of stations in the U.S. The company developed this portal with extensive search capabilities in order for users to find any station in America.

For more information contact WarpRadio.com in Colorado at (303) 799-9118, fax (303) 790-8543 or visit the Web site at [www.warpradio.com](http://www.warpradio.com)

**Broadcastport Opens Door to Internet**

**Broadcastport.com** from OMT Technologies is designed as a turnkey Internet solution for radio or television stations.

The system features live audio and video feeds, a choice of bandwidths, customized player, rotating ad banner system, track titling and album art and Internet ad insertion. The company provides stations with the hardware and software to run a streaming site.

The main system's streaming media distribution system uses Globix's Tier 1 global network. This network features a national 2 Gbps internal distribution backbone with 11 or more 155 Mbps and nine or more 45 Mbps network access points.

Other features of Broadcastport.com include the ability to include an in-studio Web camera, a live chat room, an e-shopping mall and fulfillment services — warehousing and shipping — and Virtual Office services. The company does not require a percentage of any online revenue.

The Virtual Office services allows customers to request appointments, view public events on station calendars, visit personal Web pages and contact management. It allows the station to manage e-mail services, schedule and view appointments, provide ICQ interfaces with instant messaging and manage station expenses.

Broadcastport.com offers game packages, customized music formats for Web-only streams and news and entertainment content. Soon the system will have dial-up and xDSL Internet access service.

For information contact Broadcastport.com in Manitoba, Canada at (888) 665-0501, fax (204) 786-3994 or visit [www.broadcastport.com](http://www.broadcastport.com)

**Listeners? Measurecast Finds Out**

**MeasureCast** develops streaming audience measurement solutions for Internet broadcasters, advertisers and media buyers. The Streaming Audience Measurement Service provides customers with next-day reports on audience size and demographics.

Recently Real Broadcast Network (RBN), the Webcast hosting solutions division of RealNetworks Inc., agreed to deploy the measurement service on its network servers. In addition, the companies have agreed to conduct joint marketing programs designed to promote and grow streaming media markets.

MeasureCast employs Active Event Monitoring, a server-side technology that records the exact number of streams requested from an Internet broadcaster's streaming server. This technology is tailored for streaming media and is designed to provide accurate, tamper-proof and up-to-date audience size and usage information. Initial reports are tailored for Internet-radio broadcasts.

For more information contact MeasureCast Inc. in Oregon at (503) 241-1469, fax (503) 241-0243 or visit the Web site at [www.measurecast.com](http://www.measurecast.com)

**MediaBox Tunes in Streaming**

The MediaBox from **Ituner Networks** is a server/encoder system that allows broadcasters and other users to encode and stream live and on-demand video and audio over the Internet.

The unit can stream RealAudio, RealVideo, RealMedia G2 (RSTP) and Live MP3 from XingTech. Multiple live encoders, multiple streaming platforms and a well-tuned Web Server constitute the system and can handle up to three simultaneous audio and video sources.

The MediaBox can schedule encoding and archiving tasks automatically using MediaBoxCron, a scheduling system designed for Internet broadcasters.

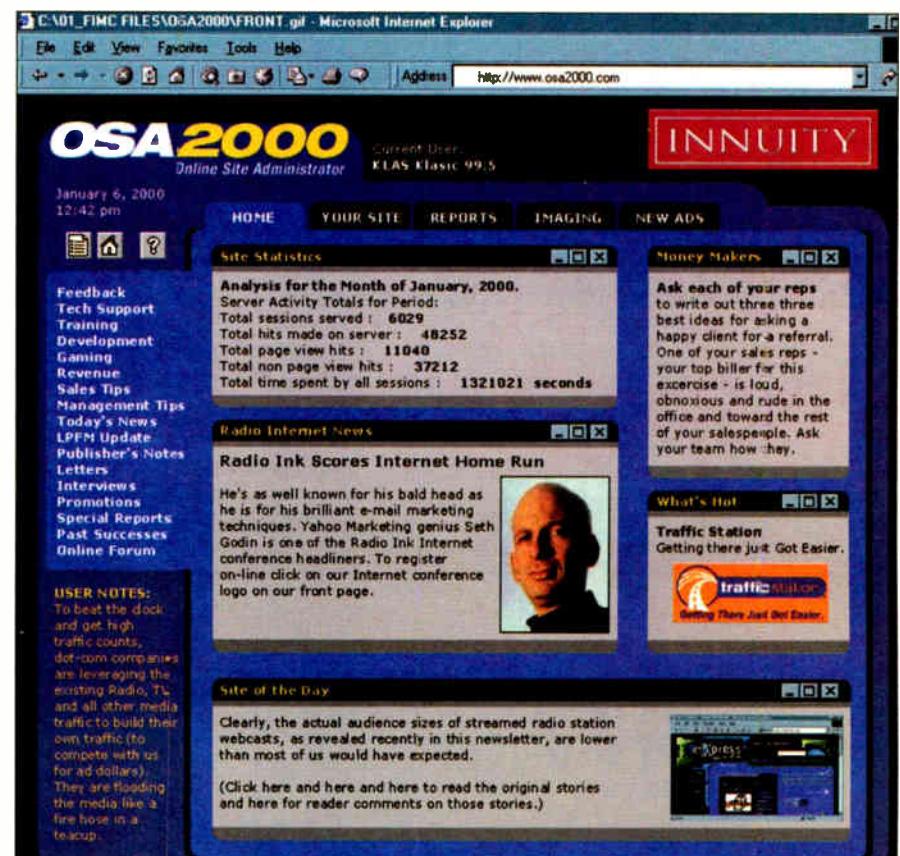
The entire system is based on the RedHat Linux OS.

For more information contact Ituner Networks Corp. in California at (800) 97-TUNER, fax (510) 795-8855 or visit [www.ituner.com](http://www.ituner.com)

**Innuity Manages Station Sites**

**Innuity** provides Web sites and Web products aimed at generating revenue and enhancing ratings. The network includes 1,500 stations worldwide.

The company's range of products for radio is designed to minimize the technical and hardware requirements of hosting and updating revenue-generating sites. All sites are hosted in data centers at server farms and clusters to ensure service while minimizing the likelihood of any loss of service.



The OSA (Online Site Administrator) tool for site administration/updating is browser-based, which allows stations to administer their sites with minimal investments in hardware and software.

The current version, OSA2000, features the ability to insert station events, local news stories, surveys and playlists. Users can create advertiser features like coupons, sponsorships and advertiser Web sites.

Stations can add Web pages, including pages for DJs, contests and events and create online photo albums of concerts, events, artists and staff.

In addition, customers can create, host, service and provide billing data for Internet advertising and provide secure access to advertisers for updating ads. The OSA can also generate detailed statistical reports about site traffic.

For information contact Innuity, Media Services Division, in California at (949) 369-5900, fax (949) 369-5909 or visit [www.innuity.com/radio](http://www.innuity.com/radio)

**BroadStream Tracks Station Viewers**

**BroadStream** is a streaming measurement company providing near real-time metrics for Internet traffic.

The company offers ViewerSide Metrics, a patent-pending tool for tracking streaming content. The system's approach is designed to incorporate each viewer's actual experience. The results are offered in three report formats.

According to Jupiter Research, the streaming media market is expected to reach \$2.5 billion by 2004. More than 36 percent of those now online use streaming media.

The company's reporting system includes two other elements.

The Media Sensor detects real-time viewer activity within streaming media, relaying this data to the Fusion Center.

The Fusion Center is the BroadStream reporting interface, which organizes information gathered by the Media Sensor. The center allows clients to continuously manage their streaming files.

The system provides 40 key metrics in near real-time reports: simultaneous users, user connection speed, streaming quality, total bandwidth usage, average viewing time and content popularity ranking.

For more information contact BroadStream in California at (888) 527-1997, e-mail [info@broadstreet.com](mailto:info@broadstreet.com) or visit the Web site at [www.broadstream.com](http://www.broadstream.com)



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## TECH UPDATES

**Stations Acquire Streams Via IB**

StreamAcquire from Industrial Bandwidth streams audio and video over the Internet through the IB private network to a Content Delivery Network, or CDN.

The company developed this service and its private network with partners GMV Network and DSLnetworks.

IB said it designed the system for content providers and CDNs looking to acquire signal sources for Internet radio and video broadcast. A private "non-Internet" path delivers a signal which duplicates the original broadcast to a distribution point.

Signal quality results from providing a separate network for content producers to deliver a signal or for CDNs to acquire a signal.

Traditionally, CDNs have acquired signal sources from content producers over expensive frame relay links and have had to deal with numerous vendors in the installation and service of the circuit. In addition, the company says, frame relay is subject to inherent congestion and packet loss.

IB says StreamAcquire solves this by giving content providers and CDN operations personnel one point of contact for the installation and service, and a private network for the delivery of streaming audio and video.

The company offers signal acquisition, service and customer management through a private network "designed to guarantee signal integrity." Created for moving streaming media from content owner to CDN, the system backbone does not carry Internet traffic.

The hardware, software and monitoring tools used are proprietary implementations designed for moving streaming media and developed in conjunction with GMV Network.

*For more information contact Industrial Bandwidth in California at (619) 563-1551 or visit the Web site at [www.industrialbandwidth.com](http://www.industrialbandwidth.com)*

**NET-36 Takes Internet Aloft**

NET-36 provides a satellite-based Entertainment Distribution Network.

The company, a subsidiary of PanAmSat, is an Internet broadcast network designed to deliver Internet through a satellite-to-edge hybrid network that bypasses up to 95 percent of Internet congestion points.

The system is designed for content providers to broadcast digital and streaming media to DSL providers, cable headends, ISPs and broadband wireless providers worldwide.

Excite@home has partnered with NET-36 to provide Excite@home's high-speed Internet subscriber with streaming content.

*For more information contact NET-36 in Connecticut at (203) 622-6664 or visit the Web site at [www.net-36.com](http://www.net-36.com)*

**DirectAir Turnkey for i-Radio**

DirectAir is a turnkey approach for Internet radio broadcasters.

The company handles station integration, national sales, scheduling, billing, collections and payment to stations. The intelligent Neural-Net-based commercial insertion projects an advertising rate average of \$180 cpm.



The Web-based order entry system allows new insertion orders to air within minutes. The commercial filter enables targeting while addressing listener privacy issues. The system offers an independently audited commercial delivery and audience measurement system to secure advertiser confidence as well as audience measurement and listening reports.

In addition, listeners can rate songs, commercials and other elements while streaming. DirectAir provides each station with a custom Interactive Player with station logo, graphics and turnkey e-commerce.

*For more information contact DirectAir Inc. in Texas at (512) 335-6609, fax (512) 335-6306 or visit the Web site at [www.directair.ws](http://www.directair.ws)*

**Access Provides Path to Internet**

Access Broadcasting offers ad and revenue management Internet services for broadcasters to expand station Web sites and take revenue from newspaper and print competition. The company said they are designed to create additional income from local and regional clients, while building cume and TSL.

The products help stations offer services most requested by listeners responding to Arbitron Internet studies. In these surveys, listeners emphasized the desire for localized information as well as discounts and deals from local advertisers.



The pricing for services are on an affordable flat-fee basis that is scalable with stations regardless of market size. Each tool can be used to share and manage information and revenue by a single station, a cluster of stations in a single market or within an entire multi-market group.

Other products include the News-Information-Events Management System with Ad Banner Tools, which allows stations through a single Web-based tool to post contests, news, promotions, events and sponsorship banner ads.

Local Business Directory and Online Coupons can build a directory or online mall that creates a local business directory by categories, single-page Web ads, associated coupons and discounts from local advertisers.

Access Broadcasting also offers Loyal Listener Management-Classifieds-Personals services. The integrated package allows stations to build and manage a P-1/P-2 loyal listener e-mail database, request marketing e-mail sponsorships and station communication with listeners for contests and promotions.

In addition, the station receives online classifieds/personals with revenue sharing on credit card ad placement. Trivia and survey tools are available when combined with News/Info package.

*For more information contact Access Broadcasting in Oregon at (541) 431-0036 or visit [www.accessbroadcasting.com](http://www.accessbroadcasting.com)*

**RCS Rides Stream With Direct Ads**

RCS — partnered with software and Internet companies Activate and Engage — has developed two software products that enable broadcasters to insert targeted advertising into Internet audio streams.

InSert and SplitStream automatically switch away from a commercial or promotional spot and insert alternate material in its place.

InSert is intended for replacing one broadcast signal or stream with another prior to the audio encoder. The replacement occurs when "covering" a terrestrial station's local commercials with a separate feed more suited for the Internet. SplitStream, conversely, can send different ads to individual listeners simultaneously.

SplitStream Dynamic Live Ad Insertion software is based on Windows Media Player. The software identifies when a live upcoming commercial break occurs and alerts the Player to get ready to insert an ad for the Web at the break. The Player responds to the notification by requesting an ad from Engage AdManager.

AdManager decides which ad to insert for the particular listener and tells Media Player the name of the ad and where to find it on the Activate streaming media network. The ad is requested from the Activate network and is pre-buffered prior to the actual insertion time.

Either ad insertion system can be combined with RCS RadioShow. This system is an Internet audio player and graphic synchronizer, which can be "branded" by the content provider.

*For more information contact RCS in New York at (914) 428-4600, fax (914) 428-5922 or visit the Web site at [www.rcsworks.com](http://www.rcsworks.com)*

# Radio World

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UREI dual graphic EQ, 10 band, excel cond, \$295. Dennis Scott, 615-309-8688 or [ds.music@home.com](mailto:ds.music@home.com).

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Yamaha BP-2 bass generator & pedals, schematic/literature. Would prefer electronics but schematic needed. Bob Meuse, Muse Audio Arts, 191 E El Camino Real #209, Mtn View CA 94040. 650-969-2433.

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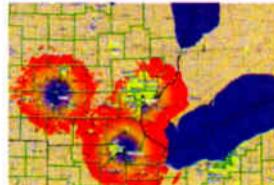
Collins 212-F1, extra modules & remote portable model 12Z, tube type. Bob Zellmer, New Directions Media, POB 2224, Greeley CO 80632. 970-353-6522.

Shure M267 pro portable mic mixer w/limiter, 4 input, \$385. Mark Larsen, KBQR, POB 20335, Piedmont CA 94620. 510-465-6035.

Tube type models for Collins 212 consoles. Bob Zellmer, New Directions Media, POB 2224, Greeley CO 80632. 970-353-6522.

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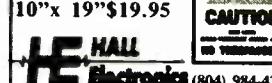
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## ACTION-GRAM

### 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:

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Brief Description: \_\_\_\_\_

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\*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

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Distributor Directory	\$120	115	110	105
Professional Card	\$90	85	80	75
Station/Studio Services	\$175			
Classified Line Ad	\$2/word			
Blind Box Ad	\$15 additional			

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54	Allied	<a href="http://www.ocwhite.com">www.ocwhite.com</a>
35	Aphex Systems	<a href="http://www.aphex.com">www.aphex.com</a>
20	Armstrong Transmitters	<a href="http://www.armstrongtx.com">www.armstrongtx.com</a>
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26	Arrakis Systems	<a href="http://www.arrakis-systems.com">www.arrakis-systems.com</a>
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**OPINION****◆ READER'S FORUM ◆****Live remotes**

Dear RW,

I enjoyed the Mark Lapidus article "Let's Bring Back Live Remotes" (Nov. 22, 2000).

I have enclosed photos one of my first remotes in 1948 at WFMD(AM) Fredrick, Md., at the age of 15, and later, in 1975, at Universal Studios in Hollywood while at KMPG(AM).

As a DJ, I've done remotes from a U.S. Navy submarine at sea, and a 747 in flight to Hawaii, just to name a few.

Roger Carroll  
CEO

*Best Sounds In Town Inc.  
Long Beach, Calif.*

**Thanks for the coverage**

Dear RW,

Thanks for putting my story in front of a national audience ("Shortwave for the Blind in Peril," Oct. 11, 2000).

The article couldn't have been run at a better time. The Dane County Circuit Court seems bent on making an example of me as a "troublemaker." In this venue, "troublemaker" is legal language for a

victim who knows his rights. Dirty tricks and gross unfairness will be a little more difficult to perpetrate from this point on with your readership watching.

Stimulated by the article, old and new friends are already calling in to offer support. If you receive any calls, it might be best to first refer folks to my Web site, WISCLEAN, For an Ethical Wisconsin ([www.wisclean.org](http://www.wisclean.org)).

I have placed much of the background

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**Radio's Soft Landing**

Look for commercial radio to continue on a healthy, but less dramatic, growth curve this year.

If RAB President and CEO Gary Fries is correct, the industry will see sales grow by 7.5 to 8 percent in 2001, after an estimated 13 percent jump in 2000.

If that's a "soft landing," we'll take it.

Fries, whose association convenes in Dallas in a couple of weeks, said the coming year will tell a lot about how groups will pursue growth.

"While 2000 was largely consumed with major consolidation issues, 2001 will be the first full year where the new organization of ownership will truly take effect," he said in an RAB statement.

"Now we will see the operators who elected to remain independent stepping up their marketing effort to increase their position in the marketplace, resulting in new initiatives to increase revenue streams in the local market arena."

Another enthusiastic voice is that of Intercom CEO and Chairman Ralph Guild, who, as 2000 was drawing to a close, said radio revenues for the year would exceed \$20 billion. Despite competition from new media, he said, the industry has doubled its revenue since 1994.

Can that performance be maintained? Fries argues that even during times of advertising slowdowns, radio traditionally produces strong revenue months.

Some national sponsors are employing a wait-and-see approach before implementing spending plans, he said, but "indications are that radio will continue to be a major part of their strategy."

Fries is ever the optimist, but radio's performance has vindicated him. The medium blew the bindings off prior record books in recent quarters, especially in the first half of last year. True, that was driven in part by all that dot-com business we enjoyed before the technology sector started to tank, and that surge isn't likely to be repeated on such a scale.

But if Fries is right and radio can continue to post reasonably healthy growth — what he calls "a more realistic figure" — despite upheaval among the dot-coms and general questions about the economy, ol' reliable radio will once again prove the value of its place in the ad mix and its durability within a rapidly changing communications universe.

We're betting on it.

—RW

and evidence of the case on those pages. I have found that if people look at the documents first, the issues of the case become crystal clear.

Once again, Radio World represents not only unlimited power to educate and entertain; it has the potential to bring us together in times of peril. What is happening here at our Wisconsin transmitter site is a dangerous precedent for all broadcasters. In radio-electronics terms, information is our only circuit breaker in the face of an overload of injustice. Radio World is quite literally our industry's "Fourth Estate."

Mike Dorrough  
Madison, Wis.

and chief engineer of a small noncommercial radio station, WFRS 88.9 FM, and I love it.

I wish I had the money to own my own station, but my employer, being nonprofit, doesn't pay much. I can see how much fun it is to have your own radio station in your basement (ATR 1170). Just being on the air is the thing.

Keep up the good work with your articles, and enjoy your basement station.

Bruce W. Clark  
Operations Manager/Chief Engineer  
WFRS(FM)  
Islandia, N.Y.

**Write to Us**

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READER'S FORUM**

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World Radio History

# *THE WHEATSTONE D-5000*

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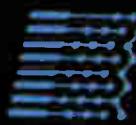
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