

*****AUTO**3-DIGIT 857
S101903 D08 0204
BARRY MISHKIND 700
2033 S AUGUSTA PL
TUCSON AZ 85710 7905

From the Ground Up

If you need to design and furnish a studio, start in Buyer's Guide.

Page 59

Pointed Words

RIAA fees, pirate radio, datacasting and Super Engineers, in your letters.

Page 76-78

Radio World



\$2.50

The Newspaper for Radio Managers and Engineers

September 1, 2002

Mt. Wilson RF Drama: What Happened?

FCC Inspectors Warn Of Future Visits

by Randy J. Stine

LOS ANGELES The FCC seems to be focusing more intently on enforcing frequency radiation exposure limits. A recent surprise RFR exposure inspection at Mt. Wilson near Los Angeles has broadcasters here waiting for word of possible violations and fines for exceeding maximum exposure levels.

Observers say the FCC action may signal the start of more-aggressive RFR enforcement nationally.

Mt. Wilson's antenna farm is considered by some observers to be one of the hottest RF spots in the United States. Approximately 25 miles northeast of downtown Los Angeles, Mt. Wilson is 5,710 feet tall and home to at least 25 FM and 20 television transmission facilities.

The FCC issued more-restrictive RFR standards in 1997 and established a deadline of Sept. 1, 2000, for broadcaster compliance.

FCC officials have not said that enforcement of those standards has been stepped up; but others involved say the agency seems to be taking a closer look at them.

See RFR, page 8 ▶

Smooth Sailing?

Radio Hopes for Calmer Economic Waters As the NAB Radio Show Docks in Seattle.

Special Coverage Begins on Page 12

Photo of Washington State Ferry courtesy Seattle's Convention & Visitors Bureau

2002 Radio World READERS' CHOICE Sweepstakes

TEXAS REVERB

An Infinity engineer in the Lone Star State takes home a Yamaha digital reverb.

Page 4

Sign Up For NewsBytes Weekly Digest at www.rwonline.com

A Great System Starts With an 816R

Known throughout the world as the best performing, most reliable FM transmitter.

IDT Continental Electronics

INTEGRATED DEFENSE

800.733.5011 www.contelec.com

◆ NEWS WATCH ◆

Clear Channel Looks For Radio CEO

SAN ANTONIO Clear Channel Radio was searching for a replacement in August for former radio division CEO Randy Michaels, who switched jobs in July.

Michaels now heads a New Technologies Division at Clear Channel. In the newly created position, he will focus on interactive, wireless broadband and satellite technologies.

Mark Mays became acting CEO of Clear Channel Radio while he searched for Michael's replacement.

Mays said of Michaels, "Without his

vision and foresight we would not have been able to develop the best, most well-positioned, unduplicatable collection of radio stations in the world. ... In his new role, Randy will be able to use his strength to enable us to react better to the advent of new technologies and their impact on the company."

Michaels is based in Covington, Ky., where he ran Jacor before the merger with Clear Channel. Mays wanted to shift the radio CEO position to San Antonio as the group retrenches to focus on operations rather than further acquisitions, according to Clear Channel.

The Mays family also reportedly preferred someone in that position with a

more low-key management style, according to published accounts, given possible congressional scrutiny of large groups over the independent record promotion issue.

Net Radio Bill Introduced

WASHINGTON Representatives Jay Inslee, D-Wash., George Nethercutt, R-Wash. and Rick Boucher, D-Va., introduced the Internet Radio Fairness Act, a bill that sponsors said aims to provide a reprieve from bankruptcy for small Internet radio companies and correct the royalty

arbitration process that imposed a high cost on the nascent Internet radio industry.

"With this bill, Reps. Inslee, Nethercutt and Boucher have once again demonstrated their appreciation of the promise of Internet technology and the benefits to consumers and recording artists that will result from a vibrant Internet radio industry," said Jonathan Potter, executive director of the Digital Media Association.

Harris to Launch IBOC 'Roadshows' In Seattle

MASON, Ohio Starting in Seattle on Sept. 10, Harris Corp. will sponsor a series of "roadshows" about IBOC digital radio in the six cities designated by Ibiqity Digital Corp. for its initial rollout.

The manufacturer hopes to attract general managers and radio executives as well as engineers to the one-day presentations. Topics include business models as well as technical discussions. Representatives of Ibiqity and Impulse Radio will take part.

The first seminar will take place in Seattle two days prior to the NAB Radio Show in that city. Subsequent presentations in September will be made in New York, Miami, San Francisco, Los Angeles and Chicago.

THE AMAZING LITTLE MIXER



ALM

Routes any INPUT to any FADER...

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

It's got the high end features too, like bright LED dot matrix source displays above faders and monitor pots, and 24 bit A>D and D>A ins and outs. Its AES digital inputs have sample rate convertors so it works



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

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

And because it's **AUDITRONICS**, it's built tough as steel, and will be easy to maintain.

DIGITAL CAN BE EASY—JUST CALL AUDITRONICS!

tel 252-638-7000/fax 252-635-4857/sales@wheatstone.com
600 Industrial Drive, New Bern, North Carolina, USA. 28562

copyright © 2002 by Wheatstone Corporation

AUDITRONICS
www.auditronics.com

See us at the NAB Radio Show Booth #1025

Index

NEWS

Mt. Wilson RF Drama: What Happened? by Randy J. Stine	1
NewsWatch	2
Ibiqity Plans AM Night Tests by Leslie Stimson	3
It's Not IBOC, But 'HD Radio' by Leslie Stimson	3
Back-to-School Book Revue by Paul J. McLane	4
TI Says 'HD Radio' Chips Ready by Leslie Stimson	5
Ibiqity to License Radio Content-on-Demand by Leslie Stimson	5
Coverage Tops AM IBOC Opinions	7
NAB RADIO SHOW PREVIEW	
Radio Docks for Show in Seattle by Susan Ashworth	12
Managers Divided on Value of Show by Craig Johnston	16
Workshops Serve Engineers by Michael LeClair	20
Exhibitor Listings	24

FEATURES

Workbench: 'Old' Tricks for New Engineers by John Bisset	35
From Regular to Super Graphics by Steve Lampen	36
Expanding Museum Sparks Interest by Skip Pizzi	38
XM Radio's Music Is Massive by Craig Johnston	42

GM JOURNAL

Radio Groups on the Move by Susan Ashworth	47
Re-Regulation: On the Horizon? by Vincent M. D'Ingo	47
Leap into Target Testing for Trends by Mark Lapidus	49
Avoid Legal Programming Hassles by Paul Kaminski	51

STUDIO SESSIONS

Mbox: Software/Hardware Approach by Ty Ford	53
DeWig Uses Method Acting in Promos by Ken R.	53
New Nanoamp Drives Headphones by Mario Hieb	56

BUYER'S GUIDE

Walters-Storyk Redesigns WETA by John Storyk	59
NCC Creates N.Y. Studios by Wally Smith	59
Ram Furnishes ESPN in Chicago by John Hurmi	60
Birmingham Radio Uses Wheatstone by Scott Tanner	60
Harris Furniture Goes Up and Down by Warren Shutz	61
Meridian Creates WCBS Facility by Mark S. Olkowski	62
Mager Furnishes Purdue Radio by Michael Gay	62
OPINION	76, 77, 78

DIGITAL NEWS

Ibiquity Plans AM Night Tests

by Leslie Stimson

Ibiquity Digital Corp. is trying to quantify the interference that exists for AMs at night and what changes might occur with IBOC.

For several reasons, the effort is limited compared to previous testing; but observers for Ibiquity and the National Radio System Committee believe any effort to quantify AM IBOC interference at night is helpful. The testing was to begin in late August, with results to be publicized later.

At the same time, observers looked to the FCC to issue some type of initial blessing of IBOC. They want the FCC to make clear that other solutions, involving Eureka-147, TV Channel 6 or other approaches, won't be used.

Supporters also have pressed the FCC to allow stations that want to transition this fall to do so, possibly using a blanket special temporary authorization.

The FCC does not comment on its plans. The agency has a team working on IBOC, according to sources.

"We recognize their anxiousness and we will do everything we can to move quickly," said a source close to the agency. But he said comments to the FCC reveal differences of opinion that must be worked out before commissioners can sign off.

"This is not instant oatmeal," the source said.

A major issue for AM is the power level stations would use when they sign on with

IBOC. Clear Channel has suggested, and ABC agreed, that AMs should lower their power levels initially by 6 dB, so the primary digital carriers are 22 dB below the main carrier, as opposed to Ibiquity's proposed 16 dB. The goal: to reduce the possibility of interference to adjacent stations.

Other groups that lack higher-power AMs operating on skywaves at night oppose the idea, saying lower power effectively would cut their coverage area in half. They also worry that it may be difficult to recover full power later.

Also confronting the FCC is the fact that the NRSC has so far endorsed AM IBOC only for daytime.

"This AM thing is tough enough without making it worse. Now we're saying we're daytime-only and cutting power? That won't cut it for most (AM) stations," said one major group engineer.

Another issue for the FCC is whether to delay implementation of IBOC entirely until the AM issue is settled, as some commenters suggest. Proponents say they'd lose momentum for receiver manufacturers to produce radios.

Some sources say a conservative course for the FCC would be to approve AM IBOC for daytime use at full power, with a caveat that an interfering station must reduce power or stop transmitting digital altogether.

As Labor Day approached, observers were hoping the commission would act at a public meeting slated for Sept. 12.

Meanwhile, Ibiquity planned to use

computer modeling to determine existing interference for every AM station in the country and project potential effects of IBOC.

"It's a sophisticated study, more so than what has been done before in terms of propagation," said Ibiquity Vice President for Engineering Glynn Walden. The tests are expected to take a couple of months and include subjective listening.

Atmospheric changes

Testing in the field for AM at night is difficult because the atmosphere changes constantly. NAB Science and Technology Vice President John Marino heads up an ad hoc group of NAB and NRSC engineers advising Ibiquity on the nighttime tests. "In order to do a scientific study, (it) would take a long time, perhaps years, depending on the sun spot cycle."

Ibiquity is using WLW(AM) in Cincinnati for skywave tests. "We'll have a digital signal on WLW and study the impact of WLW on other stations," said Ibiquity Vice President and General Counsel Al Shuldiner.

"For WLW, we'll look at existing groundwave analog reception with IBOC off. Then, we'll turn it on and see if that changed the groundwave signal. Then we'll go to another point in the country and measure skywave reception, with the IBOC on and then off, to determine changes."

Ibiquity planned to use WTOP(AM) in Washington to test the impact of a digital signal on local stations at night.

Shuldiner said the goal is to quantify any impact on existing stations from the digital signal. The NRSC has stated that IBOC will entail certain tradeoffs, such as accepting some interference in some outside metro coverage areas.

All sources contacted by Radio World agreed that AM nighttime tests on only two stations are limited; Ibiquity has cited its time constraints as the reason it cannot do more at this time. One group engineer said testing on only two stations is not sufficient, "not to the point where we'll hang our hat on this for the rest of our lives."

"We need to evaluate as broadcasters if the (50 kW) clear-channel stations have as much value as their owners think they do," he said. "There may have to be tradeoffs to make sure AM survives."

Ibiquity is using other stations, such as WOR(AM) in New York, to demo its service for receiver makers. It also has applied for STAs to demo IBOC in Seattle during the Radio Show on Infinity's KBKS(FM) and Sandusky's KIXI(AM).

Still unclear is whether any radio groups have agreed to transition their stations this fall and whether any had signed Ibiquity's fee contracts.

Ibiquity said it was negotiating with a number of groups but said discussions were private. Asked for a list of rollout stations, Ibiquity declined.

"In some cases, they're forming (roll-out) strategy and they may not want us to say how're they're doing this," said Ibiquity Vice President Jeffrey Jury.

It's Not IBOC, But 'HD Radio'

When you think of digital radio, what comes to mind? Ibiquity Digital Corp. wants consumers to think the phrase "HD Radio," piggybacking on the concept of high-definition television.

"HD Radio" and an accompanying slogan — "Pure Digital. Clear Radio." — are part of a new branding campaign Ibiquity and its license-holders will use to commercialize in-band, on-channel digital audio broadcasting. Stations, transmission and receiver manufacturers have the right to use the brand name to promote the digital radio concept and product category.

Kenwood will put "HD Radio-ready" on 17 of 23 car radio models to be introduced in 2003; some of those head units also will be marked as "Sirius-ready," to be compatible with Sirius Satellite Radio.

Why not just call it "digital radio?"

Ibiquity felt it needed something more to convey the concept of terrestrial digital radio to consumers, and to differentiate digital from analog radio and from satellite radio.

Also, Ibiquity hopes to license its IBOC technology in a variety of handheld devices. "We needed a name conducive to where the technology is headed," said Ibiquity VP Marketing Dave Salemi.

Ibiquity hired a marketing firm to design the brand and conduct focus groups of consumers, radio general managers, engineers, salespeople, automakers, receiver manufacturers and

consumer electronics salespeople to glean their thoughts about the brand.

Some radio industry participants thought associating radio with HDTV would cause consumers to associate it with industry disputes over standards and other issues stalling the DTV rollout. But Ibiquity believes the average consumer is unaware of conflicts within the industry over HDTV and would not associate them with digital radio.



Although the term "IBOC" is used widely within the industry, few expected it to be the name presented to consumers. But Ibiquity has wrestled with the decision. The company previously introduced an iDAB logo on experimental IBOC equipment.

HD Radio replaces iDAB, which may have involved trademark issues abroad. Ibiquity felt iDAB was too similar to a DAB logo trademarked by Philips Electronics for overseas use and a similar logo used on Eureka-147 radios.

Ibiquity has trademarked the name HD Radio.

— Leslie Stimson

Broadcast equipment at exceptional prices.

Customized automation systems.

Complete systems integration.

Quality pre-owned equipment.

Pre-wiring packages.

Broadcast equipment repair.

Complete engineering services.

Lightner
Electronics Inc.

Your Ultimate Solution.

Toll Free : 866-239-3888

Tel: 814-239-8323

Fax: 814-239-8402

www.lightnerelectronics.com



FROM THE EDITOR

Back-to-School Book Revue

by Paul J. McLane

Autumn is coming. That means long, cool evenings sitting by the fire with a good book. Here are several new ones that have taken up residence in the McLane library recently.

A revised edition of "Border Radio" is in print.

The book by Gene Fowler and Bill Crawford has the compelling subtitle "Quacks, Yodelers, Pitchmen, Psychics and Other Amazing Broadcasters of the American Airwaves." First published 15 years ago, it covers "radio outlaws" who operated superpower stations just south of the Mexican border from the 1930s to the 1980s.

The new 372-page edition has more first-hand information and black-and-white pix. The introduction is by the late Wolfman Jack. Read this one if you like roguish radio history, plenty of personalities and great old photos.

University of Texas Press; \$22.95 in paperback, \$50 in hardcover; www.utexas.edu/utpress.



Photo by Bob Kovacs

★ ★ ★

Jazz and opera can be intimidating. So can classical music.

NPR has lent its endorsement to a series of four neat little paperbacks called "The NPR Curious Listener's Guides," to help you listen to these musical forms more knowledgeably. There's even one about popular standards — music by the likes of Gershwin, Carmichael and Armstrong. I'm definitely saving these books for more reading at home.

"The NPR Curious Listener's Guide to Jazz," for instance, gives a history of the genre and introduces you to players, variations in styles and terms. Written by conductor and sax player Loren Schoenberg, it also lists 50 "essential" jazz CDs (no, you can't slide by with just "Kind of Blue" in your collection).

These guides would benefit from artwork; there are no photos. And the A-to-Z terminology listings are thin. But the books are affordable and accessible. Anyone who has paused on the radio dial and listened for a few minutes to an opera or symphony, and would like to know more about the

music, will enjoy them.

It's too bad not more stations (or public radio organizations) are playing jazz, opera, classical and standards.

Perigee/Grand Central Press; \$13.95 for each guide; www.penguinputnam.com.

★ ★ ★

Speaking of NPR, journalist Neal Conan's book will appeal if you love getting your baseball and your radio at the same time.

In 2000, Conan took a leave of absence from the network and wrangled himself a job as an announcer covering the Aberdeen Arsenal, a minor-league ball team in Maryland. (I hate him already.) He writes about the experience in "Play by Play: Baseball, Radio and Life in the Last-Chance League."

"I cashed in 23 years of tenure at National Public Radio and abandoned wife, children, yard, cat and a career inside the Washington Beltway to punch my ticket to the small time," he writes. "This summer, my audience would be measured in dozens, not millions. Accustomed to broadcasting with the help of two technicians, a producer and a director in a state-of-the-art studio, I would be a one-man traveling band."

Like most good "road" books, this one is as much about the people Conan met along the way as about himself. But it's also a reflection by a man who had just turned 50 and was well aware of it.

The pause in his career doesn't seem to have hurt much; he's now host of NPR's "Talk of the Nation."

Crown Publishers; \$21.95 in hardcover; a \$12 trade paperback is due out this winter; www.randomhouse.com.

★ ★ ★

"Audio/Video Cable Installer's Pocket Guide" is the latest from Steve Lampen, Radio World columnist and popular industry speaker on the subject of wire and cable.

See BOOKS, page 6 ►



As of this issue, Radio World and its advertisers have now given away more than \$50,000 worth of prizes in our Reader's Choice Sweepstakes since January — from clocks and codecs to routers and shopping sprees. Have you signed up yet?

Jerry Ernest of Infinity Broadcasting in Irving, Texas, is the latest winner; he takes home a Yamaha REV500 digital reverb unit that he won just by signing up at

www.rwonline.com.

The REV500 features 20-bit A-D/D-A conversion and stereo processing for great sonic performance. Its reverb programs are categorized by Room, Hall, Plate and Special. Jerry can choose among 100 preset programs or customize his own.

Parameters are controlled by rotary knobs and displayed on an LCD panel. The rear panel has balanced XLR and unbalanced phone jack inputs and outputs, plus MIDI connectivity. Retail value: \$549.



AutoPilot

All-New AutoPilot[®] 2...

Unleash the Power!

Broadcast Transmitter Control Software

- Control all sites from one PC
- Wizards for easy setup
- Powerful Scripting

"AutoPilot 2 has not missed a beat -- which is critical for a high powered AM station. It's very dependable."
Paul Reynolds, Chief Engineer
Cox Radio.

"AutoPilot 2's open architecture has really expanded our monitoring capabilities. The power of the scripting wizard can't be overstated."
Jeff Kuhne, Engineer, WRPI-FM

See us at the NAB Radio Show Booth #216

World Radio History

Special Offer!!

Order now and receive
free ARC-16 5.4 firmware
with your purchase!

5.4 Firmware Features include:

- Adjustable Alarm Delays
- Adjustable Raise/Lower Durations
- Autoload for PC Based ARC-16 Configuration

BURK
TECHNOLOGY

Tel: 800-255-8090
Web Site: www.burk.com
Email: sales@burk.com

DIGITAL NEWS

TI Says 'HD Radio' Chips Ready

by Leslie Stimson

Texas Instruments has a receiver chipset ready to be incorporated into IBOC radios, or HD Radios, as Ibiquty Digital Corp. now is calling them.

The completion of the DSP chipset is important in order for receiver manufacturers to have time to incorporate them into radios for introduction at the Consumer Electronics Show in January.

"Kenwood is pleased to see the first IBOC DSP solution available from TI," said Bob Law, senior vice president of sales and marketing for Kenwood USA.

He said completion of the chipset would save time to market and enable Kenwood to deliver digital radios to retail partners quickly for consumer sale.

Visteon Corp. also plans to incorporate the chipset into digital radios and has been working with Ibiquty and TI to bring HD Radio technology as original equipment to automakers in early 2004.

In addition, Delphi, Alpine, JVC, Harmon Kardon and Marantz are looking at introducing HD Radios in 2003, said Ibiquty Senior Vice President Jeffrey Jury.

A group broadcast engineer involved in digital radio development termed the

chip milestone as "critical," saying this is a great sign for receiver companies that terrestrial digital radio really is going to happen.

process Ibiquty's AM and FM waveforms.

The chip is called the TI DRI200; it's based on TI's digital signal processor architecture and incorporates digital channel, source and data decoding and demodulation functions.

The programmability of the chip is important, said TI spokesman John Gardner, so that changes can be made easily. That flexibility, according to TI and

Ibiquty to License Radio Content-on-Demand

by Leslie Stimson

Radio may be getting its own type of TiVo, the TV content-on-demand device.

Ibiquty Digital Corp. has acquired worldwide licensing rights to Command Audio's intellectual property for its automatic capture and recall technology for digital radio. Terms were not disclosed, but Ibiquty has acquired the patents for all the digital radio applications of the technology so it can focus on commercialization.

Like Ibiquty, Command Audio is privately held. Strategic investors include Macrovision, Motorola and Texas Instruments.

The digital radio developer said the acquisition sets the stage for advertisers to develop new messages to reach consumers, and content providers will have new tools with which to design programming.

Ibiquty has opened an office in Redwood City, Calif., and hired eight software engineers from Command Audio. The latter company will continue to focus on licensing its content-on-demand technology for TV applications.

In television, TiVo service consists of a digital personal video recorder that uses a computer hard drive to play recorded programs. The unit is plugged into the consumer's phone line; for a monthly fee, the program guide is downloaded into the device. Consumers program the device to record selected programs, and after a while, sources said, TiVo learns the user's preferences and begins to record similar programs on its own.

Ibiquty has opened an office in Redwood City, Calif., and hired eight software engineers from Command Audio.

Similarly, radio stations could download a program guide into the consumer's receiver, so the user can program audio choices and record and play selections. Shorter elements such as traffic alerts could be recorded and replayed at the listener's convenience using the technology, Ibiquty said.

These elements could be sent as audio, text or both, giving advertisers a chance to verbally sponsor the audio message or display text ads on the radio display while the program element plays back.

Ibiquty plans to incorporate the Command technology into the waveforms for AM and FM IBOC. It is targeting 2004 for IBOC broadcasters and receiver manufacturers to use the extra storage and multimedia capability to help differentiate digital radio from analog.

Still undecided is who would pay for these extra capabilities — whether consumers would pay an extra charge, or whether receiver manufacturers would bundle the charge into the final receiver price, Ibiquty said.

An Ibiquty spokesman said the technology has been tested with FM subcarriers, satellite radio, the Eureka-147 form of DAB used overseas and the Digital Radio Mondiale digital system in development for shortwave and AM abroad. Any company that would want to add the content-on-demand capability to its digital radio system would need to pay Ibiquty a fee.

XM Satellite Radio joined forces with Command Audio in May to develop a platform for data applications for its radios; now Ibiquty inherits that agreement.

How will the Command Audio deal affect Impulse Radio, the company heading up the effort to develop IBOC data standards and content that stations can use with the IBOC system? No change, said Ibiquty.

"Impulse is one applications provider; we are also now an applications provider," said an Ibiquty spokesman.

TI says its cell phone technology can be adapted for use in IBOC radios.

TI is using a programmable DSP chip that contains Ibiquty's software, the IBOC Digital Module, incorporated on the digital baseband chip. The chip handles the IBOC modulation and decoding necessary to

Ibiquty, lowers the risk inherent in developing products for new technologies. The fact that the chip is programmable also allows for software upgrades.

See TI TECH, page 6

NEW RADIO SYSTEMS CT-2002 MODELS

Now The Most Flexible Featured Clock/Timer System Available Anywhere!

New in Every 2002 Model:

- Up-Down Timer
- SMPTE Time Code
- Top-of-Hour Reset
- Infra-Red Remote Control*
- Pre-Set Down Timers*
- Master/Slave Operations
- RJ-45 Quick Connectors
- Sleek Black Styling

Models start at just \$155.00

Available in Large 2" Display Rack or Wall Mount, Desktop or Ultra Thin Models

*Requires optional IR remote control @ \$25.00

radio SYSTEMS

601 Heron Drive, Bridgeport, New Jersey 08014
(856) 467-8000 voice (856) 467-3044 fax www.radiosystems.com

ADVERTISEMENT

We'll give you the shirt off our backs.

Why trust your remote broadcasts to Comrex? Over 40 years of experience and a full line of award-winning equipment mean Comrex customers broadcast from far and wide without fail. Comrex covers you with the most comprehensive service in the industry to help you work miracles day in and day out.

While you're on the front lines, Comrex is on the phone and on the Web with honest, practical advice and troubleshooting so that every broadcast you make is smooth, stable and timely. We've also made obsolescence obsolete, supporting our products long after we produce them in order to protect your investment.

Comrex covers you.

Straight answers — even if they don't include a Comrex solution.

Technical specialists — talk live with one of our knowledgeable experts.

Products that deliver high-quality live audio even under the most punishing conditions.

Online tech center for manuals, software upgrades, and the exhaustive knowhow of the Codec Answer Guy.

Investment protection. Free.

Buy any Comrex codec and we'll cover you and your back. Mail us the warranty card from the purchase of your next BlueBox, Matrix, Vector or Nexus. Not only will we send you this handsome Comrex shirt (a \$65 value), we'll double your warranty to two years. How's that for coverage?

For a dealer call: 800-237-1776

Or visit us at www.comrex.com

COMREX

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

★ ★ ★

"Network Technology for Digital Audio" by Andy Bailey has been on bookshelves for about a year and a half. It is about the transfer of audio data and related data over digital communications networks.

As the author states in the preface, the book comes at a time of great interest in this area, thanks to the penetration of the Internet and affordable availability of the necessary data rates.

But the pace of change is fast, and Bailey acknowledges that few clear industry standards are in place to cover all of the pertinent audio applications. That can make a book like this get dated quickly.

Still, his text builds a useful foundation in digital communications, starting with the modular approach of the ISO's seven-layer open systems inter-

connection reference model. Topics include digital audio and computer networks; network theory; audio interfaces; IEEE 1394 and USB; telecom networks and other important areas. The subject material is arranged in an understandable way, and there are lots of nice illustrations.

The price is a bit steep for a paperback, a common problem with specialty topics. I also would like to have seen application notes for radio in particular; but the book isn't targeted that narrowly.

But it is suitable for digital novices as well as those who want to learn more about networking digital audio.

Focal Press; \$49.99; www.focalpress.com.

If you bought a book after reading about it here, let me know what you thought of it. You can find me in the library. ☺

World Radio History

Books

► Continued from page 4

The book is 412 pages but fits in your palm. It focuses on the application and installation of cables and is a suitable companion to his 1995 effort "Wire, Cable and Fiber Optics for Video and Audio Engineers." Lampen aims the new book at anyone who needs to install cable, both professionals and home-theater enthusiasts.

This is a book you will indeed want to stick in your pocket; it is informative and fun. When should you use Starquad? Can I run digital on analog pairs? How to get the most out of a distributor? The answers are here. Its descriptions of cable basics, common questions and installation notes are leavened with Lampen's trademark sense of humor and frequent anecdotes. He gives us plenty of useful charts and simple drawings, too.

**I cashed in
23 years of tenure
at National Public
Radio ... to punch
my ticket to the
small time.**

— Neal Conan

Some of the material may be familiar to you from the pages of RW; and you may have no need for the video portions he provides. But if you like Lampen's columns, buy this one. He is a deep well of information, and he always seems to surprise even techie veterans with interesting tidbits or pieces of history.

Published by McGraw-Hill; \$29.95; www.books.mcgraw-hill.com.

TI Tech

► Continued from page 5

The alternative would be a hard-coated chip; Ibiqity is exploring that development with Philips Electronics and ST Microelectronics for the future.

Jury said this is the first time a commercially viable IBOC chip is available. First-generation target applications will be in car and home radios, with portables slated later.

At the CES show earlier this year, TI and Ibiqity demonstrated that TI had reduced the chip size from roughly the size of a breadboard to that of a credit card, suitable to fit in a receiver. TI originally had 12 chips in the design; now there's one. Using a single chip drives down manufacturing costs and power use in the radio, translating into lower costs for consumers, TI said.

Ibiqity believe the initial incremental cost of a digital radio would be \$100 compared to analog; its goal is to get that figure down to roughly \$50.

The TI chip draws less than one watt of power, a key requirement of receiver makers for in-dash units.

Gardner said TI's previous experience developing DSP chips for cell phones and Eureka-147 radios has enabled it to apply some of those technologies to terrestrial digital radio and will help the new chips to be used for other devices that can receive HD Radio.

"This core chip can be used across multiple product lines. From the Ibiqity perspective it's great because it's a proven technology," said Jury.

Pricing for the samples to receiver makers is listed at \$50; pricing for chips sold in volume is being worked out, said Gardner.

Given that TI has produced receiver chips for both IBOC and Eureka-147, might it design a combined chip? That would depend on whether receiver makers wanted such a chip, said Gardner.

TI and Ibiqity both own technology on the chip, and Ibiqity receives a portion of the payment that receiver makers will pay TI for the chip. Ibiqity expects to garner larger sums from the sales of finished receivers.

TI believes 30 million digital radios will be shipped by 2010; more than 70 million analog radios are sold a year in this country. ☺

Coverage Tops AM IBOC Opinions

Here's a sampling of public comments filed with the FCC in response to the NRSC's evaluation of Ibiqity's AM IBOC system.

"In order to ensure the smoothest possible transition to IBOC, and in light of the caution needed in employing any transitional methodology, Clear Channel also supports a single modification with respect to the proposed interim AM IBOC power levels. As proposed, the primary digital sidebands of a station implementing the hybrid AM IBOC system are actually in that station's first adjacent channel. Because other stations that are on first adjacent channels to an analog station implementing hybrid AM IBOC will thus be co-channel to that station's primary digital sidebands, Clear Channel, Ibiqity and other broadcasters have discussed the possibility that the digital AM IBOC signal now proposed for hybrid mode operation may affect first adjacent analog listening at the edge of coverage. ...

'Clear Channel proposes a further 6 dB reduction in the aggregated power level of the primary digital carriers.'

"Accordingly, to be sure to afford sufficient protection to existing analog AM signals and to facilitate a smooth digital transition, Clear Channel proposes a further 6 dB reduction in the aggregated power level of the primary digital carriers as part of the interim adoption of hybrid AM IBOC, so that such IBOC carriers are 22 dB below the main carrier, as opposed to the currently proposed 16 dB. Clear Channel's understanding from its work with Ibiqity is that this lower power level will slightly reduce digital coverage, which should not significantly inhibit the interim rollout of AM IBOC as otherwise proposed by Ibiqity.

"This proposed change also lays the groundwork to resolve a potential obstacle, pending further testing during the interim period, to a smooth final AM IBOC transition. The vast majority of first adjacent AM stations experience a contour overlap greater than the currently required 2:1 or -6 dB studied by the NRSC. Consequently, the final IBOC methodology may need to adjust the power level of the primary digital carriers depending on the contour overlap situation. Clear Channel intends to work with Ibiqity to develop such a flexible power level approach."

Jeff Littlejohn
SVP-Engineering,
Clear Channel Radio
Covington, Ky.

"The conclusions reached by the NRSC's evaluation working group as to deployment of the AM IBOC system were largely consistent with the test results and the intent of the subcommittee to endorse digital deployment only to the extent that the underlying analog service was not

significantly compromised. ...

"Because of the wholly different relationship of a station to its first adjacent channel neighbors during nighttime hours, entailing the potential for significantly increased interference among such facilities, the NRSC reached the only conclusion possible, given the data in hand, relative to nighttime service. Specifically, the NRSC at this time simply could not endorse nighttime operation of the proponent's AM IBOC system. This is a conservative, responsible and proper position to take at this point in the ongoing process of IBOC AM development. Although the nighttime interference problems appear

potentially serious, the collection of more data along with nighttime test transmissions on selected stations may shed more light on the possibility of full-time AM digital operation.

"It must be stressed that all of the NRSC's tests regarding the compatibility and reach of digital service were based on the parameters of the system as originally defined by the proponent. Any changes to those parameters prior to or during implementation of the AM IBOC system could adversely affect both of these critical criteria, undermining the conclusions of the NRSC's evaluation. Accordingly, Greater Media strongly recommends that if the

commission chooses to permit the implementation of AM IBOC during daytime hours, then the transmission parameters must be mandated to match those used in the NRSC's system evaluation. ...

"Greater Media respectfully requests that the commission employ a mechanism akin to a blanket STA authorization to permit those stations wishing to be early adopters of the digital transmission scheme to initiate the service promptly. Any such STA scheme could be accompanied by an appropriate non-interference condition."

Greater Media Inc.
East Brunswick, N.J.

"Being the chief engineer at three AM stations, I find it a dubious proposition that we'd have to spend \$75-100 thousand or more per station with equipment that is

See AM, page 10 ▶

All the world's your studio!

Good Day USA's Doug Stephan broadcasts from anywhere — with Comrex.

"I've owned most of the Comrex products on this shirt, including the Matrix, which I use to broadcast from my favorite studio — my farm."

Doug Stephan,
Host, Good Day USA.

From London to LA, from Moscow to his Massachusetts farm, talk show host Doug Stephan never goes anywhere without his Comrex codec. "Since my first STLX in 1986, I've relied on Comrex equipment to deliver high-quality broadcasts from my local studios and remote sites worldwide."

A constant traveler, Doug and his morning show co-hosts are rarely in the same state, let alone the same studio. Using Comrex equipment they can broadcast from any spot on the planet and sound like they're all sitting together. With

Comrex in your lineup, broadcast from anywhere and sound great everywhere. You can bet the farm on it.

Let Comrex help you broadcast from anywhere.
And we'll give you the shirt off our back.

Mail us the warranty card from the purchase of your next Blue Box, Matrix, Vector or Nexus. We'll send you a handsome Comrex shirt like the one Doug is wearing (retail value \$65) FREE. Plus, we'll extend your warranty to two years. Act now. No matter where you are.

For a dealer call 800-237-1776 or visit www.comrex.com



BLUEBOX



MATRIX



VECTOR



NEXUS

COMREX

19 Pine Road, Devens, MA 01432 USA
Tel: 978-784-1776 • Fax: 978-784-1717 • Email: info@comrex.com

See us at the NAB Radio Show Booth #526

World Radio History

RFR

► Continued from page 1

"The rules are on the books and we are in the process of enforcing them, just like any other rule," said Jerry Ulcek, specialist in RF safety compliance with the FCC. "The DTV conversion raises the potential for additional exposure at multi-use sites."

The inspection on July 12 took place after work had started on a DTV antenna installation at the end of June. The inspection followed a rumored complaint by the TV station that its crews had not received cooperation from one of the FMs at the site. It's unclear whether the commission visit resulted from the complaint; many engineers in the area believe it did.

Ulcek said the agency was evaluating data from the RFR inspection at Mt. Wilson in July and declined further comment on the investigation.

Safety standards

Although no broadcaster has ever been fined for violating RFR safety standards, that could change after the Mt. Wilson investigation is completed, Ulcek said.

"If fines are issued, we will file the appropriate Notice of Apparent Liability with the broadcasters involved," he said. Any broadcaster that creates 5 percent or more of the maximum power density permitted at a certain spot will be considered by the commission as a significant contributor and could face potential fines, Ulcek said.

One Los Angeles-based broadcast engi-

neer said, "This serves as a wake-up call for everyone, really. Just like with an earthquake, you always think you are prepared until it actually happens. This is a jolt that will help make sure we have things in order."

Broadcast groups with transmission facilities on Mt. Wilson include Clear Channel Communications, Hispanic Broadcasting, Infinity Broadcasting and ABC Radio.

The FCC required stations to shut down during the RFR inspec-



A tower worker in the KMEX driveway uses a meter to measure a 'hot spot' marked by the FCC with green paint.

The Power to Move Ahead

Flexibility
Value
Style

With the fast-moving, competitive nature of this business, you need equipment that can smoothly shift gears with you. Logitek digital consoles have the flexibility to meet any of your programming requirements and our sleek, smooth styling turns your studios into elegant showrooms. Even better, you'll find our prices very attractive. For more information, call us toll-free at 800.231.5870. Logitek - Digital With a Better Difference!



Logitek

www.logitek.com

tion on July 12. One at a time, at least a dozen FMs and most of TVs were turned off for approximately 20 to 40 seconds to allow for the RFR hazard inspection, said one observer.

The FCC inspection came after the installation of a new antenna for KDOC(TV) began June 24, and was completed July 30.

According to one engineer familiar with the Mt. Wilson antenna farm, tower crews complained they were getting limited cooperation from other broadcasters for requests to decrease power.

"There was one FM station that failed to comply with the requests. After about a week of negotiating, the station agreed to reduce power to about 80 percent so the work could be completed," he said.

Site agreement?

Several sources pointed to Infinity's KLSX(FM) as the offending station. Infinity prohibits employees from speaking to the press, complicating efforts to ascertain the exact sequence of events. An Infinity spokesman did not respond by deadline; regional engineer Scott Mason declined comment, citing the company's rule.

Sources indicated KLSX had not been notified of the initial site agreement for power reductions. When tower crews arrived to begin work during morning drive on June 24, they found areas that exceeded the RFR occupational exposure standard and determined KLSX was the leading contributor.

After complying with the request the first day, KLSX officials refused to reduce power the following morning, sources said. The sources said the station argued that it had not received advance notification and that the work did not need to be done on an emergency basis and should have been scheduled outside drive time.

Accounts differed as to whether KDOC(TV) actually complained to the FCC about the lack of cooperation.

According to an anonymous letter written to the CGC Communicator, a regional electronic newsletter published by engineering consultant Communications General Corp., the FCC said its personnel were at Mt. Wilson on a regular inspection and not as the result of an incident.

"Most observers there did not buy it," the letter stated. "The agents seemed to have arrived poorly prepared for inspections, as though they had been called to Mt. Wilson at the last minute. According to engineers who had spoken to the FCC the day prior, they were well aware of the KDOC incident."

Mike Callaghan, chief engineer for
See RFR, page 10 ►

MEET THE OMNIA-4.5

A feature list as long as your arm:

- DSP based processor
- 2 AGC bands
- 5 limiter bands
- 96 kHz 24 bit sampling
- AI S3 and analog /O
- Ethernet remote control
- DSP stereo generator
- Bright color display
- Upgradable PCMCIA card
- Famous Omnia sound

...at a price well within your reach.*



Omnia
www.omniaudio.com

Omnia is used in 4 of 5 leading stations in New York, 2 of the 3 top stations in Los Angeles and 5 of 6 of the most listened to stations in the US. 4 of the leading stations in Paris, all of the BBC's local FM stations in the UK, and the number one stations in Canada, Ireland, Germany, Finland, Australia, India, China, Denmark and Sweden.

*Suggested US \$499. Omnia 4.5 fm model. Prices may vary. © 2001 Omnia Audio, Inc. All rights reserved. www.omniaudio.com

RFR

► Continued from page 8

KIIS(FM) in Los Angeles, said, "The whole point of the FCC's visit was to remind everyone that if you are asked in a timely fashion to reduce power for tower work, the terms of your license obligate you to honor the request."

KBIG(FM) Chief Engineer Terry Grieger said FCC inspectors discovered two hot zones at Mt. Wilson that exceeded the maximum safety standard for the public. The FCC gained entry to the Mt. Wilson site at two restricted locations.

FCC look-see

"One was where a gate was left open and the other where a chain had been down the day prior to the inspection. (The FCC) was mainly concerned with exposure hazards to the public. It's not good when you have uncontested entry to a transmitter site," Grieger said.

The maximum RFR exposure standard for the general public is 0.2 milliwatts per square centimeter in the frequency range of 30 to 300 MHz. The maximum occupational/controlled exposure is 1.0 mW per square centimeter.

FCC inspectors were seen at the site on July 11, then summoned chief engineers from every radio and TV station to Mt. Wilson the next day, Grieger said.

Grieger said the inspectors warned engi-



The Mt. Wilson antenna farm is home to more than two dozen FM and 20 TV transmission facilities.

neers at the Mt. Wilson site that they would be back to Mt. Wilson and that they plan on visiting other multi-use sites around the country.

"They wanted to punctuate their message by starting with Los Angeles. They didn't indicate what stations were responsible for the hot spots," Grieger said.

Grieger said the area where KBIG has its antenna has become congested with digital TV facilities.

Several sources told Radio World that broadcasters with transmission facilities at Mt. Wilson have talked about the need to

update the area's RFR field study, but "it's been hard to get everyone to agree to jump on board" to help pay for the analysis.

Consulting engineering firm Hammett & Edison completed the most recent Mt. Wilson field study in 1998.

Dane Ericksen, senior engineer with Hammett & Edison, said the 1998 analysis is obsolete because of routine tower work over the years and the amount of DTV antennas added to the site.

"An accurate RFR study is the best form of insurance a broadcaster can have. It's especially important at a multi-user site to have a master study done," Ericksen said. He estimated a new study at Mt. Wilson would cost approximately \$100,000.

Ericksen, a former FCC field engineer, said the commission likely chose Mt. Wilson for an RFR inspection because of its high-profile status.

"I don't know of a site with more television and FM sticks. Broadcasters have long looked at the FCC's lack of enforcement as an excuse to not have their houses in order. That attitude has changed 180 degrees now," Ericksen said.

Broadcasters with transmission sites on Mt. Wilson long have known that some radio stations were over the standard, said James Hatfield, partner in consulting engineering firm Hatfield & Dawson.

"It's a very complex site. However, it's a very public area as well, with towers only 100 to 200 feet tall throwing a lot of RF on the ground. I'm not surprised that the FCC is interested in it," Hatfield said.

Hatfield does not believe problems of human exposure to RFR are widespread.

"Most of the major groups we work with have taken the needed steps to get a handle on it. They have known about this since 1997. It's very important to have an up-to-date RFR field study. You have to do an analysis every time things change," Hatfield said.

The FCC, he said, should be commended for enforcing RFR hazard rules, but he added that the agency has few people properly trained to take field measurements.

The FCC's Ulcek said stations at multi-use transmission sites must cooperate with requests to reduce power for tower work.

"You must avoid exposing tower crews to dangerous RF radiation levels and working conditions. If a request is for a power reduction during drive time, as a licensee you're obligated to cooperate. You cannot refuse to reduce power because you may lose listening audience or advertising revenue. And you may not insist that the work be done late at night for your convenience," Ulcek said.

"When we do inspections, we'll go where the public can go. That means if a gate is left open, we'll go right into the site to take our measurements. (The FCC) may visit your site at any time." 🌐

AM

► Continued from page 7

usable only in the daytime. Furthermore, I live in a rural area, and would be out of the range of any reliable medium wave broadcasts, as the dismal tests at WTOP (AM, Washington) would suggest. ... The solution is on the receiver side."

Scott Todd
Cambridge, Mass.

"The technology should be licensed for use by noncommercial educational radio stations either without charge or under terms and conditions that are reasonable and predictable under the circumstances. Public broadcasters should be able to obtain the technology, plus maintenance, updates and upgrades of the technology, without significant or unexpected costs. ...

"(T)he FCC's Office of Engineering and Technology should allocate resources to examine nighttime AM IBOC DAB service, including a modified hybrid approach with narrower sidebands and a narrowband digital-only service for nighttime operation, that could achieve the benefits of IBOC without unacceptable interference."

National Public Radio
Washington

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



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

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

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

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



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

MARK YOUR CALENDAR...

...so you can be sure to attend

the 52nd ANNUAL BROADCAST SYMPOSIUM

Sponsored by the
IEEE Broadcast Technology
Society



October 9-11, 2002

Omni Shoreham Hotel
2500 Calvert Street, N.W.
Washington, DC 20008

Sessions on:

- Satellite & Broadcast Engineering
- Digital TV Transmission
- Broadcast Radio Engineering
- Digital TV Reception

...and tutorials on

VSB Enhancements and IBOC
Technology & Implementation!

FOR MORE INFORMATION VISIT
US ON THE INTERNET:

<http://www.ieee.org/btsymposium>

or

call D. LAYER at 202-429-5339

The IEEE is a non-profit, technical professional association of more than 350,000 individual members in 150 countries.

HUBTOWN

EPISODE #6
SUMMER SCHOOL

NEXT EPISODE -
STUDIOHUB ON LOCATION,
NEAR AND FAR.

POP QUIZ

HERE'S
A QUICK
REVIEW
OF OUR
PRODUCT
TO DATE.

IT'S UNIVERSAL

STUDIOHUB USES
SHIELDED CAT-5 TO
CARRY ALL YOUR ANALOG,
DIGITAL AND DATA
SIGNALS. **JUST ONE
CABLE TYPE DOES IT ALL!**

SO EASY

YOUR
WHOLE
STUDIO PLUGS
TOGETHER IN NO TIME-
WITH **PRE-MADE RJ-45**
CABLES, ADAPTERS
AND HARNESS BLOCKS.

COMPLETE

STUDIOHUB PROVIDES
DOZENS OF
SELF-POWERED
ACCESSORY PANELS
TO CONNECT, **MATCH,**
AMPLIFY AND CONTROL
YOUR SIGNALS.

STUDIOHUB WORKS

NOW IN
USE AT
HUNDREDS OF
STUDIOS, **LARGE**
SATELLITE FACILITIES
AND
GROUP
PLANTS **THROUGHOUT**
THE COUNTRY.



StudioHub+ Hubs

The heart of StudioHub is passive and active RJ-45 "blocks" with 110 pass-through connectors.



CAT5 Cabling

All StudioHub+ cabling is shielded and CAT-5 certified.



Powered Peripherals

This headphone amp is StudioHub+ "DC link" or wall wort powered. Choose from dozens of other optional components.

Save time and money on your next studio project with the StudioHub+ integrated wiring solution.

Contact Radio Systems for more information on the StudioHub system of pre-made cables, adapters, and active peripherals that let you "plug-and-play" all your studio analog, digital and data connections.

radio
SYSTEMS

601 Heron Drive, Bridgeport, New Jersey 08014
(856) 467-8000 voice (856) 467-3044 fax
www.studiohub.com • www.radiosystems.com



THE NAB RADIO SHOW

Sept. 12-14, Seattle

Radio Docks for Show in Seattle

Uncertain Revenue Streams and a Choppy Stock Market Likely to Be on Radio Managers' Minds

by Susan Ashworth

SEATTLE Whatever the future holds, few dispute that the last decade has been one of unprecedented change for radio.

Examples of the industry's rollercoaster of events litter its recent path: consolidation, the wildly fluctuating stock market and the promise and perils of new technologies like digital radio, satellite and the Portable People Meter measuring systems.

It is with these issues in mind that the radio community heads to this year's NAB Radio Show, held in Seattle Sept. 12-14. Many will be searching for answers to tough questions about personnel, ratings, technology and, perhaps most significantly, how to strengthen the bottom line.

The show itself has shrunk. Attendance last year in New Orleans was down about 30 percent from the year before, with approximately 5,200 people attending, of which about 2,000 were fully paid, according to NAB at the time. The association expects a similar turnout this year.

Management tools

The number of exhibits likely will be smaller, too; Radio World's preview issue for last year's show listed 148 pre-registered booths; this year's list has approximately 105.

This convention originally was to have started on Sept. 11, but NAB officials changed the start date to avoid starting its event on the first anniversary of the terrorist attacks.

The convention will offer broad choices of topics for managers.

To measure the health of a radio station, the market generally relies on two simple tests: ratings and revenues. But over the last several years, numbers in both of those categories have fallen, due to reasons as varied as increased competition and a fracturing of the radio-listening seg-

ment from other media.

Although the show will touch on a wide scope of issues including satellite radio, deregulation, low-power FM, payola and independent promotion, the fluctuating stock market undoubtedly will lead much of the dialog.



"The economy is the one issue that drives the rest of the discussions," said Jimmy Steal, a member of the NAB Radio Show Steering Committee, which organized the conference and exhibition. "A general manager of mine once said, 'If it's not about ratings and revenue, I'm not interested.' That pretty much lays out the hierarchy" of how things work in radio. Steal is regional vice president of programming for Emmis station KPWR(FM) in Los Angeles.

Predicting the future

When one considers that radio basked in uninterrupted revenue growth through most of the 1990s until revenue pulled back in 2001, the thumps that the recent economy has handed out will be of primary focus.

At least one panel will try to predict that future. "Seeing Your Future in the Crystal Ball of Insiders/Outsiders," moderated by James Boyle, an analyst with Wachovia Securities who covers media stocks, will comprise "both industry insiders and Wall Streeters looking forward, perhaps with very conflicting views," he said.

Similar views will come from Radio Advertising Bureau President Gary Fries in the session "The State of Radio Sales,"

where Fries will offer the RAB's perspective on the state of the industry and when recovery of media markets can be expected.

Attendees can get actual tips on how to revive falling revenues at another session, "Revenue Resuscitator: 60 Sales & Management in 60 Minutes," where representatives of RAB will offer tips and tricks to improve a station's bottom line. Likewise, Sam Donaldson will moderate a Super Session of radio group executives from various market sizes, each of whom will discuss the opportunities and challenges facing their market.

While some broadcasters are focused on terrestrial radio developments, others still have an eye on the promises of cyberspace. But are online radio streaming sites more of a programming asset or a liability

Fact Box

What: The NAB Radio Show

Where: Washington State Convention and Trade Center, Seattle

When: Sept. 12-14

Exhibits: Thursday, 5-8 p.m.; Friday 9 a.m.-6 p.m.; Saturday 9 a.m.-1 p.m.

Registration: \$495 for members, \$895 for non-members; Marconi Awards \$55; exhibit-only passes \$200

Info: www.nab.org/conventions

in the way information is being presented?

Although heated debate goes on over issues such as copyright rules and limited advertising dollars, supporters still call online radio streaming "an opportunity to reinvent radio."

"While the goal a year ago was simply to have one up and running, now the key is to monetize it, build databases and make the site work for a radio station," Steal said. Those issues will be tackled in Internet-focused sessions, including "WWW: What's With Our Web-Site?" and "Radio Station Streaming: Is There A There, There? Sound Recording Royalties, Music Licensing Fees and Substitutions," which will explore whether streaming of a radio station's signal still makes sense.

Being the best

Other sessions at this year's show focus on more grounded goals: getting your talent and programming to be better than it already is.

One such tactic will be at work during the "Morning Show Meeting" session, where show consultants and a program director will give the thumbs up or down to a working morning show.

"We want to help stations find out what is compelling about their program and what is not so compelling," Steal said.

Unfortunately, sometimes the steps to

See RADIO SHOW, page 15 ►

For all your audio & audio-for-video needs:

BROADCAST

www.BRADLEYBROADCAST.com

PRO AUDIO

800-732-7665

Local Phone: 301-682-8700 • Fax: 301-682-8377 • Address: 7313-G Grove Road, Frederick, MD 21704

Rave Reviews!

"Excellent Product" — Doug Walker, Clear Channel, Cincinnati

"Telos has taken two great products [the Zephyr and the Zephyr Express] and made them better. They listened to the customer." — Roul Velez KNBR, KFOG, Susquehanna Broadcasting of San Francisco

"Telos asked us what we wanted and they put it in there... you can't ask for anything more than that." — Paul Burt, Clear Channel, New Orleans

"It's even easier to use than the original Zephyr." — Michael Black, WEOS Geneva, New York (NPR affiliate station)

"The most popular ISDN digital transceiver in the country has a fresh new look... Zephyr Xstream, a slick, updated version of [the] familiar Zephyr." — Steve Kirsch, Silver Lake Audio, New York

Telos
www.zephyr.com



NO OTHER SPEAKER WORKS REMOTELY AS WELL!



SRM450 LIVE REMOTE SOUND SOLUTION.

Wide dispersion.
Long throw.
Extreme
accuracy.

The active
SRM450 is
compact,
easy to
transport,
and so simple
to set up
that even an
on-air jock
could do it.

Not that
they ever
would.



With SRM450s, your station can sound better in the parking lot of a car dealership than it does over most most people's home stereos. This is one subtweet-sounding loudspeaker.

The SRM450 has a rugged scuff-resistant, composite-molded cabinet and weight-balanced carry handles.

You don't have to mess with external amps thanks to 450 watts of high-current amplification built in (plus an electronic crossover, equalization, phase and time compensation).

Call us toll-free, visit our web site or contact your broadcast supply house for more info on the SRM450 live remote solution.



Perfect match for live remotes:
The 1402-VLZ[®] PRO mic/line mixer. Superb XDR™
mic preamps. Low noise. High headroom. Silky-smooth 60mm
log-taper faders and the best RFI resistance of any compact mixer.

www.mackie.com/SRM450 • 800.898.3211

 **MACKIE**

World Radio History

©2002 Mackie Design, Inc. All Rights Reserved. Mackie and the Mackie logo are registered trademarks of Mackie Design, Inc. The master DJ who says "the live hot dog" is a trademark of Doug Live Remote.

Radio Show

► Continued from page 12

improving a station's programming come from miserable circumstances. Panelists at "411 on 9/11: What Listeners Want Now" will consider how the radio industry has changed since Sept. 11.

"Our goal is to roll up our sleeves and see how listeners' expectations have changed post-9/11 and whether broadcasters have effectively adapted themselves to meet these new needs," Steal said.

Other times, steps to improvement come from the other guys.



Jimmy Steal, a member of the NAB Radio Show Steering Committee, sees a promising future for the industry.

"When you look what's happening with TV now, shows like 'Spy TV,' 'Survivor' and 'American Idol,' you'll notice that those are all old radio bits," Steal said. "I think TV has done a great job of taking pages out of the radio playbook, but I don't know if we've done as good a job, especially in the promotions arena."

This topic will be tackled in "Take it From the Tube: Lessons Learned From TV."

Technology trials

Regardless of whether you are excited about this new technology or are anxious about some of the results, most consider Arbitron's Portable People Meter an innovation that will have long-term ramifications for the industry. PPM technology will be the focus of the session "Look Ma, No Diary!"

"The PPM tests by Arbitron are one of the hottest topics in radio right now because it affects so many stations financially," said one radio industry consultant, who spoke on the condition of anonymity.

Many PDs, the consultant said, have a "basic suspicion" about Arbitron that its diary numbers aren't as accurate as they should be.

"And there are definitely questions about exactly how, when and where the new technology will be implemented and how the old books will be phased out."

Another hot-button issue, in-band, on-channel digital audio broadcasting, will be the focus of several sessions and workshops, which Lynn Claudy, NAB senior vice president of science and technology, said has the potential to be "the greatest change in radio since the introduction of FM broadcasting."

Panelists will explore the introduction

of IBOC across several markets in "IBOC Rollout — Across The Industries," moderated by Radio World Editor Paul McLane, and the all-day "Digital Radio Certification Workshop" will feature updates on IBOC, the ins and outs of IBOC implementation, updates on Ibiqity's IBOC rollout and information on how to go digital at minimal cost.

'Real question'

While many tout the potential value of using IBOC wireless data in a mobile environment, others remain concerned about the cost of converting from analog to digital.

"There's a real question about how you justify going digital when there aren't yet any receivers yet in the market," said one radio industry consultant.

Seen by some as a blessing and others as

a bust, consolidation is again up for debate.

At a session titled "With Consolidation, How Do We Grow the Revenue Pie?" panelists from radio groups and stations will discuss if the big group deals are truly bringing more money to radio. The issue also will be discussed in the session "You're Consolidated: Pros and Cons," which will delve into the good and the bad when it comes to consolidation.

This year's NAB Radio Show keynote speaker is Bill O'Reilly, host of "The Radio Factor with Bill O'Reilly" and "The O'Reilly Factor."

Other hot topics at the show include AM/FM antenna certification guidelines; opportunities for small-market stations; and news from the FCC, including the annual Policymakers' Breakfast led by FCC Commissioners Kathleen Abernathy and

Michael Copps. In addition, a panel of Washington insiders at the "NAB Congressional Radio Breakfast" will discuss possible further deregulation of radio ownership and the future of copyright laws.

Steal sees a promising future for the radio industry as it pauses for this event.


"Even though the market has gone through a rough time, I've found those are the times that genuine opportunities arise," he said.

"The good thing about this convention is that you can get a vibe from people all over the country about how their station is doing, what the talent pool is like and who will be radio's next big success.


"I'm not the most objective party, but radio is the most dynamic form of communication out there, and it will continue to succeed." 🌐

Easy As 1 2 3


MARTI can make your next remote broadcast a breeze. With products designed and produced with cutting edge technology at a MARTI price.



DIGITAL CELLCAST
The digital version of our popular Cellcast transmitter is the easiest to use - lighter, more rugged and capable of remote broadcasting from virtually anywhere in the world. Just turn it on and go!



STL-20C
The easy to tune STL-20C delivers more power, reliability and better cooling.



SRPT-40A
The SRPT-40A is highly reliable and feature packed. Now, the exact frequency can be dialed in from the front panel, from 430 MHz through 480 MHz, making it easier than ever to use. Other frequency bands available in 2002.

MARTI™

A Broadcast Electronics Company

www.martielelectronics.com
817-735-8134

©2002 Broadcast Electronics, Inc. MARTI is a registered trademark of Broadcast Electronics, Inc. - RW2002

See us at the NAB Radio Show Booth #616

World Radio History

Managers Divided on Value of Show

by Craig Johnston

Radio groups contacted by Radio World are divided over whether they will bring many of their engineers to the NAB Radio Show, while exhibitors express optimism about business at the Seattle convention.

Clear Channel Communications, the nation's largest radio group owner with more than 1,200 stations, will bring just a handful of engineers to the convention. Jeff Littlejohn, Clear Channel senior vice president of engineering, said a few corporate officers and people from the local market

would attend.

"I don't think I'm even going to go," he said.

That contrasts with the Hispanic Broadcasting Corp.

"About half of our engineering managers are going," said Dave Stewart, Hispanic Broadcasting's director of engineering. "Staffers are going to get the workshops and certified in the antenna school or the digital conversion school."

Cox Radio will attend the show in numbers.

"There's not a company-wide directive, but I think about two-thirds of

market or individual station engineers will be coming," said Sterling Davis, Cox Broadcasting VP of engineering. Though station engineer attendance is at the discretion of station managers, Davis has lobbied for them to come because he will hold group engineering meetings concurrently with the show.

NextMedia Group doesn't plan to send anyone at the market level to the fall show, said Mark Stennett, vice president of engineering. "I haven't even decided if I'm going," he said in August.

At press time, the NAB reported

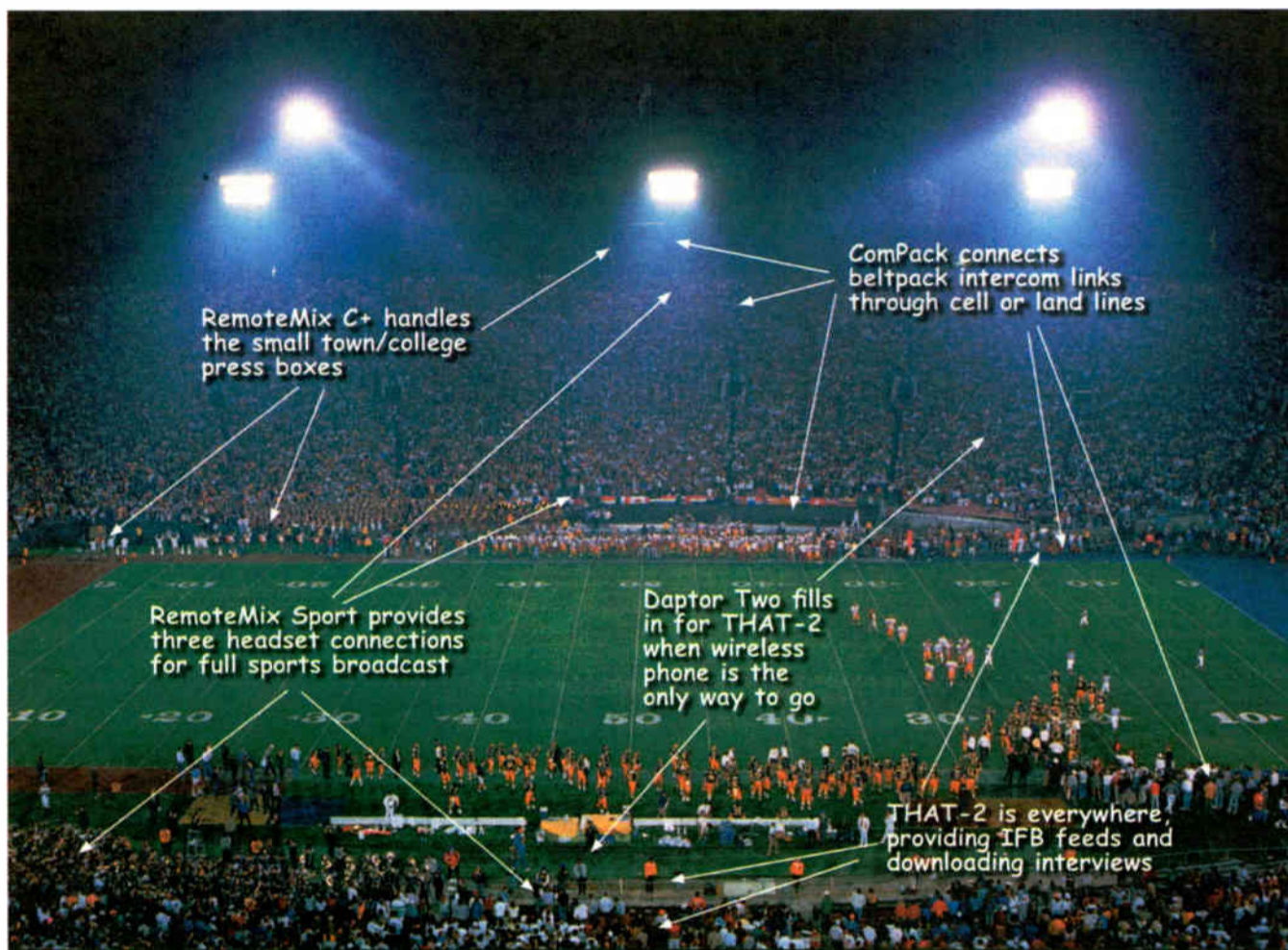
that pre-registered attendance was tracking slightly above last year's Radio Show numbers, and they are looking forward to the same "closing bounce" similar to the late surge in registrations the organization experienced just prior to the spring show.

Attendance last year in New Orleans was about 5,200 people, down about 30 percent from the year before; of those attending, about 2,000 were fully paid, according to NAB at the time.

'Important' show

There may be fewer exhibitors this year, in part because the Xstream component of the show is not included. Still, exhibitors contacted by Radio World have high hopes for the fall convention.

"We're sending a good number of representatives," said Thom Mocarsky, vice president of communications for Arbitron Inc. "We're going to have our booth, we're sponsoring our own special panel on the Portable People Meter because everybody's very interested in that. We're going to invest a lot of time and effort to use the NAB to get our message out."



The need to get together and work deals is a little different than it was. The vendors are willing to come to us now instead of us coming to them.

— Jeff Littlejohn
Clear Channel

Your First Line Of Defense Isn't Always On The Field

We've said it before...broadcast is a contact sport. And keeping in contact is what JK Audio is all about. So before the game goes on, a team of players in key positions is enjoying 100% contact with each other, with the studio, with the director, with the players on

the field, and with the outside world. JK Audio makes it possible with our intelligently designed tools. Give us a call or visit us on the web to learn more about JK's efficient, cost-effective, reliable solutions and establish your first line of defense.



ComPack



Daptor Two



RemoteMix C+



RemoteMix Sport



THAT-2

JK Audio
REMOTE BROADCAST GEAR

Toll Free (USA & Canada): 800-552-8346 • Tel: 815-786-2929 • Fax: 815-786-8502
See us on the web: www.jkaudio.com

"It is an important show," said Don Spragg, director of RF products and programs for Harris Corp., "because at NAB, the spring show, we introduced the (IBOC transmitter), what we had coming down the line, getting ready to roll. But now we're getting very close to starting the rollout, with Ibiqity's plans to get a large number of stations on by the end of this year."

'Cuts both ways'

"We expect the audience to be a quality audience," said Philippe Generali, president of RCS, "because in those times where budgets are strictly limited, there is no room for the curious and the tire kickers. The station that sends someone to the NAB is making an investment, and this person going to NAB that represents the station or the group of stations usually is looking for information, products, and is really interested in what they see."

Ownership consolidation is one
See WHO GOES?, page 18 ►

IBOC is the Future

Six Cities, Six Dates

Give us one day and we'll provide the rest — training by radio's foremost IBOC experts — Harris, iBiquity and Impulse Radio — all seminar materials, continental breakfast and lunch, and even a special gift. Best of all, you'll get information that will help you determine your most seamless and cost-effective path to the future.

Start your journey at
a free IBOC seminar.

Register online at
www.broadcast.harris.com

HARRIS

Seattle
Sept. 10, 2002

New York
Sept. 16, 2002

Miami
Sept. 18, 2002

San Francisco
Sept. 24, 2002

Los Angeles
Sept. 25, 2002

Chicago
Sept. 27, 2002



Who Goes?

► Continued from page 16

reason given for a lower attendance, at a time when fewer managers represent more stations. Exhibitors Radio World spoke with see some advantages in that concentration.

"Actually (consolidation) makes things easier for us in the sense that the decision-makers for more stations are concentrated in one place," said Arbitron's Mocarsky. "Groups do make decisions about ratings services and ratings for the whole group."

"Consolidation is a sword that cuts both ways," said Bob Jordan, co-chairman and co-founder of The Media



Some radio managers find more value than others in attending trade shows. Jeff Detweiler of Ibiquity met John Mielke of KKNX(AM) in Eugene, Ore., at last year's Radio Show.

Audit. "You can cover more stations by talking to fewer people, but it shifts more leverage to the customers."

Clear Channel's Littlejohn said he wonders if consolidation eventually will decrease the importance of such trade show exhibitions.

"We've kind of consolidated our way out of the NAB (shows), because Clear Channel owns 1,200 radio stations, CBS or Viacom owns a big chunk, Citadel and Cumulus, ABC, they all own these big chunks, and it's no longer several thousand owners, it's now a few hundred owners.

"The need to get together and work deals is a little different than it was. The vendors are willing to come to us now instead of us coming to them."

The NAB takes issue with the "few hundred owners" statement.

"There are still nearly 4,000 owners of radio stations in the U.S.," said Stacy Perrus, NAB conventions media relations manager, "and we believe that most of the employees of these stations, including Clear Channel employees, find real value in attending the Radio Show.

**In those times
where budgets are
strictly limited, there
is no room for the
curious and the tire
kickers.**

— Philippe Generali
RCS

"Where else can you go to hear from the heads of the major groups, experts on independent promotion, companies developing the technology that's going to change the face of radio, the regulators and legislators shaping our regulatory environment, all within the course of three days?"

Hispanic Broadcasting's Stewart said he finds another great value in bringing the group's engineers to the exhibition floor.

"If you have a problem vendor, it's fairly effective to show up at their booth en masse, and refuse to go away." 🌐

40,000 Watts Solid State FM Power.

The Nautel Q20/20 comprises two 20 kW stand-alone FM transmitters fully integrated to operate as a 40 kW active reserve transmitter system. For more than 30 years Nautel has built the best radio transmitters by blending solid state technology and innovative engineering design. The Q20/20 provides reliability and peace of mind through built-in redundancies — in all the world you won't find its equal.

Each Q20 features:

- redundant Power Amplifiers
- redundant Power Supplies
- dual Digital Exciters
- dual IPA & Power Supply
- dual Low Voltage Power Supplies
- 68% overall efficiency



Simply the best engineered transmitters

Contact Nautel for more information about the benefits of our full range of solid state FM and AM transmitters.

Nautel Limited, Hackett's Cove, RR #1 Tantallon, Nova Scotia Canada B0J 3J0 Phone: (902) 823 2233 Fax: (902) 823 3183 Certified ISO 9001
Nautel Maine Inc., 201 Target Industrial Circle, Bangor, Maine USA 04401 Phone: (207) 947 8200 Fax: (207) 947 3693 Certified ISO 9002
E-mail: info@nautel.com or visit us on the Web at www.nautel.com

Speak Your Mind

Tell us what you think.
Radio World's expanded Reader's Forum is your soapbox. Sound off on any radio topic by sending an e-mail to radioworld@imaspub.com or write to:

Reader's Forum
P.O. Box 1214
Falls Church, VA 22041

PROPHET SYSTEMS INNOVATIONS

Prophet Systems has the solutions to all your broadcast needs!

Now, more than ever, you need to maximize your time, energy and money. You know our reputation for quality and reliability, and now you can own a Prophet, even if you're not in the market for a new automation system! Introducing our new standalone products:

Remote Buddy

Revolutionize remotes and generate non-traditional revenues with our portable, standalone system. It's like having your studio hard drive in a suitcase! We can enhance your next remote or special event with sound effects, theming, lighting control, video signage... anything you need.

- Show video productions on your monster truck or van during your next parade or remote
- Develop non-traditional revenue streams with a traveling dance machine
- Brand your station and increase your listening audience
- Searchlights, spotlights and dancing logos are now within your reach

MusicGEN

Announcing a revolutionary breakthrough in music scheduling with MusicGEN. Now you can own or lease your music scheduler. One station, one lease rate, one purchase rate, regardless of market size. We're so sure you'll like MusicGEN, we'll let you test the software for 60 days. At the end of 60 days, you can lease MusicGEN for \$150 a month, or you can buy the software for \$3,500, the choice is yours. This is an introductory rate, so act now.

Complete Broadcast Solutions

NexGen Digital is designed to meet the complex needs of today's broadcasters through high levels of system redundancy and connectivity, as well as database fault tolerance capabilities. The system is engineered to anticipate future growth. And, our entry level product, NexGen Digital NS starting at \$9,999, allows you to select only the features that meet your particular needs and budget size.

We are now offering financing options!



THE FUTURE OF DIGITAL TECHNOLOGY

See us at the NAB Radio Show Booth #206
World Radio History

Workshops Serve Engineers

by Michael LeClair

The NAB Radio Show will feature a lineup of technical workshops concentrating on the fundamentals of radio transmission systems.

Three full-day sessions will discuss the basics of transmitter design and troubleshooting, AM and FM antennas, and the latest information on in-band, on-channel digital audio broadcasting.

Designed for both new and experienced engineers, these workshops will cover many basics of radio engineering and offer a solid introduction to the proposed IBOC digital broadcasting.

Attendees at the technical workshops will receive a certificate of attendance that qualifies for Society of Broadcast Engineers re-certification credits.

Antenna fundamentals

The AM/FM Antenna Certification Workshop on Sept. 12 will feature presenters Benjamin Dawson, president of Hatfield and Dawson; Ronald Rackley, vice president of du Treil, Lundin and Rackley Inc.; Thomas Silliman, president of Electronics Research Inc.; and Bob Surette, manager of RF engineering for Shively Labs.

As the final element in the broadcast

technical chain, antenna systems are vital to providing good signals to the radio audience. This workshop is designed to help engineers understand the workings of antenna systems, how to maintain them and how to get the most from them.

The morning presentations will provide a complete overview of AM directional antenna systems, how they are constructed, how they operate, and how to troubleshoot them when problems occur.

According to Ron Rackley, the goal of morning sessions is "to bring engineers who are responsible for AM



Ron Rackley

directional antennas to the point they understand the basics of their antenna systems ... a level of familiarity that will let them confidently approach questions of maintenance, performance evaluation, and if necessary, corrective action."

FM antenna system design, construction and maintenance will be covered in the afternoon. Directional FM antenna pattern development and design also will be addressed. Silliman and Surette will lead the afternoon sessions.

Digital plans

At the Digital Radio Certification Workshop on Sept. 13, representatives from Ibiqity Digital Corp. will provide attendees with the latest on IBOC digital radio. Presenters will include

Designed for both new and experienced engineers, the workshops will cover many basics of radio engineering and offer a solid introduction and update to IBOC.

Scott Stull, director of broadcast business development; Pat Walsh, vice president of wireless data business development; Glynn Walden, vice president of broadcast engineering; and Jeff Detweiler, broadcast technology manager.

Also presenting will be Tom Wroblewski, strategy and implementation engineer for Lincoln Mercury Engineering, and Bill Whikehart, senior technical specialist of Visteon,

See WORKSHOPS, page 23 ►

Test drive at
NAB Radio
Booth No. 836

The World's Best 15kHz POTS Codecs!



Unrivalled stability, superior sound and unique remote controllability are the results of the World's Best POTS Codec technology - Tieline technology.

Watch the Flash Movies and become a Tieline Codec expert in minutes @ www.tieline.com

Ask your favorite dealer for a FREE demo today!

Tieline 
TECHNOLOGY

www.tieline.com

Tieline Technology - 5555 N. Tacoma Ave., #101, Indianapolis, IN 46220-3547. Toll Free (888) 211-6989 Fax (317) 259-8040
email: sales@tieline.com

Have you heard?



Have you heard? BSI has a whole family of great products for Radio. Simian, WaveCart, Stinger, Speedy, Skimmer and WebConnect can all work together to make your station function professionally and sound amazing. In addition to the software that we have created, we offer partner products like AudioScience sound cards, Natural Broadcast Systems traffic and billing software, Syntrillium's new Cool Edit Pro 2.0 and various other hardware accessories.

Any and all of our programs are available on our website for download. So install our software and play with it for as long as you want. Once you've decided that it's the software for your station, give us a call or order online.

"I want you to know how pleased I am with your products. They are smooth and reliable. My client, Radio 74, who is running your software on both of their stations here in France, is delighted they took my advice to purchase your system."
-Ron Myers, European Broadcasting Services

"The whole suite of software that we have from BSI has just been really, really good."
-Rick Bell, KWDB

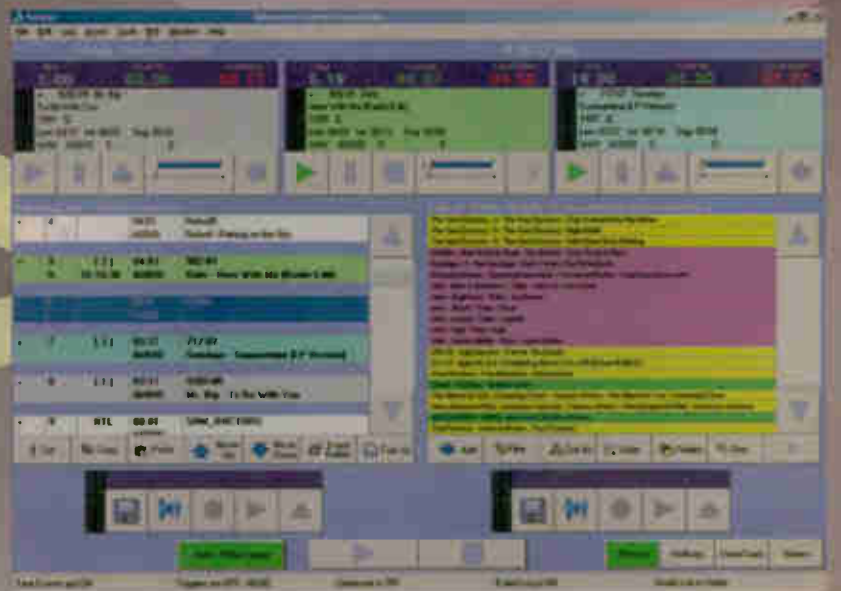
"BSI was the most reasonably-priced and user-friendly product that we found anywhere."
-Lenny Harris, Trinity Church

"We like it. We have a nine station group here, and all of our stations use BSI products."
-Dan Fisher, Trend Broadcasting

"We are proud to tell others of the great assistance and software that BSI has made available."
-Katina Stamat, WPDQ

"Having worked with the public in various customer service occupations, I try to make a point to show my appreciation for excellent service when I receive it. Thank you for the professional staff you have representing you and BSI."
-Dan Dwire, WTBJ

**Simian digital automation
\$1499**



Thousands of users have discovered how easy and versatile BSI software really is.

Test and try before you buy.

**Broadcast
Software
International**

888-bsiusa1 www.bsiusa.com sales@bsiusa.com



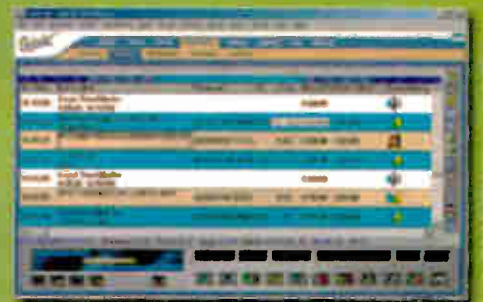
The New MASTER CONTROLTM XV

Three more reasons to make the switch!

Internet Voice Tracking
Use top talent from across town or around the world.



Living Log
No more copying log out and into the studio. All schedule changes are immediate.



24 Hour Support
The average RCS support call is answered by a real human being in 12.5 seconds.* If you have a question, we've got the answer no matter what time.



*From internal document (7/1/2001- 6/30/2002) based on more than 27,000 calls.

See the difference, hear the difference, get the best!



Master Control is Selector[®] smart.
For live-assist, automation, satellite,
Internet and remote broadcasting.

Call, click or email now:
914-428-4600
info@rcsworks.com

www.rcsworks.com/howitworks

IBOC, Music Promotion Among Hot Topics

How will digital radio affect your station? A non-technical session for managers will look at "The IBOC Rollout — Across the Industries" at the NAB Radio Show.

Radio World Editor Paul McLane moderates. The session gives managers a chance to hear from panelists representing the broadcasting, retail, consumer electronics and automotive industries concerning their rollout plans and the challenges each sector faces with the conversion to digital broadcasting.

Panel members include Bruce Reese, president and CEO of Bonneville; Jason Dillon, regional manager of Good Guys; and Bob Law, senior vice president, sales and marketing for Kenwood.

The session is Saturday, Sept. 14 from

9 to 10:15 a.m.

Another red-hot topic these days is the role of independent music promoters. A discussion about the use and value of promoters takes place during the Super Session "Independent Promotion: What's Goin' On" on Sept. 12 from 3:30 to 4:45 p.m.

Panelists include Tom Barsanti of Jeff McCluskey and Associates; Eric Bernthal of Latham & Watkins; Rick Cummings of Emmis Communications; Mitch Glazier of the RIAA; and Ted Calo of the office of Democratic Rep. John Conyers Jr.

"This is a complicated issue and the session promises to be one of the most highly attended in recent years," predicted the moderator, NAB's Jeff Baumann.



Bruce Reese



Rick Cummings

Workshops

► Continued from page 20

who will deliver a paper on in-vehicle use of data transmitted by IBOC stations.

As IBOC digital radio moves closer to reality, with Ibiquity planning rollouts in six cities in coming months, the workshop will be of interest to those planning to start broadcasting digitally.

Morning sessions will discuss the business opportunities afforded by digital broadcasting, including potential revenue-producing wireless data applications. The afternoon will offer updated information on the IBOC system and a chance to discuss IBOC implementation, and its estimated costs, with representatives of companies offering IBOC products, such as exciters, transmitters, antennas and combiners, in a panel format moderated by Detweiler.

"All interested parties — general managers, program directors and engineers — would benefit from the morning sessions," said Stull. "The afternoon panels would be of greater interest to engineers and other technical staff at the station, regional or group levels."

Transmitter tips

Finally, the seventh annual AM/FM Transmitter Certification Workshop will be held on Sept. 14, led by Radio World columnist John Bisset.

This workshop includes a review of the basic building blocks of transmitters and will discuss a variety of real-world transmitter failures to help develop troubleshooting skills in engineers.

To further illustrate the art of troubleshooting, the "Chief Engineer's Lessons Learned" panel discussion will present other engineers' disasters and how they recovered.

A panel of experts from major transmitter manufacturers will be on hand to discuss maintenance tips for their products and review the basics of site maintenance.

With the advent of IBOC, this workshop also will feature an updated session on preparing your transmitter site for the technology. ●

Put an end to shock radio.

SOUND GUARD

LIFE CAN BE HARSH at radio stations. Electrical storms and high levels of RF radiation can batter your equipment with high voltage transients. That's why AudioScience now equips its audio adapters (ASI4300 series, ASI4215, and ASI6000 series) with SoundGuard over voltage protection on all inputs and outputs. SoundGuard uses advanced multilayer Transient Voltage Suppressors (TVS) to dissipate a peak power of over 1000W per I/O pin. It's just another reason why all our products are *Built for Broadcast*. To find out more, call us at +1-302-324-5333 or visit us on the web at: www.audioscience.com.

AUDIOSCIENCE
Sound Engineering
Sonic Excellence

BUILT FOR BROADCAST



THE NAB RADIO SHOW

EXHIBITOR LISTINGS

Exhibit Hours

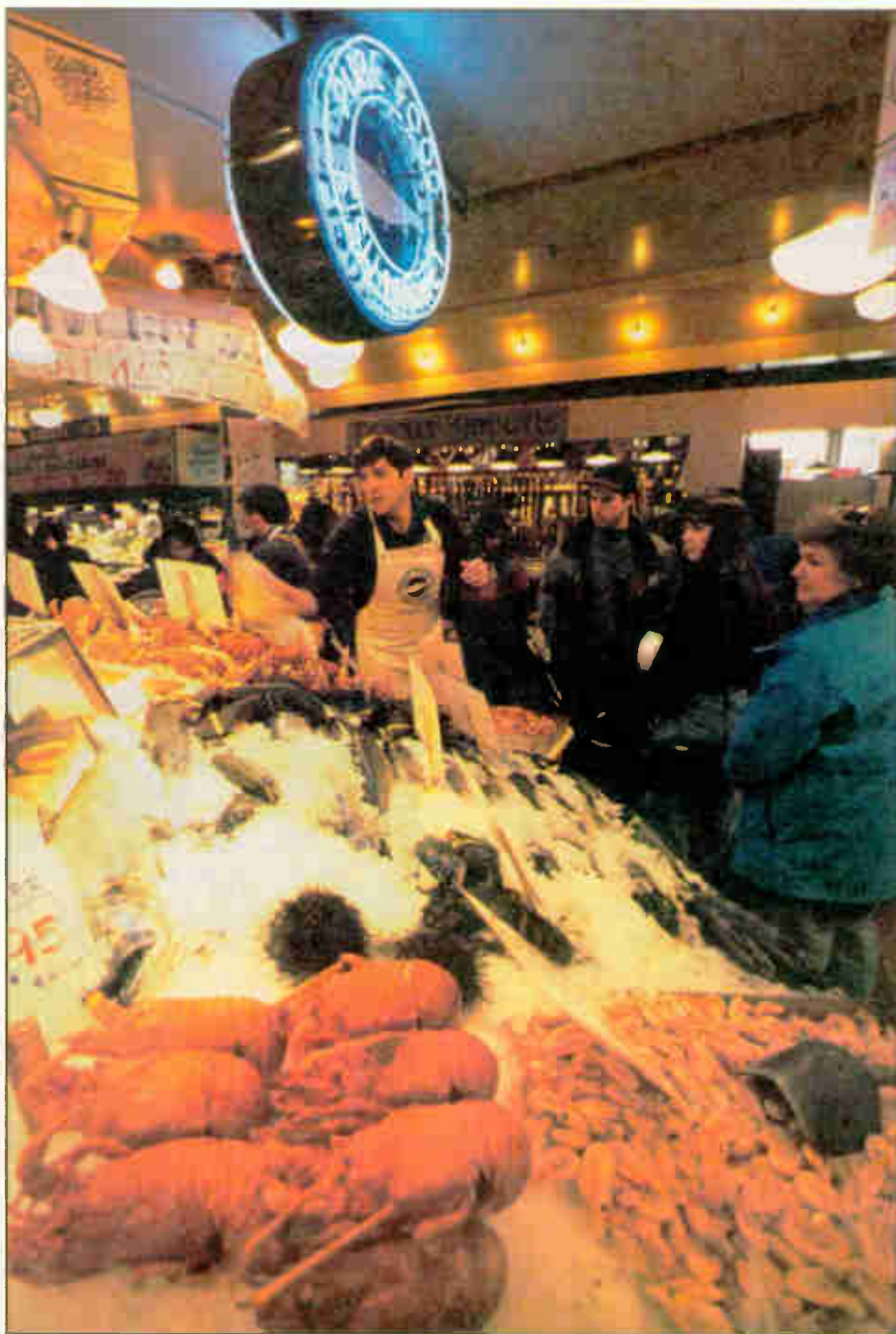
Thursday, Sept. 12 5-8 p.m.
Friday, Sept. 13 9 a.m.-6 p.m.
Saturday, Sept. 14 9 a.m.-1 p.m.

The following are exhibit booth numbers at the NAB Radio Show in Seattle. The list was provided by the show organizers. Highlights are paid for by the exhibitors.

Late registrants may not appear here. Check your on-site program for changes.

615 Music Library	619	Armstrong Transmitter	319
Advertising Edge	428	Army National Guard	435
AEQ	232	BIA Financial Network Inc.	810
Air Force Advertising	215	BMI	919
AKG Acoustics	523	Broadcast Electronics Inc.	616
Andrew Corp.	916	Broadcasters General Store	539
Arbitron	405	Burk Technology	216
		Burli Software Inc.	433
		CGA Inc.	910
		Coaxial Dynamics	912
		Communication Graphics Inc.	514
		Computer Concepts Corp.	510
		Comrex Corp.	526

Intro: The flexible Matrix codec allows for POTS/PSTN, ISDN and wireless operation. The BlueBox is a low-cost codec for delivering high-quality audio over POTS/PSTN and wireless services. The DX-300 is a new



Pike Place Market attracts visitors with fresh seafood and produce, arts and crafts.

Photos courtesy Seattle's Convention & Visitors Bureau

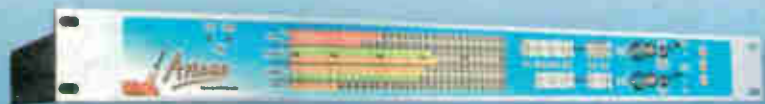


Broadcasters General Store

Don't Butcher YOUR SOUND

Today's cleaner, more transparent audio sources demand cleaner processing. You'll get it with the Ariane. Consistent, unobtrusive, powerful control will give you a sound that's a cut above the rest.

The Ariane Stereo Audio Leveler



TRANSLANTECH SOUND, LLC

"The Art and Science of Sounding Good"

www.translantech.com email: sales@translantech.com



Our family is growing...three new offices to better serve you!

Gary Tibbot
765-935-6707
E-mail: gary@broadcastdealer.com

Cindy Edwards
828-698-2893
E-mail: cindy@broadcastdealer.com

Cecile Gibson
937-783-2995
E-mail: cecile@broadcastdealer.com

Florida Home Office

1-352-622-7700

www.broadcastdealer.com

ISO/MPEG Layer III stereo codec. On Display: Envoy ISDN studio, Vector POTS codec and Nexus ISDN codec.

Kris Bobo, VP Development
19 Pine Road
Devens, MA 01432
USA
978-784-1776
800-237-1776
Fax: 978-784-1717
E-mail: info@comrex.com
Web Site: www.comrex.com

automation solution, Qed, the easy-to-use PC-based phone editor and Gateway, the intelligent file transfer utility.

Don Backus, VP, Sales & Marketing
29444 Northwestern Highway
Southfield, MI 49034
USA
248-827-4440, Ext. 130
800-362-6797
Fax: 248-827-4441
E-mail: sales@enco.com
Web Site: www.enco.com

Dalet Digital Media Systems USA Inc.	806	Energy-Onix	327
Dielectric Communications	807	Envoy Productions	427
dMarc Networks	331	ERI-Electronics Research	809
ENCO Systems	225	eWeather Corp.	201
On Display: DADpro32, world leader in digital audio delivery and automation for broadcast. Also showing NewsBoss, the newsroom		FamilyNet	915
		First MediaWorks	109

Continued on page 26 ▶



Proud to be Serving Broadcasters for 60 years

Come to Dielectric for all your FM needs. We have the most complete broadband product line and 60 years of engineering expertise in the industry. You can rely on Dielectric as your one source of responsibility for a successful project from bottom to top.

Towers

- *Manufacturing*
 - *Guyed*
 - *Self-Supporting*
- *Mapping and Inspection*
- *Custom Design & Modifications*
- *Installation and Rigging*

Antennas

- *Top and Side Mount*
- *Multi-Station*
- *Pattern Studies*


Transmission Line

Combining Systems

Dielectric
COMMUNICATIONS

Engineering Excellence Since 1942

See us at the NAB Radio Show Booth #807


**CENTRAL
TOWER**
A Dielectric Company

Call your TEAM today! • 1-866-DIELECTRIC • www.dielectric.com
World Radio History



► Continued from page 24

FirstCom Music Inc.	512
Gepco International Inc.	323
Harris Corp.	605
Ibiquity Digital Corp.	732
IMAS Publishing <i>See information under Radio World</i>	906
Inovonics Inc.	220
International Communications Products	532
Jampro Antennas/RF Systems	1015
KD Kanopy Inc.	702
Keystone Studio	106
LakeSoft	832
LARCAN USA Inc.	425

Logitek Electronic Systems 332

Intro: The Remora Digital Console is a full-featured console in a very small footprint, offering full access to the features of Logitek's Audio Engine. The console is expandable from 4 to 22 faders; also Logitek Audio Engine, the heart of Logitek digital consoles, now functions as a full crosspoint router to handle all audio within your facility. Physical and software controllers are available; also the redesigned Numix Digital Console, sleek, ergonomic, it now offers a large LCD panel with full-color graphics along with improved intercom capability, dedicated talkback switches on each fader, and more.

On Display: Router controllers including the Route3 and Button12; advanced Supervisor software.

Elaine Jones, Marketing
5622 Edgemoor
Houston, TX 77081
USA
713-664-4470
800-231-5870



Boats move from the fresh water of Lake Washington and Lake Union to the salt water of Puget Sound through Hiram M. Chittenden Locks in the Ballard neighborhood.

Fax: 713-664-4479
E-mail: info@logitekaudio.com
Web Site: www.logitekaudio.com

LPB Communications	900
LR Enterprises	635
Marketron	825
Media Professional Insurance	423B
MediaTouch	1019
Miller, Kaplan, Arase	913
MobilSign LLC	842
Moseley Associates Inc.	300
Musicam USA	315
NAB Zone	316
Nassau Media Partners	525

National Radio Systems Comm.	922
National Weather Service	631
Nautel Maine Inc.	925
NPR Satellite Services	520
Olympus Flag and Banner	326
OMB	920

Orban/CRL	611
Pinnacle Media Management	424
Powergold Music Scheduling Software	819
Propagation Systems Inc.	1013
Prophet Systems Innovations	206
Radio Express Inc.	917
Radio Systems Inc.	339

RadioSoft 536

Intro: ComStudy 2.2 radio engineering software. Accurate, fast and cost-effective prediction mapping. Includes Frequency Finder, designed to discover the impossible. Searches FCC rules and databanks to identify possible new locations.

Dale D. Tahner, Marketing Director
109 W. Knapp Ave.
Edgewater, FL 32132
USA
386-426-2521
Fax: 386-423-0821
E-mail: ddtman@radiosoft.com
Web Site: www.radiosoft.com

Radio-Television News Directors Association 426

Radio World 906

The newspaper the reaches corporate and station-level managers and
Continued on page 28 ►

PREVENT DOWNTIME WITH STABILINE®

TVSS Transient Voltage-Surge Suppressors and WHR Automatic Voltage Regulators: Your best defense against transients and voltage regulation problems.

STABILINE TVSS surge suppressors protect against extreme transients and are rated up to 300 k amps.

STABILINE WHR Voltage Regulators maintain output voltage to +/- 1% with 99% efficiency.

Superior Electric

383 Middle Street, Bristol, CT 06010
Phone 860-585-4552 • Fax 860-582-3784
www.superiorelectric.com
Toll-Free 800-787-3532 ext. 4552
A Danaher Corporation Company

See us at the NAB Radio Show Booth #931

Radio World
The Newspaper for Radio Manager and Engineers

"I love Radio World! Every issue has something for everyone in the business."
Bill Diehl, Entertainment Correspondent
— ABC Radio Networks, New York, NY

"The most important magazine on radio."
John Stortz, Chief Engineer
— WKES/WKZM Moody Broadcasting, St. Petersburg, Fla.

Our readers have something to say

"Pound for pound, Radio World is the best trade magazine of the bunch. I truly enjoy reading it and I have a notebook of articles I've kept from past issues."
Ed Towey, President
— Ed Towey & Associates Inc., Tallahassee, Fla.

"Last April (2001), wind-shear took our 328-foot self-supporting tower down. Radio World was a 'life saver' in giving me contacts of firms who were a part of the total effort of getting a new tower back in place of the old one. WGNS was on the air with a 'horizontal wire' antenna the next day, but we were not back at full-power until July 14, 2001. Radio World was a treasured source of information during that time of crisis."
Bart Walker, Owner/President
— WGNS Talk Radio, Murfreesboro, Tenn.



Jeff Gulick
Regional Engineering
Services Manager
Clear Channel Radio

Jan Chadwell
AM Chief Engineer
Clear Channel Radio

The New Face of Digital

Jeff: "We looked at everybody... and nobody had what Klotz Digital has."

Jan: "The flexibility, ease of use, low maintenance and great tech support reinforced our decision to go with the VADIS AudioMedia Platform."

Jeff: "We're brutally honest around here and to be honest, if it was garbage, we'd tell you!"

Jan: "But you couldn't get us to go back to the old way of doing things if you had to."



KLOTZ

DIGITAL

There's something comforting about an honest face... but it's the honest thoughts of our customers that are our most valuable asset. So, if you were to ask them about their old analog router and consoles, we couldn't really guarantee their sunny dispositions. But ask them about their KLOTZ DIGITAL VADIS AudioMedia Platform? Well... please see the photo above.

Call or visit us on the web today to discover the possibilities.

5875 Peachtree Industrial Blvd., #340, Norcross, Georgia 30092 Tel: 678-966-9900 Fax: 678-966-9903
ussales@klotzdigital.com www.klotzdigital.com/america

KLOTZ DIGITAL AMERICA / SBE Chapter 47

► Continued from page 26

engineers at U.S. radio stations with relevant, timely, credible news and commentary. Now featuring columnist Skip Pizzi, industry-leading coverage of the IBOC rollout and our Reader's Choice Sweepstakes, with more than \$50,000 in prizes already awarded this year. Ask about advertising opportunities in the next edition of our annual Sourcebook & Directory.

Simone Fewell, Sales
 PO Box 1214
 Falls Church, VA 22041
 USA
 703-998-7600, ext. 154
 Fax: 703-998-2966
 E-mail: sfewell@imaspub.com
 Web Site: www.imaspub.com

RCS	624
Register Data Systems	217
Rock & Roll Hall of Fame	440
Roll a Sign, Div. of Reef Industries Inc.	1011
Royal & SunAlliance	423A
Rules Service Co.	534
S.W.R. Inc.	328
Salem Radio Network	202
SCA Promotions	905
Scott Studios Corp.	801
Shively Labs	613
Sierra Automated Systems & Eng. Corp.	815
Singleweb.com	740
Smoke and Mirrors LLC	219
SpaceCom Systems	909



Seattle enjoys mountains on several sides, including the Cascades.

Staco Energy Products 432

Intro: UniStar Sx online, double conversion, single-phase UPS. One through 10 KVA UPS provides clean, stable power source, with advanced battery management, rackmount or tower available; also TreStar Sx online, double conversion, three-phase UPS, 10-250 KVA UPS, for large or heavy-duty applications where downtime is not an option.

On Display: Staco Voltage Regulators offer rock-solid, dependable technology that has made it a leader in the broadcast industry. From mobile units to large transmitter regulators, Staco Energy provides the tightest regulation, outstanding customer support and an industry-leading three-year warranty.

Kimberley A. Brown, Mktg. Coord.
 301 Gaddis Blvd.
 Dayton OH, 45403
 USA
 866-261-1191, Ext. 145
 937-253-1191
 Fax: 937-253-1723
 E-mail: sales@stacoenergy.com
 Web Site: www.stacoenergy.com

Stardraw.com 531

Intro: Award-winning Stardraw Radio is the fastest, easiest way to produce high-quality layouts of your radio system. It includes the largest, highest-quality symbols library and can read, write and edit DWG and DXF files.

Rob Robinson, Marketing Director
 245 Park Avenue, 24th Floor
 New York, NY 10167

USA
 212-672-1855
 Fax: 212-372-8798
 E-mail: info@stardraw.com
 Web Site: www.stardraw.com

Stratos Global Corp.	527
StreamingHand Service	535
Studer	431
Superior Electric	931
Supporters of The Rock	340
The Album Network	935
The Media Audit	632
Thermo Bond Buildings	224
Tieline America LLC	836
U.S. Tape & Label	609
Valcom Limited	921
VMS.VoiceTrak	324
V-Soft Communications	400
Wheatstone Corp.	1025

Wicks Broadcast Solutions 415

Intro: Control Tower provides data warehousing capability to Wicks' systems. Automated report consolidation at market and corporate levels with real-time access to information viewable as a report/spreadsheet or via the Internet;

DeltaFlex 4.0 traffic and billing introduces a Windows look and feel with its new graphical user interface; Order Express eliminates significant manual entry by multiple people of sales contract information directly into any current version of Wicks' traffic and billing product, includes a simple integrated approval, allowing electronic orders to be approved by a manager.



On Display: VT - Visual Traffic 2.6 traffic and billing software is a management-oriented traffic and billing system for "point-and-click" operation from order entry through invoicing; SalesMinder Customer Relationship Management is a sales force automation tool that helps manage the ever-increasing amount of sales information through simplifying account list management, tracking proposals and other functions; RateMinder Revenue Management software system is a powerful new sales proposal software tool for creating attractive packages while maximizing yield; Invoice Express Electronic Invoicing Software is an interface to Wicks Software Systems.

Bill Price, Sales Manager
 P.O. Box 3078
 508 S. 7th St.
 Opelika, AL 36801
 USA
 800-932-1533
 334-749-5641
 Fax: 334-749-5666

E-mail: sales@wicksbroadcastsolutions.com
 Web Site: www.wicksbroadcastsolutions.com

World Division 621

FASTER... MORE ACCURATE RADIO COVERAGE

ComStudy 2 Mapping Software

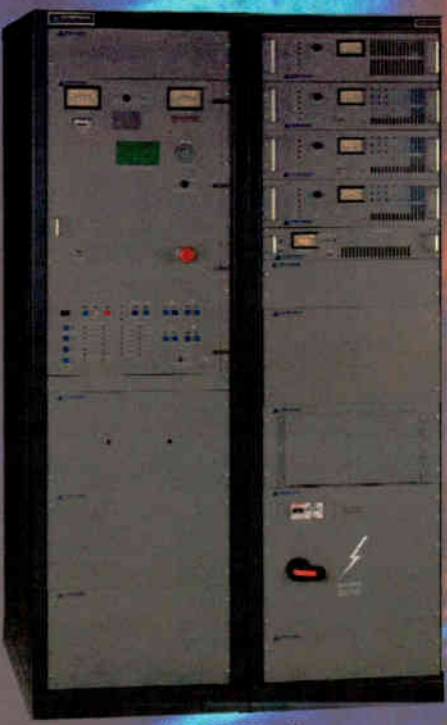
- Fully Integrated Databases
- Automatic Interference Calculations
- Real Time 3-D Displays
- Used by the FCC
- Find Available Frequencies Automatically
- Latest FCC, TIA, and ITU Standards Built-In
- Frequency Range 20mHZ to 40GHZ
- Cost Effective Mapping

Visit us at www.radiosoft.com (386) 426-2521

RADIO SOFT

109 West Knapp Ave. • Edgewater • FL 32132

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



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

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

Features Include:


- 1/4 Wave Grounded Grid Tetrode PA
- Fiber Optic PA Arc Detection
- PA Temperature Protection
- Advanced Control System with remote computer interface
- More internal status sensors than any other transmitter
- CD Quality Audio (AES/EBU optional)

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

FM 30000 TX

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

...because you deserve nothing less!



ARMSTRONG
TRANSMITTER CORPORATION

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

See us at the NAB Radio Show Booth #536

Experience. Stability. Vision. *And Chris Lawton.*

Susquehanna People

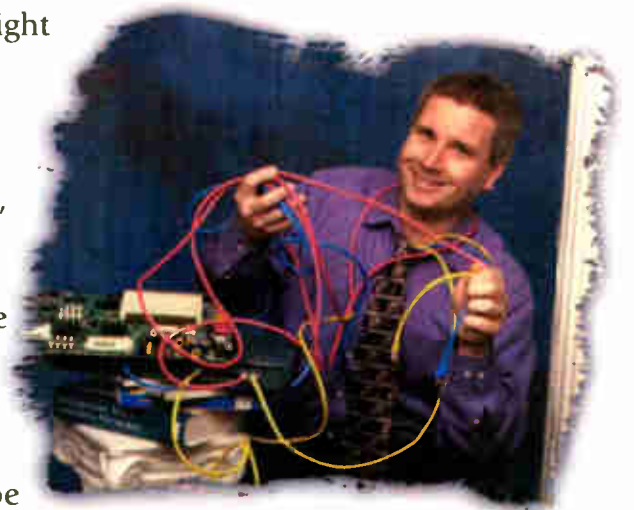


Chris Lawton
Sr. Systems Engineer
Susquehanna Radio Corp.

Chris Lawton is wired for success. He first hooked up with us in a part-time role while studying electrical engineering in Atlanta. That was back in the late 80's when new technologies were emerging. Later, as an assistant engineer, Chris asked to install the company's first LAN system. Now, as a member of the corporate IT team, Chris travels to every market we serve, helping our radio stations with their LANs, WANs, digital audio systems, and network upgrades.

What's different about Susquehanna Radio Corp.?

"Doing things right has always stood out," says Chris. "If someone says, 'this is what I believe should be done,' if they're passionate about it, they will often be given that chance, because the company does listen."



Make a Sound Career Choice!

With operations in major markets across the USA, Susquehanna Radio Corp. offers a number of radio career opportunities. For more information call our Human Resources Department at (717) 852-2132.



A subsidiary of Susquehanna Pfaltzgraff Co.

140 East Market Street ■ York, PA 17401
(717) 852-2132 ■ Fax (717) 771-1436

Susquehanna Radio Corp. is an Equal Employment Opportunity Employer, an ESOP Company, and maintains a Drug-Free Work Environment.

Radio People Comings & Goings

Byron Swanson, former chief engineer of what became the Clear Channel cluster in Portland, has moved on to become a contract engineer specializing in AM transmitter sites.

Ed Weigle left his position as operations manager at "Radio Latina," WEDJ(FM)/"Fiesta Mexicana," WSYW(AM) in Indianapolis to join **Nick Sommers Productions** at its facility in Engelwood, Fla. He will continue to work with WeigleVOX Productions International voiceover clients.

Dennis Dempsey is now the director of engineering at EWTN Global Catholic Network.

Kent Kramer was promoted to vice president of engineering at Big City Radio; the assistant chief in the Los Angeles cluster, **Alex Roman**, was promoted to chief engineer.

Veteran radio programmer **Ed Salamon** has retired from work with **Westwood One**, where he was a long-time official, including president of programming and consultant.

Zenith Media USA promoted **Matt Feinberg** to senior VP of the agency's National Radio Group.

Steve Kosbau was named president and GM of WDRQ(FM) and WDVD(FM) in Detroit, part of the ABC Radio Station Group.

Clear Channel has made a plethora of personnel changes. **Cindy McDowell** will head up its six-station Milwaukee trading area. **Dave Pugh** moved to Detroit as VP and market manager. Senior VP-West Coast **Don Howe** was tapped to head up the company's new cross-plat-

form sales effort, **Clear Channel Advantage**. Dallas cluster radio sales executive **Kelly Kibler** is the VP and market manager for the Las Vegas cluster. **Morgan Bohannon** was promoted to market manager for the Greensboro, N.C., cluster. **Muriel Funches** was named VP and market manager of the New Orleans cluster. **Scott Pritchett** joined the northern Florida team as director of sales. **Debra Wagner** was named VP/market manager for Springfield, Mass.

Robert Greer was named market manager for the Portsmouth, N.H., radio cluster of **Clear Channel Radio**. **Kim Field** is the new VP and market manager for a four-station cluster in Findlay/Tiffin, Ohio.

Karrie Sudbrack is the new VP/market manager for the company's eight-station Dayton, Ohio cluster. **Michael Preacher** was named director of strategic sales for California. **Kim Johnson** was named director of Internet sales for the Southeast region.

Beasley Broadcast Group Inc. named **Brad Beasley** as market manager for its five-station Fort Myers-Naples cluster and **Maureen Knorr** as the cluster's VP and director of sales.

Suzanne Adamoli, the corporate con-

troller for **AAA Entertainment**, has been given the title of VP.

Beasley Broadcast Group Inc.'s WPTP(FM) The Point 96.5 in Philadelphia has hired **Mike Rossi** as a morning on-air host.

Jones Radio Networks has made **Kim Ketchel** its marketing and promotions manager for its Denver-based programming products.

Jean Lange has resigned from the post of promotions manager to start her own business, and was replaced by **Melissa Jones**. **Jim Murphy** was promoted to VP, integrated country media for **Jones Media Networks Ltd.**

The **Associated Press** Broadcast division selected four senior radio executives to serve on its broadcast advisory board:

Richard Ferguson, VP and COO for Cox Radio; **John Dickey**, executive VP, Cumulus Radio; **Clarke Brown**, president, Jefferson Pilot Radio; and **Jim Russell**, senior VP, Minnesota Public Radio. **Kathleen Carroll**, the Washington bureau chief of Knight Ridder and a former writer and editor in four Associated Press bureaus, returned to AP as its senior news executive.

Sirius Satellite Radio has hired **Larry Rebich** as the VP of programming acquisition and market development, and **Jay Clark** as VP of nonmusic content. The company also appointed **William Gerski** as VP, independent distribution.

Jeff Scott was named program director of **Entercom Communications Corp.'s** STAR 93.7 FM in Boston.

Moody Broadcasting Network brought on **Tony Rufo** as the satellite department manager responsible for the network development staff and the satellite program schedule.

XM Satellite Radio named **Joseph Euteneuer** as its CFO and executive VP.

Jean-Paul Colaco was promoted to president and GM of **Radio Disney**.

Dennis Begley was named president and GM of 1250 **ESPN Radio** WEAE(AM) and 540 **Radio Disney** WWCS(AM) in Pittsburgh.

Andrew Colton has joined **ABC Radio** as a Miami-based correspondent.

Great American Country Inc. has hired **Bobbie Eakes** as the host of the network's daily request show, CRL.

Radio One named **Tamara Knechtel** as VP of operations. She will continue as GM of Radio One's Motor City cluster.

Journal Broadcast Group named **Rob Davis** as business manager of its radio operations in Boise, Idaho, which includes **KJOT(FM)**, **KGEM(AM)**, **KCID(AM)**, **KTHI(DM)**, **KQXR(FM)** and **KRVB(FM)**.



ART AND ENGINEERING COME TOGETHER ...



TRADITIONAL AND INTERNET BROADCAST STUDIO SYSTEM DESIGN AND INSTALLATION.

- Remote Broadcast and Recording Packages
- Home Studios
- Conference/Hotel Broadcast Facilities
- 24/7 Customer Support Services
- Detailed Documentation

10600 West 50th Avenue #5, Wheat Ridge, CO 80033

(303)425-5004 fax: (303)425-5005

www.creativestudiosolutions.com

Craig Hoffman joined **Syndicated Solutions Inc.** as an affiliate sales director in Pennsylvania. **Caroline Daughters** is now a sales director in Connecticut.

Kathy Maitino was named VP/manager with **Katz Radio** in Boston.

Infinity Radio hired **Andy Schuon** as president of programming. **Gary Bryan** joined **Infinity Radio's** K-EARTH 101 in Los Angeles as a morning show host. **Infinity Radio Houston** brought on **Andre Ware** as the official Houston Texans Radio Network game analyst on **SportsRadio 610 (KILT-AM)** and **100.3 KILT(FM)**.

KNX NewsRadio in Los Angeles has brought on **Jim Olerich** as the local sales manager.

NBG Radio Network appointed **Chris Ruh** as the director of affiliate relations.

Waite Radio Network hired **Ken Fearnow** as its president and **Mark Todd** as the VP of programming.

KGO-AM Radio Inc. hired **Doug Sterne** as the director of sales for **ABC Radio San Francisco**.

MNN Radio Networks Inc. hired **Scott Murray** as its general sales manager.

Rick Blangiardi is now the Hawaii market senior VP/GM for **Emmis Communications Corp.**

Washington, D.C.-based **WMAL(AM) 630** added **Bill Pres**, **Jane Norris** and **Sam Donaldson** to its the **WMAL Morning News** show.

Michael Fisher has joined **Radio Web Network** as the director of sales development.

Premiere Radio Networks promoted **Peter Tripi** to VP of affiliate marketing/talk division.

Arbitron hired **Katy Flatau** as a client service representative for its Advertiser/Agency Services in the company's Atlanta office. **Glen Tacinelli**, an account manager for **Arbitron Outdoor**, was recently promoted.



Glen Tacinelli

First Broadcasting Co., a merchant banker serving the broadcast and media industry, appointed **Gary Lawrence** as the president and vice chairman of the board.

Solid State Logic appointed **Steve Zaretsky** to the position of VP of broadcast for the East Coast.

Chris Pelzar was appointed CEO at **Fairlight USA**.

Sophie Lion Poulain has left **Audemat** for a position with **Eresco**.

Marie Cere replaced her as a salesperson.



Eric Rosenberg

Solid State Logic appointed **Dave Christenson** as manager of post-production for North America, and **Eric Rosenberg** as western regional manager of broadcast sales.

See PEOPLE NEWS, page 32 ►

Complex problems...

WE SPECIALIZE IN RELIABLE, COST EFFECTIVE PRODUCTS FOR YOUR BROADCAST RELATED NEEDS.

AFS-2 AUDIO FAILSAFE
CAS-1 CON/AIR SWITCHER
ACU-1 AUDIO CONTROL UNIT
DAI-2 DIAL-UP AUDIO INTERFACE
TTI-2 TIME-TEMP-ID DELIVERY SYSTEM
MBC-1 MESSAGE BOARD CONTROLLER
RFC-1/B REMOTE FACILITIES CONTROLLER
TAS-1 TELEPHONE ANNOUNCEMENT SYSTEM

Innovative solutions!

Sine Systems, inc.

615 • 228 • 3500 (VOX)
615 • 227 • 2367 (FAX)
WWW.SINESYSTEMS.COM

Another late night at the station?

You need iMediaTouch.



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

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

iMediaTouch broadcast automation software.
Big market dependability. Small market affordability.



To find out more call us
Toll Free 888 665 0501 or visit www.cmt.net

Come visit us at Booth#1019 at the NAB Radio Show in Seattle. World Radio History

People News

Continued from page 30



Jeff Shorsher

Gepco International Inc. expanded its sales team with the addition of **Jeff Shorsher** as director of western regional sales.

ClearOne Communications Inc. named **Eugene Kuntz** as COO.

Encoda Systems Inc. named **David Johnson** as its new CFO. Encoda appointed **Paul Stewart** as senior vice president of sales. **Jack Donnelly** was named to the post of CIO.

Tyler Callis has left the Broadcast Business Unit of **Richardson Electronics** for consulting work.

William Woodside has been promoted from APT's production manager to sales manager for Asia. APT also made **Sound Equipment Reinvest** its exclusive distributor for Belgium.

Annette Williams joined the RF Parts sales staff.



Annette Williams

DG Systems Inc. named **Mark Dunn** as its senior vice president of sales and marketing.

Thomas Murray and **Howard Silverman** joined **Syndicated Solutions Inc.** as sales directors. Murray will work in Connecticut and Silverman in California. Both will work on national ad sales.

Focusrite's U.S. Distributor, **Digidesign**, appointed **Dino Virella** as Focusrite sales and marketing manager for the United States and Canada.

Cellport Systems Inc. made **Lee Jobe** the company's president and COO.

BSS Audio USA appointed **Denny McLane** to the position of regional sales manager for several western states.

WorldSpace Corp. named **Andy Ras-Work** to the position of COO.

Philippe Delacroix was appointed to the post of **Digram** managing director.

Sierra Automated Systems announced that **Chris Wallace** joined its sales team and will head up international sales of the company's offering of analog and digital audio switchers and routers.

McCave International Inc. was given an exclusive appointment to distribute **ADAM Audio's** Monitors in the Americas.

Arbitron chose **Rich Tunkle** as its manager for new business development. **Karla Eyerly** was promoted to manager of advertising marketing services. **Julie Ellis** was hired as advertiser agency services manager. **Dana Burleson** joined the company as a client service representative for advertiser agency services. Finally, **Randy Bondar** is a new account manager for radio sales services.

Jonathan Darling joined **Kirkegaard Associates** as a consultant for its AV Systems Group.

HHB USA moved from west Los Angeles to a larger office and warehousing facilities in Simi Valley, Calif. The company recently appointed a president, **Doug Schwartz**, who took over from **David Beesley**, who returned to the U.K. **Tim Murray** is now the national sales manager.



Doug Schwartz

Electronics Research Inc. hired **Kinsley Jones** as the engineering manager for the company's Antenna Division.

KVH Industries hired **Dr. Kalyan Ganesan** as the company's VP of engineering.

Waves Ltd. has made several staffing changes. **Bob Reardon** was appointed VP of sales and marketing for North and South America for the Waves Professional Products Division. **Didi Dori** was named marketing coordinator for the Professional Products Division. **Pete Carty** was promoted to product specialist, Professional Division.



Kip Whitehead

Neutrik USA has hired **John Batliner** as the company's sales representative for its Latin American efforts.

Kip Whitehead was promoted to the position of technical

support/field service manager for **Crown International**.

Stephen Dinkel has joined the **Burk Technology** staff as a sales engineer.

MediaSpan hired **Joni Silverman** as its manager for affiliate relations.

Sierra Automated Systems has added **Brian McConnell** as its regional sales manager for the Western half of the United States and **Jim Armstrong** as the regional sales manager for the Eastern half.

Fairlight USA appointed **Gerard Volkersz** as its director of sales for the Western region.

Dario Sacomani is the senior VP and CFO of **Richardson Electronics**.

AKG Acoustics appointed **Garry Templin** to the position of VP of sales and market development. The company also hired **PAMI Group Consulting** as the public relations representative.

Dave Burns becomes director of broadcast business development for **Klotz Digital America**.

Gareth Paredes was promoted to managing director of sales, marketing and customer service for **Orban/CRL Systems Inc.** He replaced **Jim Seemiller**.



Gareth Paredes

Danaher Corp. hired **Kurt Gallo** as the president of **Danaher Power Solutions**. He replaced **Gary Masse**, who was promoted to president of **Danaher's Linear Motion Systems**.

NAB Executive VP of Television **Chuck Sherman** has transitioned to the position of president of the **NAB Education Foundation** and special assistant to **Edward Fritts**.

Kai Aiyetoro was named Low-Power FM Director at the **National Federation of Community Broadcasters** in San Francisco

The Southern California Broadcasters Association's GMs elected **KPWR/KZLA(FM)** Sr. VP/Market Manager **Val Maki-Candido** as chairman and **KTWV(FM)** VP/GM **Tim Pohlman** as vice chairman of the SCBA Board of Directors. The rest of the executive board consists of **KYSR(FM)/L.A.** VP/Station Manager **Paul O'Malley** as secretary, **KLVE/KSCA/KRCD/KRCV(FM)/KTNQ(AM)**

VP/GM **Ken Christensen** as treasurer and **KSSE/KSSC/KSSD(FM)** VP/GM **David Haymore**, as immediate past chairman. The SCBA's General Sales Managers Council elected **KPWR/KZLA(FM)** Director of Sales **Jeff Federman** to the position of its chairman. All of the stations are based in and around Los Angeles.

The **Country Radio Broadcasters Inc.** board of directors named industry veteran **Ed Salamon** as executive director. He replaces **Paul Allen**, who is returning to the education field.

The **Country Radio Broadcasters Inc.** board elected two officers and two members. **Gary Krantz** of **Premiere Radio Networks** was elected as president. **R.J. Curtis** of Los Angeles-based **KZLA(FM)** was named secretary. **Steve Ennen** of **WUSN(FM)** in Chicago, and **Charlie Morgan** of **WFMS(FM)** in Indianapolis were added as members of the board.



Peter Shields

Peter Shields, a partner at **WRF Telecommunications** partner, is now the president of the **Federal Communications Bar Association**.

Jim Zoulek, district director for the Los Angeles FCC Field Office, has retired after 34 years of service. The new director is **Catherine Deaton**.

Michael LeFevre was appointed executive producer of **Oink Ink Radio's** agency office in Santa Monica, Calif.

American Women in Radio and Television released the 2002 Honorary Trustees of the Foundation of **AWRT**. The new honorary trustees are **Pierre Bouvard**, Arbitron; **Mindy Herman**, E! Networks; **Geraldine Laybourne**, Oxygen Media; **Kevin O'Brien**, Meredith Broadcasting Group and **Stu Olds**, Katz Media Group.

Communications law firm **Pepper & Corazzini, L.L.P.**, joined Washington, D.C.-based **Womble Carlyle Sandridge & Rice, PLLC**.

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

Your signal picture sound messages vision reputation is only as good as your cable

GEPCO INTERNATIONAL, INC.
CABLE, CONNECTORS, ASSEMBLIES, PATCHBAYS, PANELS & ACCESSORIES

1-800-966-0069 www.gepco.com email: gepco@gepco.com

You can measure... with the best monitor and the most accurate test set.

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

BELAR ELECTRONICS LABORATORY, INC. www.belar.com (610) 687-5550
LANCASTER AVENUE AT DORSET, DEVON, PENNSYLVANIA 19333
Call or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.

BROADCAST RICHARDSON

A Division of Richardson Electronics

140 Product Lines, 200 Brands Including:



AM TRANSMITTERS - 1 kW & 5 kW

- Identical & on-line hot plug-in amplifiers, fully protected
- Built-in modulation monitor and audio processor (option)
- Digital & AM stereo compatible
- Covers AM & extended AM band
- High accuracy synthesized oscillator
- Built-in remote control interface
- Assembled in USA - 2 year warranty

RFCAST



POWER GRID TUBES

- The leader in innovation since 1934, Eimac products include:
- Rugged grids made from proprietary Y3™ wire
- High efficiency cooling characteristics
- Laser-cut pyrolytic grids
- Made in the U.S.A - ISO9001 certified
- Accessories available including sockets & chimneys



SATELLITE - ANTENNA SYSTEMS

- High quality, cost-effective turnkey solutions
- Covering your fixed satellite needs, including:
 - Prime Focus and Offset Antennas
 - TVRO and VSAT Antennas
 - Transmit/Receive Antennas
- Wide range of .45 to 6.1 meter dishes



AUDIO EDITORS - BCC EDIT PRO

- "Fastest Audio Editor on the Planet"
- Edits, saves, and records simultaneously!
- Audio-card independent - Handles all audio-formats
- Multi-Track Editor only \$299 (Reg. \$349)
- Dual-Track Editor now only \$49!! (Reg. \$69)



Call Today! 800-737-6937

More than 60 locations worldwide to serve you.

BROADCAST RICHARDSON

A Division of Richardson Electronics
Integrated Solutions

E-mail: broadcast@rell.com
Internet: www.broadcast-richardson.com
630-208-2200 • Fax: 630-208-2550
US & Canada: 800-737-6937

**Transmitter Components • AM, FM, TV, HF Transmitters • Studio Equipment
Broadcast Systems • Antennas • Video • Communication Links • Satellite • Webcasting**

THE XM PLUG 'N PLAY RADIO

THE XM PLUG 'N PLAY STUDIO



- | | | |
|-------------------------------------|----------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | REALLY COOL STYLING | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | SLIPS IN EFFORTLESSLY | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | EASILY RELOCATABLE | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | FACTORY CRAFTED | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | LABORATORY TESTED | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | GUARANTEED PERFORMANCE | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | LIGHT WEIGHT | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | HEAVY SOUND | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | CONCEALED WIRING | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | INTEGRATED CIRCUITS | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | BUILT-IN VENTILATION | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | DIGITAL QUALITY | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | EASY TO FINANCE | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> * | ANY SIZE, SHAPE, OR COLOR | <input checked="" type="checkbox"/> |

82 XM Studios.
 All designed by NCC. All fabricated by Acoustic Systems.
 All delivered on time. All within budget. All perfectly integrated.
 All very simple.



DEVELOPMENT PARTNERS

(212) 972-1320

NORTHEASTERN COMMUNICATIONS CONCEPTS INC. / NEW YORK CITY

*Sorry, Sony

Workbench

Radio World, September 1, 2002 Past columns are archived at www.rwonline.com/reference-room

'Old' Tricks for New Engineers

by John Bisset

Brent Barber, station manager and chief engineer for WDSO(FM) in Chesteron, Ind., read the June 19 *Workbench* in which we talked of RF interference issues. He could write a book about these problems at WDSO.

Most of the complaints come from people aiming their antennas through the WDSO antenna to pick up Chicago stations. To make matters worse, two blocks away and in the path is a water tower that confuses the issue further.

Brent is used to the complaints and has a routine to handle them. He responds by mailing a packet of information about interference, including the FCC Interference Handbook, preventive steps and a report that shows the station is operating legally.

Brent went a step further, and added the information to the station Web site. You can see it by visiting <http://mail.duneland.k12.in.us/chs/wdso> and clicking on Technical Information.

Having this information readily available shows that you are making an effort and assisting the complainant, as well as operating legally.

Make sure your receptionist has a form to record information from RFI complainants. Confirm that the receptionist understands: These complaints are not a joke and not to be ignored. The wrong attitude will earn the station an inspection.

You gotta love an engineer who builds his workshop out of Kindorf.

Fig. 1 shows a portion of the workbench

owned by Dave Ziskin of Electrotechnics in Seattle. The framework of the shop is all Kindorf, too; it's not going anywhere. For that matter, neither are the tools on the hooks. This thing is solid.

For the uninitiated: Kindorf is a brand of metal channel that engineers and electricians use to hang conduit, coax, coax switches and the like; it's common at transmitter sites and used to support speakers in studios. The channel has holes and a recessed edge; spring-loaded nuts slip into the channel so you can add a bolt anywhere you want. It's cheap and versatile, and there's no tapping of bolt holes.

easily. In the hardware department, Dave has Allen wrench rack screws, which sure deter theft.

A former law enforcement officer, he's also an avid collector of police sirens and emergency lights. Reach him at (206) 527-9000.

There's still time to sign up for the technical workshops at this year's NAB Radio Show in Seattle.

Once again, I'll host the transmitter workshop, on Saturday, Sept. 14. We cover a number of topics in this all-day workshop, but one of the most popular is the transmitter manufacturers' panel discussion.



Fig. 1: Dave Ziskin's Wall of Kindorf



Fig. 2: A matrix storage system makes your hardware drawer easier to manage.

Electrotechnics does special application electronics, but Dave also sells a variety of hardware and connectors. Fig. 2 shows a drawer of connectors, which Dave set up in a matrix to locate parts

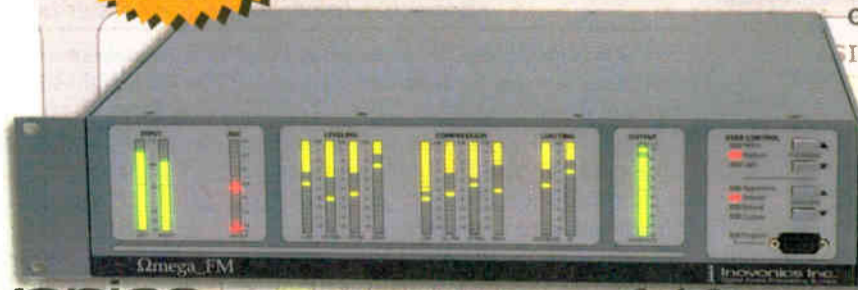
Representatives of several leading transmitter companies discuss maintenance tips and modifications to keep their products performing at their best.

See WORKBENCH, page 36 ▶

Digitally Different Omega_FM - \$5880

NEW!

OUR GOAL WAS TO DEVELOP A DIGITAL PROCESSING SYSTEM FOR FM THAT WOULD RIVAL ANYTHING ON THE MARKET. WE MET THAT GOAL...AND THEN SOME.



Omega_FM is a 100%-digital, software-based design. It doesn't use DSP chips or other application-specific parts that rapidly become obsolete. Upgrades don't plug into 'expansion slots,' they're simply uploaded.

Omega_FM is straightforward and uncomplicated. Hardware simplicity keeps the signal path short and your audio clean. Low latency lets you monitor off-air.

Omega_FM is loud, clean and versatile. We don't expect you to take our word for this, and you shouldn't. Schedule a demo at your station through an equipment supplier of your choice.

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

Hear It... Processing doesn't get any better than this.

WIRED FOR SOUND

From Regular to Super Graphics

by Steve Lampen

We left our July 3 column talking about VGA (video graphics) cables and RGB (red, green, blue) cables. These are multiple coaxes used to display progressive-scan computer monitors or analog component video, respectively. (You can read past columns in the Reference Room section of www.rwonline.com.)

Although RGB and VGA cables are available in prepackaged bags at your local electronics supply store, sometimes you can't find what you want. Standard lengths may leave you wishing for a foot or two more or trying to coil up the excess. You may need long cables if you want to move a PC with a loud fan out of the studio, leaving the monitor inside.

If you're handy with a BNC, you can "roll your own."

If you need to shorten a cable, the only problem will be identifying and buying the right BNCs or possibly a high-density DB-15 for a VGA cable. Maybe you should just start with "raw" multi-coax cable.

Many cable manufacturers make raw multi-coax. Decide how many coaxes you will need. Three, four or five are the most common choices, although there are some multi-coax "snake" cables with up to 12 individual coaxes.

A few words of caution:

When you send multiple parts of a video signal ("component video"), they have to arrive at the same time. Timing among the coaxes can be critical.

Generally, if any of the signals is more than 40 nanoseconds different than any other signal, that cable is not considered "broadcast-quality." This means the *electrical length* of the coaxes can be different from the *physical length* of the cable. You can't always just cut and connectorize.

If the cable is short by a few feet, you probably can get away with it. Longer cables require more attention.

Calculation

Because you're a radio guy or gal, you may not have a vectorscope, waveform monitor or time-domain reflectometer that will allow you to "look" at the electrical length.

What can you do? Ask the cable manufacturer. They should be able to tell you the maximum "time delay" among the coaxes. It's then easy to divide that number into the 40 nsec maximum and calculate whether you can go far enough on that cable.

For instance, if the manufacturer tells you that a multi-coax cable has a maximum of 4 nsec/100 ft., a common value for high-quality cable, calculate as follows: 4 into 40 is 10; and 10 times 100 ft. = 1,000 ft.

That means you would have to go 1,000 feet on that cable before you would exceed the 40 nsec limit.

That doesn't mean you *can* go a thousand feet. In all probability, the basic cable attenuation will be so great that after you won't have enough signal strength. Yet all, these bundles usually use small coaxes. The result simply means that timing will not be a problem.

If you're extending a VGA cable, attenuation is doubly important because of the higher frequencies these cables

must carry; so check those attenuation numbers, too. If you're going a long way, you might want to move up to a bundle with larger coaxes with less loss.

Often, a VGA cable ends terminates in a Sub-D connector (high-density DB-15). This may be a problem spot, especially if you have chosen big, beefy coaxes for low loss and long runs. You'll never get that bundled inside a high-density DB-15.

Adaptors are available to convert from BNC to high-density DB-15. If you must use bigger coaxes for lower attenuation, put BNCs on both ends and use adaptors when necessary.

This explains why most pre-made assemblies are short. The coaxes inside

are super-tiny because they have to fit into that Sub-D connector. Super-tiny coaxes inherently are inaccurate, often not even close to 75 ohms. So keeping the cable short hides these flaws, electrically speaking.

Try to extend that style of cable for 50 or 100 feet and, whoa, what happened to the graphics on the screen?

It gets better

S-VGA, for super video graphics, is a new generation of monitors, using a new type of cable. The problem with S-VGA is that it is not standardized. Lots of manufacturers that make monitors, or boxes that drive monitors, have their own ver-

sions of S-VGA.

Most customers simply buy the cables with the monitors. The problems come when you want to extend the monitor cable.

Classic S-VGA cable, if one can call anything this new "classic," contains three coaxes, for the VGA portion, and five pairs. This format can be seen in a connector known as the 13W3. It uses a DB-25 shell but contains three coax connectors and 10 pins. The 13 refers to the total number of pins, each coax having one pin, so to speak. The regular pins are grouped as five pairs.

Most commonly one would expect five twisted pairs in these 10 pins. Unfortunately, this is not the standard for many users.

Most often, the signals sent down these cables are R-G-B-H-V, representing the red, green and blue signals plus

See LAMPEN, page 37 ▶

Workbench

▶ Continued from page 35

To get an idea of the kinds of things discussed, look at the performance improvement issue discussed at the Broadcast Electronics site www.bdcast.com/exciter. Click on the Summer 2002 issue and find the Service Bulletin on the index.

For owners of older FM-100C units, it's possible for the modulated oscillator/AFC board to develop wideband noise. BE Manager of RF Customer Service Stuart Peters describes the fix for this problem in the bulletin described above. It involves installing two new capacitors and redressing some wires.

This is a good example of how transmitter manufacturers keep their products at their peak once they leave the factory.

If you can't attend this year's workshop, the NAB offers tapes of the sessions. Drop me an e-mail for more information or contact NAB's Science and Technology Department.

★ ★ ★

Sometimes the fix to a problem can be simple.

Tom Osenkowsky, a Radio World contributor and engineering consultant in the Northeast, recently received a call from an engineer struggling with a processor that was doing all kinds of strange things.

The engineer noted hot regulator chips. Tom suggested looking at the power-supply positive and negative DC rails with a scope. You should see a straight line — pure DC — straight as a rail, hence the term.

Oscillation? Well, that would get regulator chips hot, so make sure there are bypass capacitors (usually 0.1 uf) from each rail to ground. Bad or missing bypass caps can cause all kinds of flaky problems.

Simple fix, problem solved.

★ ★ ★

While we're on the subject of old tricks:

Michael Barnes, chief engineer of KVMV(FM) in McAllen, Texas, recalls a discussion in the May 22 edition about the struggles of rack-mounting equipment when working alone. Here's a tip he thought was common knowledge.

With so many new engineers entering the industry, it bears repeating. This technique is useful especially when trying to install heavy items.

Get a couple of 2-inch bolts the same thread as your rack rails (while most are 10-32, they are *not* all the same, especially if you find some military surplus stuff with No. 12 screws). Once you've checked that the threads are compatible, cut the heads off.

When installing the piece of equipment, hand-screw the headless bolts into the holes where the top rack screws would normally go. Then slide your heavy equipment in over the headless bolts. It should now be easier to hold the equipment with one hand while starting the bottom mounting screws with the other.

Of course, Michael writes that he cheats; once the screws are started by hand, he quickly cinches them down with a small power screw gun with the torque control set at the lowest possible setting.



Fig. 3: Here's a slick way to seal PVC conduit that connects a tower to the transmitter building.

Then remove the headless pilot bolts and insert normal rack screws and tighten them down as usual.

Michael always tries to put screws into every available hole when rack-mounting equipment. Screws are cheap; and the few minutes it takes to install them is better than possible damage to the equipment or the rack ears later.

I'll add that investing in a battery-powered screwdriver is a real advantage.

Thanks, David, for lending a hand to an often-frustrating problem.

By the way, if you are short on rack screws, mount the bottom screws first. The weight of the equipment will hold the top of the equipment against the rack rails. If you mount equipment using only the top rack screw holes, you run the risk of bending the rack ears, especially when mounting heavy equipment.

★ ★ ★

Fig. 3 shows a slick way to seal large PVC conduit leading from a tower to inside a transmitter building.

The PVC pipe is fitted with a rubber boot, held in place with a stainless-steel hose clamp. The boot is cut to fit around the lines; then the boot is sealed with a rubber butyl caulk.

Adding more cables? Remove the hose clamp, rip out the old caulk, add the new cable and recaulk. This is how the cellular guys do it; and with hundreds of

thousands of sites, they have good reason to do it right the first time.

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

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

Behind the Scenes at Drake-Chenault

If the recent history of radio programming turns you on, you'll get a kick out of www.drakechenault.org.

The site is sponsored by Henry Engineering. Its owner, Hank Landsberg, was director of engineering for Drake-Chenault.

"Former D-C staffers explain 'how we did it,' with lots of photos and detail," he writes in a press release about the new site.

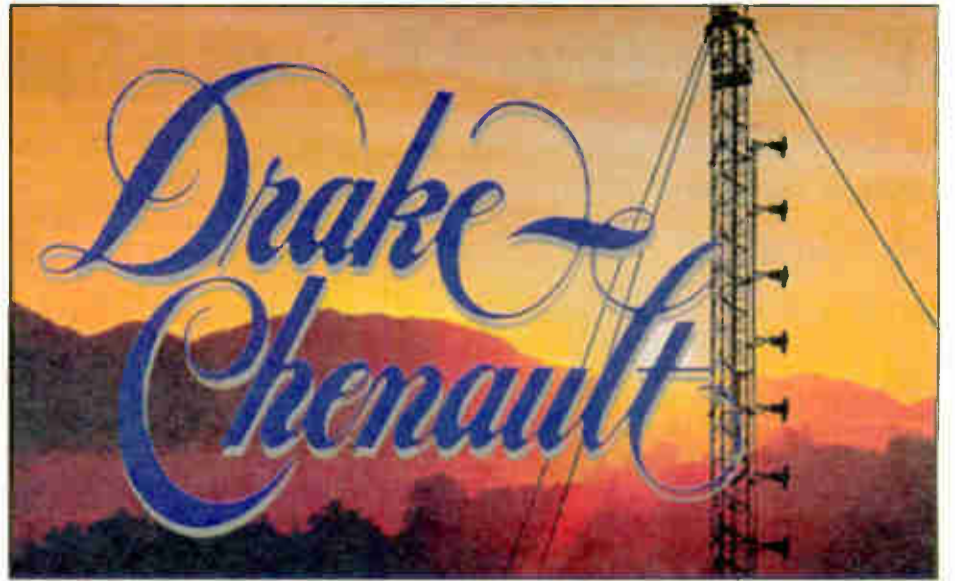
The site will appeal to those for whom "radio nostalgia" means tape-based automation, current reels, jingles and time-announce carts. It also recalls programs such as "The Golden

Years of Country" and "The History of Rock & Roll."

Drake-Chenault at one time supplied more than 1,000 automation format tapes weekly to 300 stations. The company, as Landsberg knew it, was sold in 1986.

His Web site includes contributions from writer/producer Gary Theroux and programmer Lee Bayley. It includes a list of e-mail addresses for former staffers. Hosting is courtesy of www.broadcast.net.

For information visit www.drakechenault.org or call Landsberg in California at (626) 355-3656.



Lampen

► Continued from page 36

horizontal and vertical sync. Because the sync signals are much lower in bandwidth than the RGB portion, often two pairs are used to carry them.

Of course, the pins are not 75 ohms, but the sync signals are low enough in frequency that the impedance of the connector parts is not significant. In fact, some users simply hook up the H and V as unbalanced signals, with one pin each and a common ground.

Although RGB and VGA cables are available at electronics supply stores, sometimes you can't find the lengths you want.

The decisions about which pins are which, and whether they are hot or ground, are at the whim of the equipment manufacturer.

Because most pre-made assemblies are molded, you will have to destroy one to find out exactly what the wiring is, or do some clever brainwork with an ohmmeter.

This is why there isn't any "standard" S-VGA cable. It's up to the manufacturers of the equipment. Therefore they often supply the cable with the device because it will be a lot of work for you to wire up an appropriate cable.

Next time we'll finish our look at S-VGA and discuss its new brother X-VGA and even newer versions such as DVI.

Steve Lampen is technology specialist for Belden Electronics Division. His latest book, "The Audio-Video Cable Installers Pocket Guide," is published by McGraw-Hill. Reach him at shlampen@aol.com. Past columns are in the Reference Section of www.rwonline.com.

Do more with less.

Run IBOC digital with less gear and less expense.

NEW!

FS110

Digital Signal Generator



www.bdcast.com

(888) 232-3268

Broadcast Electronics has developed a new IBOC signal generator that eliminates the need for a second exciter in many IBOC FM upgrades.

Introducing the **FS110**. Installed along with our new **FX160** digital FM exciter, everything you need to run common amplifier IBOC digital is combined and sent to the transmitter.

No costly external combiners, no filters, no second exciter or generator. You save money and time with less gear and fewer headaches.

You can also use the **FS110** to convert your AM station. Just connect to the input of most any solid state AM transmitter and you're ready to broadcast in digital.

For more information on the new **FS110** IBOC generator, contact your Broadcast Electronics representative.

©2002. The BE logo is a registered trademark of Broadcast Electronics, Inc. RW2002

World Radio History See us at the NAB Radio Show Booth #616

Expanding Museum Sparks Interest

Collection Combines Electrical Research & Radio; Plans Include LPFM License and 1920s Studio

by Skip Pizzi

This is one in a series of occasional articles about museums of broadcasting.

As the Lone Ranger shouted "Hi-ho, Silver!" from the magic box and rode into the sunset of imagination, a young listener knew that radio would always be important to him.

Jonathan Winter was an avid fan as a child growing up in post-war California; and he never outgrew his

love of the medium. By his teenage years in the 1950s, he had already acquired more than a dozen radios, and soon became as enamored of the hardware itself as he was of listening to the medium that it received.

By mid-1980s, Winter had collected hundreds of radio-related items, and opened a museum for the artifacts in Bellingham, Wash., north of Seattle. The Bellingham Antique Radio Museum continued to grow in both the size of its collection and its popularity,

carried purely by word of mouth throughout the region. It soon outgrew its original quarters, and then another home not long thereafter.

Still in Bellingham, the facility now occupies 23,000 square feet and is ambitiously titled The American Museum of Radio.

Collaboration

In 1995, another radio aficionado made a fortuitous visit to the museum, eventually enabling the current vision for the facility. John Jenkins was an executive at nearby Microsoft Corp. and was so struck by Winters' collection that he befriended the museum

founder. The two discussed a collaboration. Last year Jenkins retired from Microsoft and now co-curates the museum with Winters and serves as its chairman.

Jenkins' interest in radio included a slightly different direction.

He also had been fascinated by the study of electricity and had begun a collection of early experimental artifacts of that science, spanning more than three centuries of discovery. He held the view that it was exploration of electrical phenomena that led to the discovery of radio wave propagation.

"When Jonathan and I met," Jenkins said, "it was clear we shared a common love for the simpler, yet elegant technology of early radio and electricity."

By combining his collection of early electrical items — including many original books and scientific papers by Gilbert, Galileo, Franklin, Volta, Hertz, Marconi and many others — with Winters' vast gathering of radio hardware, a unique assemblage was created.

The joint collection now is set in "open storage," occupying about half of the museum's high-ceilinged space, while the other half is being developed for future display and other possibilities.



A Geissler Tube

Jenkins feels it is difficult to overstate the impact of this technology in shaping the American character.

"The evolution of radio, from the methodical observation of the phenomenon of electricity to the arrival of Fibber McGee and Molly in living rooms across America, has immense cultural, historic, aesthetic and scientific importance," he said.

Much of the museum's current presentation is devoted to interactive exhibits, as the staff studies how visitors — particularly youngsters — relate to the often-unfamiliar objects in the collection.

"Watching how a third-grader of today interacts with an object invented by Marconi or de Forest can be quite revealing," Winters said. The fruits of this study will inform the design of the museum's permanent collection, funding for which is being raised in a \$5.25 million capital campaign called the "Create a Legacy Project."

Meanwhile, the collection continues

See MUSEUM, page 44 ▶

Enter to win one of 26 great prizes in Radio World's reader appreciation contest giveaway!

Dear *Radio World* Reader: Last year, many of the greatest names in our industry teamed up with *Radio World* for a year-long sweepstakes extravaganza that resulted in almost \$50,000 in prizes given away. Due to the overwhelming response from you, we've decided to do it all again in 2002 as a way of showing our appreciation to our loyal readers.

Throughout 2002, *Radio World* will conduct 26 random drawings. Prizes and winners will be announced in every issue of *Radio World*. **That's 26 chances to win!**

To enter the contest you need to complete these three easy steps:

1. Go to our Web site: www.rwonline.com
2. Click the Readers' Choice icon on our home page.
3. Follow the instructions and fill out the electronic entry form — that's it, you're done!



This is your chance to participate in our Readers' Choice program and win great prizes from these fine *Radio World* supporters:



Contest Rules: To enter the drawing, simply register online at www.rwonline.com/sweeps. 26 drawings will be held throughout the year. Contest registration expires Dec. 4, 2002. Final contest prize announcement on Jan. 1, 2003. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification; however, actual delivery time may vary and is not guaranteed by IMAS Publishing. Federal, state and local tax laws may apply to prizes and are the sole responsibility of the winner. Employees and affiliates of IMAS Publishing are not eligible.

Legacy: The Digital Future—Value Packed



In today's marketplace, we know finding an innovative solutions at a reasonable price is difficult. But at Harris's Pacific Research and Design Center, our engineers refused to compromise on any of their goals for Legacy. It had to have everything: looks, intelligence, robustness and affordability. So they developed new design concepts and manufacturing technologies that combine the finest quality components with incredible styling and functionality – all at a very attractive price. Which means you get unparalleled ease of use, quick and easy format changes, low cost of ownership and legendary Harris reliability.

Contact your Harris representative for the rest of the story.

 Legacy

next level solutions

SERVICE

SYSTEMS

AUTOMATION

TRANSMISSION

www.broadcast.harris.com • 1.800.622.0022

HARRIS

See us at the NAB Radio Show Booth #605

REMOTE SALE



SALE
\$229⁰⁰

Includes Factory Hard-Wired Cable Connectors

SENNHEISER

Best Value Headset

The HMD 280 is perfect for broadcasting in high-noise environments. The headphone pads are tightly sealed around the ear and the noise-compensating microphone rejects external noise. Features: easily replaceable, single-sided coiled cable; hard-wired XLR and 1/4" connectors. Headphone frequency response 8 Hz to 25 kHz; impedance 300 ohms. Microphone frequency response 50 Hz to 13.5 kHz; impedance 200 ohms.

HMD280 List \$249.95 **\$189⁰⁰**



SALE
\$189⁰⁰

beyerdynamic Super Comfortable Beyer DT290

The low profile lightweight design makes the DT290 perfect for long hours of use. More importantly, the high-quality dynamic microphone offers excellent isolation from ambient noise. BSW has special ordered the DT290 with factory hard-wired connectors (the cable terminates in a 1/4" connector for the headphones and XLR connector for mic). Headphone frequency response 10 Hz to 30 kHz; impedance 80 ohms. Microphone frequency response 40 Hz to 12 kHz; impedance 200 ohms.

DT290 List \$410.00 **\$229⁰⁰**



SALE
\$599⁹⁹

Complete PA System Perfect for Remotes

The Fender Passport P-250 is a self-contained portable sound system with a self-powered 4-channel mixer, 2 full-range speaker units, 2 dynamic cardioid microphones and all the necessary connection cables. Setup takes no more than five minutes and the audio performance is excellent. Features: 250 watts of pure stereo power at 8 ohms (125 WPC); 4-channel, 8-input mixer; 2 additional stereo channels, sophisticated one-touch equalization and anti-feedback circuit. Order today for your fall remotes.

P250 **\$599⁹⁹**

Accessories for your P250

ST275 heavy-duty tripod stands. Includes carry bag for easy storage.

ST275 **\$98⁰⁰ pair**

BATTERYPACK is perfect when AC is not available. It powers the P250 up to 8 hours under moderate use. (Requires 12VDC-DC Power Converter)

BATTERYPACK **\$115⁰⁰**

12VDC-DC power converter enables the Passport to operate from a 12-volt power source such as an automobile.

12VDC-DC **\$85⁰⁰**

TRAVELPACK is a specially fitted wheeled cart and padded travel cover.

TRAVELPACK **\$83⁰⁰**

JK Audio



RemoteMixSport back panel

SALE
\$798⁰⁰

Make Remotes Easy

RemoteMixSport is a combination audio mixer, headphone amplifier, telephone hybrid and PBX telephone interface all in one. This is the one tool you need for sports broadcasts. Features: works with conventional phone lines, or analog and digital PBX or ISDN phones; works with a cellular phones; 3 XLR microphone inputs (one switchable to line level); 3 headphone jacks; 1/4" headphone cue input; XLR clean mix or phone mix output; built-in monitor speaker and talkback microphone and a VU meter; runs 36 hours on 9-volt batteries or use the AC adapter (included).

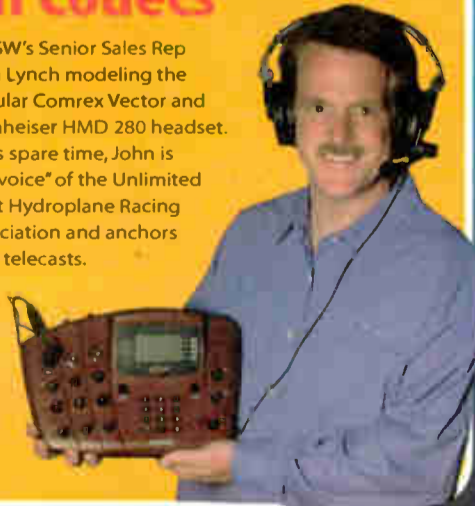
REMOTEMIXSPORT List \$995.00 **\$798⁰⁰**

Add all the Fender Accessories You Need



Call BSW for the Lowest Prices on Codecs

BSW's Senior Sales Rep John Lynch modeling the popular Comrex Vector and Sennheiser HMD 280 headset. In his spare time, John is the "voice" of the Unlimited Light Hydroplane Racing Association and anchors their telecasts.



The World's Best

BSW

BROADCAST SUPPLY

Get a Audioarts

distribution amp with your new s



Top-of-the-Line Studio

It's time to modernize your studio with our incredible sale on the Audioarts R-5. Audioarts 2x8 distribution amp to make

The 12-channel R-5, in a cost-effective, what your station needs. It has 2 mic, 10 4 high-quality mic preamps; 2 inputs per Features: Simple Phone® telephone channel VU meters for Program and Audition; channel control logic; remote control of channel studio control with talkback; 5-source digital timer with start/stop, reset and speaker and amp. Dimensions: 31-1/2"W You don't want to miss this sale. Order y

R-5 List \$5,452.00 **\$4,695⁰⁰**



AUDIOARTS

Order Today

HURRY, Sale Ends 9/30/02

World Radio History

Source for Professional Audio Products



BSW WORLDWIDE

FREE SDA8400

(\$524⁰⁰ value) studio console!



FREE
SDA with purchase of R-5 console

R-5 Console

A new console. Take advantage of Plus, we're including a free your new installation easier. Fixed-position configuration is exactly stereo line and 1 telephone channels; channel and illuminated switches. channel and mix-minus out; Sifam stereo channel on/off switches with full machine on/off; six-source stereo line selector; control room monitor selector; built-in fold; tape machine remote control; cue hours today.

BSW ENGINEERING

Buy 1.800.426.8434 or www.bswusa.com

GREAT VALUES!

APHEX SYSTEMS



ONLY \$249⁰⁰
Includes 5205K Cartridge

STANTON

Low Price on Stanton Professional Turntable

The affordable Stanton STR8-80 is a straight tone arm table that's ready to plug into an analog or digital input. Features: reverse and motor off functions; 3.5 mm line input built in for portable CDs, MDs, or any other line source; cable included; key adjustment (A.K.A. master tempo); quartz lock (A.K.A. zero pitch); 3 speeds; selectable pitch adjustment (± 8%, 12%); remote start; S/PDIF digital output; direct drive motor; target light; blue strobe indicator. Includes 5205K cartridge.

STR8-80 List \$449.00 \$249⁰⁰



MX1604A



MX802A

Incredible Behringer Mixers Starting at \$99⁹⁹

The MX802A 8-channel mixer is ideal for your project studio, remote event or applications that demand quick mixing in a limited space. Behringer's ultra-low noise circuitry and high-quality mic preamps ensure transparent, noise-free performance. Features: 8 channel inputs (4 mono and 2 stereo); 4 mic preamps with phantom power; 3-band EQ (with low-cut filters on mono channels); 2 AUX sends; 2 stereo AUX returns; rugged steel chassis.

The MX1604A is an excellent choice for your production studio with 12 channels (4 mono and 4 stereo inputs).

The MX2004A is a super affordable 16-channel mixer (8 mono and 4 stereo inputs). Not shown.

MX802A \$99⁹⁹
MX1604A \$169⁹⁹
MX2004A \$249⁹⁹



Level Matching Interface Amp

SALE \$179⁰⁰

The Aphex 124A easily interfaces consumer audio equipment to your Broadcast facility. Active, servo-balanced circuitry converts -18 dBm levels to +4 dBm (or +8 dBm) line levels and back again. XLR and RCA type connectors enable quick hookup.

124A List \$229.00 \$179⁰⁰

MARANTZ



SALE \$619⁰⁰

PMD340 back panel

Broadcast CD Player with XLR Outputs

For high-quality, reliable on-air playback, choose the Marantz Professional PMD340 CD player. Features: high durability CD mechanism; jog wheel digital encoder that can control either pitch or enable faster searches for cue points; instant start provides no audible start delays when releasing a track from pause; multi-function programmable cue button enables precise control of playback; 10-digit keypad for ensuring quick access of up to 99 tracks; audible frame-by-frame search control; RCS remote I/O; balanced XLR and unbalanced RCA analog I/O; XLR IS/PDIF format; digital output; optical digital output; GPI port with fader start.

PMD340 List \$789.00 \$619⁰⁰



SALE \$389⁰⁰

Favorite Portable Cassette Recorder

Marantz' popular PMD222 sets the standard for performance and value in portable cassette recorders. Features: 3 heads for confidence monitoring; XLR and miniplug mic inputs; modular telephone jack for direct telephone recording and playback; switchable limiter; built-in electret condenser mic; monitor speaker; 3-position mic attenuation; automatic or manual record level control; line input and output jacks.

PMD222 List \$519.00 \$389⁰⁰

XM Radio's Music Is Massive

by Craig Johnston

While much of the wonder over satellite radio focused on orbiting transmitters and how 100 channels can be received by moving vehicles, big hurdles also had to be crossed down here on the ground.

For instance, XM Satellite Radio wanted its studios to have instant access to every music CD it could collect.

"We want to program to a variety of music genres, to present some programs pre-produced and others live, but have a live feel to everything," said Kyle Whitney, director of broadcast applications for XM.

"Because satellite radio is a completely new service, we are making all the rules and designing the system with the best available technology," said XM President and CEO Hugh Panero.

The company needed a storage architecture capable of processing simultaneous audio streams with near-zero latency, combined with a scalable server platform for handling the 100 channels of audio. That's the goal the company put to supplier Dalet Digital Media Systems.

The designers also had to make the system capable of holding music from 200,000 CDs assembled by the company — about 2 million songs — and making that music available to any or all of 450 workstations.

22 TB

Dalet, which specializes in broadcast content management software, did the math. It determined that a 22 terabyte (TB) storage area network, or SAN, would give XM enough space for all present music CDs, plus room for the new ones that artists release every day. For comparison, 22TB is enough storage to hold all the printed materials in the Library of Congress, twice.

Further, playing continuous streams of audio off such a system creates a network

load hundreds of times greater than would be placed on a network system built to access traditional print files. That extra load is due to the fact that playing audio cannot be done in stops and starts; it must be done in exact sequence, in exact time.

Champion Solutions Group to create the infrastructure. That led to two years of scalability testing at IBM's Dallas facilities.

The result is a 22 TB SAN including 30 RAID arrays, 22 drives each. RAID, which stands for Redundant Array of



An XM Radio Studio

Dalet had been working with IBM on smaller systems with this capability and knew the company's products.

"IBM's cost-efficient solution for a high-throughput, scalable and reliable system was a key ingredient for developing the ideal solution for XM Satellite Radio's needs," said Anna Mae Sokusky, Dalet's president.

Dalet hired IBM business partner

Independent Disks, gives the system backup. The music data is striped across 22 disks at a time; if one of the 22 fails, enough information exists on the remainder to continue operation unabated and to rebuild the data from the failed disk drive.

"There are spare drives built into the system," said Bob Ward, Champion's director of storage delivery. "A failed drive's data begins to be rebuilt on one of these 'hot spares' immediately, and the task completed in from two to 24 hours, depending on the priority assigned."

No SPFs

The bane of an equipment designer is the "single point of failure," a component that can bring a device to a screeching halt should it fail.

One of XM's major requirements was that the music storage system have no single points of failure. With that in mind, Champion designed 100-percent redundancy into the storage system. For instance, there's a backup power supply, and the power supplies are hot-swappable.

"At its core, it's designed around an IT system," said Bill Wheeler, Dalet project manager. "It's miles and miles of fiber."

Wheeler says everything is brought into the digital domain as soon as possible, and the goal is to keep everything digital. "The exceptions are the microphones on the front end, and the speakers at the other end."

If the hardware challenge was to store all that music, Dalet's software challenge seems no less daunting: develop content management tools to find one song out of 2 million. The new system allows that access capability from any of the 450 or so workstations in the XM facility.

Scalability was a major requirement,



because nobody knew where the satellite radio business was, or is, going. So the system is designed to get bigger, if necessary.

"We could increase storage another 16 TB (60 percent) without adding additional servers," said Champion's Ward. "We could actually increase the capacity five times with minimal effort."

On the output side, XM has some elbow room, as well. Ward estimates they could increase the system to about 5,000 outputs.

The music itself? That fell to Loudeye Corp., which "ripped" or transcoded the CDs to MPEG Layer II at 384 kilobits per second (representing compression of approximately 4:1). MPEG Layer II at that bit rate was chosen to provide modest storage reduction while maintaining audio fidelity.

Loudeye ripped 120,000 music CDs, putting the material on DLT tape. Digital Linear Tapedrive is a popular medium for backing up computers.

Every programmer is beside himself at the ability to tap into our vast library of every conceivable song in any conceivable format.

— Kyle Whitney

The tapes were shipped to the XM facility, where the music files were transferred to the storage system. Finishing the job of ripping existing music and ripping new music as it is released fell to XM's in-house staff.

When XM began rolling out its satellite broadcast service in September of last year, the music system got high grades.

"Everyone is delighted with how well the system is performing," said XM's Whitney. "The launch was as smooth as could be."

"Every programmer is beside himself at the ability to tap into our vast library of every conceivable song in any conceivable format. It is amazing to be able to search for 'Darny Boy' and find over 200 versions, from Westminster Choir to Riot." ●

BUSINESS DIGEST

Studio Technology Looks to West

West Coast customers who want custom cabinetry from Studio Technology will be able to get it more easily. The supplier is about to open a 6,000-square-foot production facility in Reno, Nev.

"This is to provide better service to our existing West Coast customers and to attract potential West Coast clients who would not normally consider Studio Technology because we were perceived to be too far away," said owner Vince Fiola. The company's main headquarters is in the suburbs of Philadelphia.

Production on the West Coast is to begin by early September. The facility in Reno will be managed by Thomas Adams. Fiola hopes to have six employees there within a year and a half.

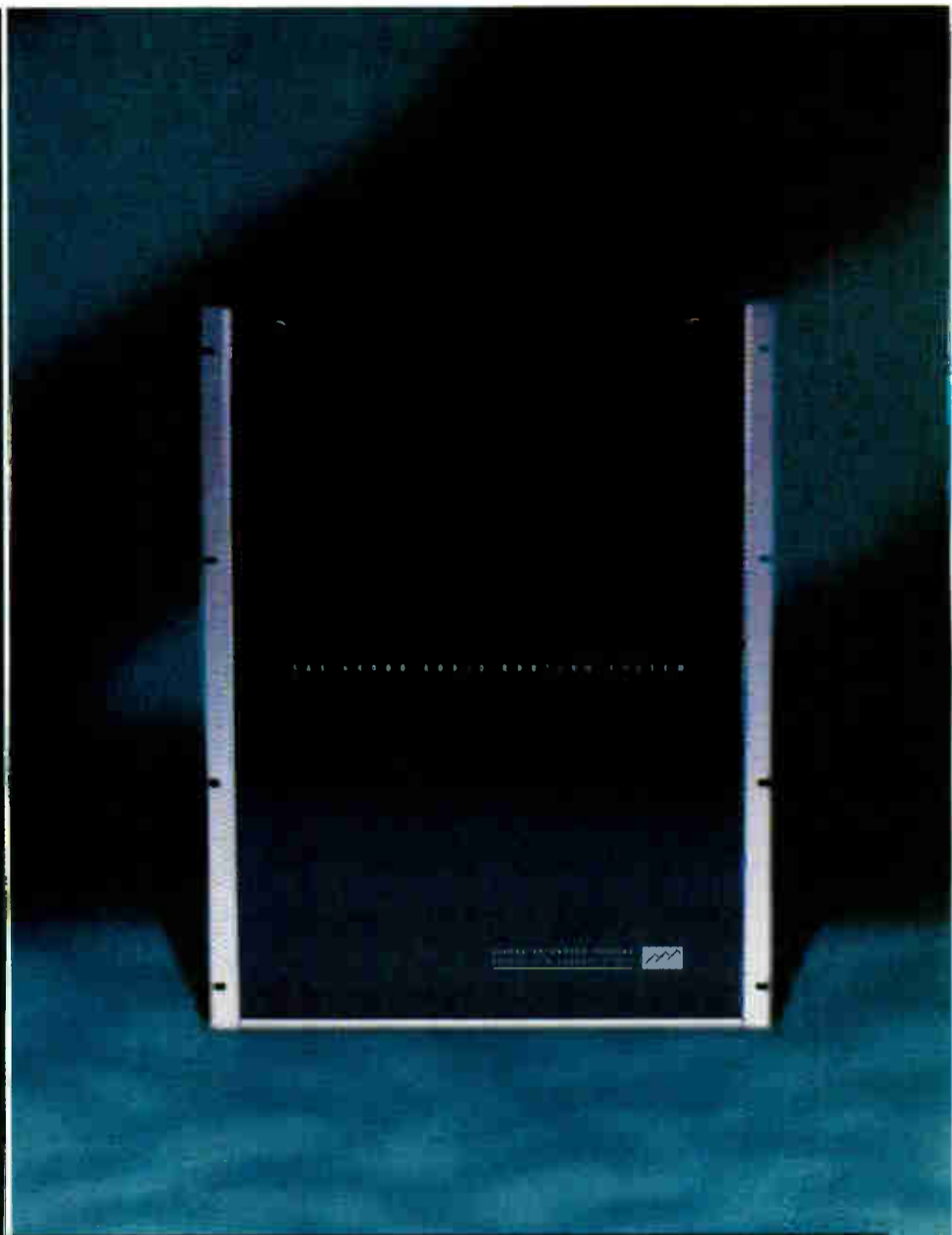


Thomas T-Man' Adams will run the new shop for Studio Technology.

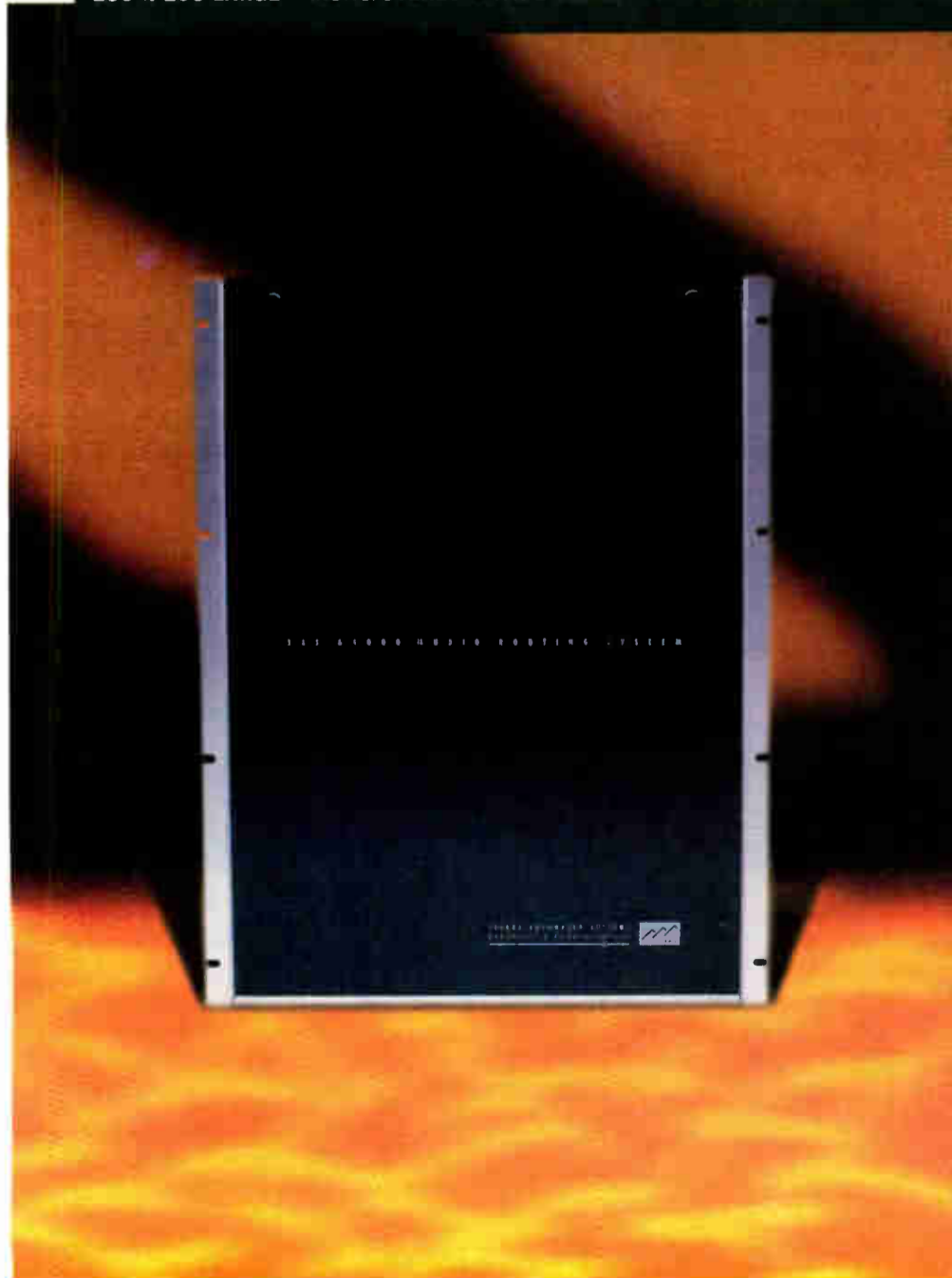
SAS64000 AUDIO ROUTING SYSTEM

E l e g a n t
A n a l o g

I n s t a n t
D i g i t a l



256 X 256 LARGE • MONO/STEREO • WIDE VARIETY OF CONTROL PANELS • 118DB ANALOG DYNAMIC RANGE • DISTRIBUTED MULTI-PROCESSOR ARCHITECTURE



If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital. A true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. And even better, the SAS64000 creates a forward path to AES/EBU digital audio without creating analog obsolescence.

This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Or mix it up with 24 bit conversion analog to digital and vice versa. Either way, this unique architecture sports flawless signal integrity and non-blocking flexibility.

And it's wonderfully simple, just plug in our new digital port expander and that's it. Welcome to digital! -co-existing richly with analog in the same framework.

There's lots more to tell. Call us: 818 840 6749. Fax us: 818 840 6751. E-mail us: sasaudio.com Check the Web site: sasaudio.com And of course, snail mail: 2625 North San Fernando Blvd. Burbank, California 91504 USA



SIERRA AUTOMATED SYSTEMS
BROADCAST & COMMUNICATIONS

Museum

► Continued from page 38

to grow, now incorporating more than 1,000 vintage radios with numerous spark-era transmitters and other tools of the trade along with a rare trove of items cataloguing scientific developments in electrical research dating back to the 1650s.

Learning as a focus

The facility's vision is driven by a need to educate, an aspiration the curators have shared for many years. They acknowledge that the coming of the digital age has radically reduced students' knowledge and interest in

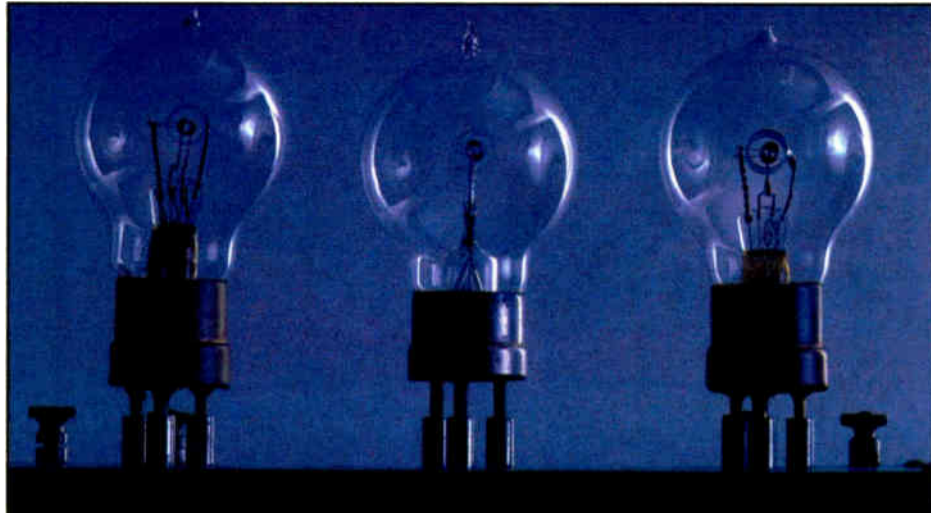
the earlier days of electronic media and analog technology.

"We no longer see how things work by visually examining them," laments Winters, noting that one of his primary goals of the museum is to expose children to the many shapes, materials and design styles of earlier technology.

"Using the museum to showcase these wonders of an earlier time is a dream come true," he said.

Jenkins envisions a rich environment for learning.

"At the museum, visitors will enter a world that existed before the transistor. We want them to experience what it was like to tune in a station on a radio built in the 1920s and hear the programs as they were heard then. We want them to see how things work and



The collection includes these early radio tubes.

begin to understand the process and the underlying scientific principles."

The curators expect the museum to be like no other, primarily in its collection's uncommon scope, covering electricity and broadcasting.

granted by the FCC. The museum also will develop a production facility to feed this new channel as a replica of a 1920s-era radio studio. This room will show visitors a creative space from an era long passed.

Watching how a third-grader of today interacts with an object invented by Marconi or de Forest can be quite revealing.

— Jonathan Winter
American Museum of Radio

Winters said, "The discharge of a Leyden jar (an early capacitor) is what led to the discovery of the resonant circuit," supporting his partner's premise that the two studies have forever been linked.

The sheer volume of the collection also will set it apart, along with its interactivity and the linearity of its exhibits' presentation in a connected story line.

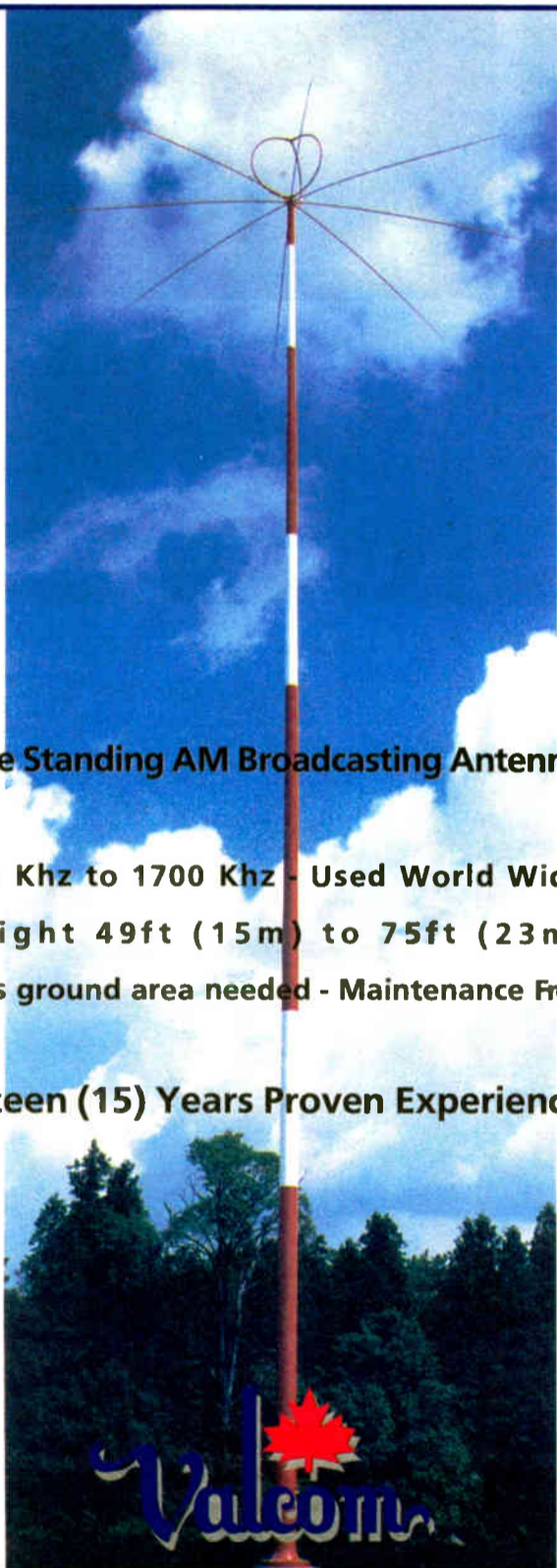
The content the museum intends to broadcast is also fast becoming an artifact: local radio programming, which it expects to provide to the Bellingham audience over the air, and to the rest of the world via the Internet.

The new facility is being designed by experienced developers, some of whom worked on the Museum of Flight at Boeing Field in Seattle. The curators

Free Standing AM Broadcasting Antenna

530 Khz to 1700 Khz - Used World Wide
Height 49ft (15m) to 75ft (23m)
Less ground area needed - Maintenance Free

Fifteen (15) Years Proven Experience



175 Southgate Drive,
Guelph, Ontario, Canada N1G 3M5
P.O. Box 603,
Guelph, Ontario, Canada N1H 6L3
Tel: (519) 824-3220 Fax: (519) 824-3411
Email: enquiries@valcom-guelph.com
Internet: www.valcom-guelph.com



The American Museum of Radio includes this reproduction of the radio room on the RMS Titanic. Co-curator Jonathan Winter listens in vain.

"Visitors will understand, for example, how Benjamin Franklin and his famous kite experiments helped save hundreds of lives during the sinking of the Titanic more than a century later," Jenkins said.

The goals for development at the American Museum of Radio are impressive. The organization has applied for a low-power FM license, which it is hopeful and cautiously confident will soon be

at the American Museum of Radio continue to search for pieces that have historical, cultural or technical distinction. They also are seeking grants and leadership contributions from individuals who share their vision.

For more information about the American Museum of Radio, visit www.antique-radio.org.

Skip Pizzi is contributing editor of Radio World. ●



Cover your assets.

Eventide Broadcast Delays.
Because what they don't hear
can't hurt you.



Some people call it speaking their mind. But when the FCC hears, it's called trouble.

Fortunately, Eventide® invented the obscenity delay. Today, the BD500 Broadcast Delay can delete obscenities multiple times while our patented catch-up gains back your delay. And the even more affordable BD960 provides up to eight seconds of delay with AutoFill™. Eventide Broadcast Delays. We can keep you out of trouble...and more importantly, on the air.

Eventide
BROADCAST DIVISION

www.eventide.com • 201.641.1200

Eventide is a registered trademark and AutoFill is a trademark of Eventide Inc. © 2002 Eventide Inc.

World Radio History

MARKET PLACE

Weather Alert Partner Covers U.S.

Page Update says it has new technology that can enhance the performance of EAS and other alert systems.

"We have, in effect, created the 'home-land security' system that everyone else is still dreaming about," said Jesse Rotman, director of marketing and sales.

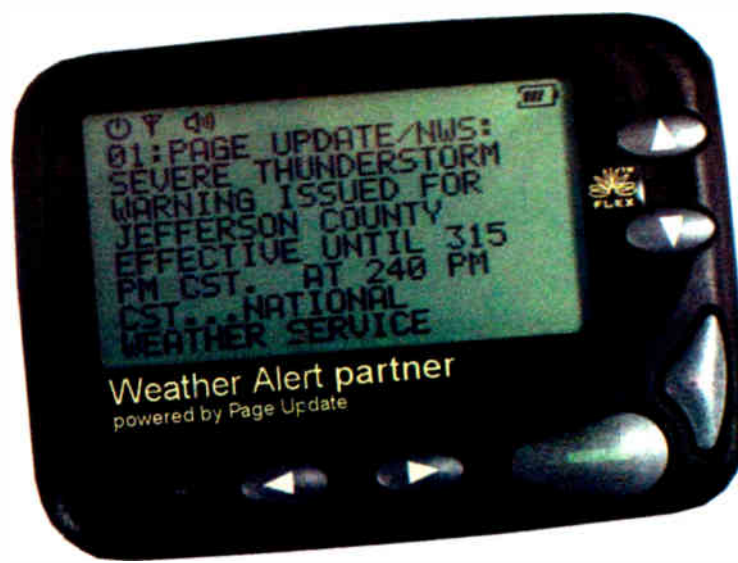
The company's technology was introduced earlier in a desktop receiver, Weather Alert 2000. A new alphanumeric pager is called Weather Alert Partner, a receiver that can be clipped on a belt or carried in a pocket or purse.

The text-based digital system uses satellite and 900 MHz technology to cover the United States. The company says its products offer capabilities well beyond analog

weather radios, e-mail alerting systems or telephone notification programs.

Up to 16 counties can be monitored at once. Group engineers can use the system to monitor stations in various markets; news staffs could be equipped with receivers in the field to stay on top of breaking weather events and news stories and receive messages from the station's news desk.

The system provides localized emergency information including tornado, storm and flood warnings and watches, chemical hazards, fires and national attacks. The receiver displays watches and warnings issued by the National Weather Service, messages from the Emergency Alert System and other



The Weather Alert Partner Pager

The Traffic C.O.P. for Windows™

If your traffic software is being discontinued, now is the time to take a look at The Traffic C.O.P. for Windows.

- A complete, fully featured, true Windows, traffic and billing system from order entry to log scheduling to A/R.
- The intuitiveness of Windows. Training has become obsolete.
- Runs on your computer network, exports to your automation system.
- Unexcelled Support. With any support option, NEVER a charge for updates.
- Run up to 256 stations from a single database, separate databases or any combination.
- Still the same low prices, Still the generous small market discounts

Once you view our FREE CD Demo, we know you will want the software.

No Obligation! See what The Traffic C.O.P. for Windows can do for you!

Call now (800) 275-6204
www.broadcastdata.com

sources from the company's facility in Nashville, Tenn.

The device sounds one of 15 alert tones or can be set to vibration or silent modes. It has an eight-line display on an LCD screen to show the message text.

There is an alert time stamp and a large digital clock display with alarm. A zoom display doubles the text size, helpful for the hearing-impaired. The pager operates on an AA battery and can remember three text alerts for each of the 16 county codes.

The product is addressable individually. This enables a "closed-circuit" notification group to be established. Customers must buy 25 units for this feature.

Custom messaging is suitable for institutional and business applications such as notifying residences and businesses surrounding a nuclear energy or chemical facility about an evacuation. Each receiver also functions as a nationwide alphanumeric pager; users can send messages to any Weather Alert Partner through the Internet.

Subscribers pay \$9.95 monthly for the weather and civil-emergency monitoring service; personal paging and custom messaging services also are available. List price of the Weather Alert Partner is \$179.95.

For information contact the company in Tennessee at (800) 743-4989 or visit www.pageupdate.com.

Harris Shows DAX; Gates Name Retired

Harris Corp. is introducing a low-power AM transmitter line at the upcoming NAB Radio Show in Seattle.

The DAX products will replace the Gates line. This represents the discontinuation of the last new products to carry the legacy Gates name, a spokeswoman confirmed.

The new transmitters, available in 1 to 6 kW, are IBOC-ready. According to Harris, the new models are suitable for IBOC and analog use and are configured for redundancy using RF modules found in its Destiny 3DX transmitters.

Power output ranges from 25 watts to 5.75 kW for the DAX-5, and 25 watts to 7 kW for DAX-6. There are five preset power levels on each model.

Selling points include a "plug-and-play" migration path to IBOC DAB and the use of Digital Adaptive Modulation, which monitors modulated output and corrects non-linearity caused by some antenna loads.

For information contact the company in Ohio at (513) 459-3400 or visit www.harris.com.

Radio Groups on the Move

Annual Revenues, Stock Prices and Stations Acquired Help Determine Who Will Be the Newest Movers and Shakers in the Radio Market

by Susan Ashworth

While it's true that the big guns — namely, Clear Channel and Infinity — still lead the radio market based on number of stations owned and annual revenue figures, they ought to keep an eye on their rear-view mirrors.

In radio, size isn't everything. According to financial analysts and radio stock watchers, success in the radio market comes from adequately balancing decisions about programming, formats, market size, staff diversity and location. A number of analysts suggest that market watchers keep the closest eye on

smaller groups, those posting less than \$200 million in revenues.

"While there isn't one way of being profitable in radio, the key is to take advantage of certain opportunities, whether it's regional or format-specific," said Mark Fratrick, vice president, BIAfn. "It's not necessarily about only having more stations or only having a niche. It's about taking advantage of the opportunities that are out there."

Revenue review

After reviewing annual revenues, stock prices, stations acquired and market share, a clearer picture forms about



James Boyle

which may be the next up-and-coming radio groups.

While success in the market can be measured by any number of factors, some groups have found success by steering away from the big powerhouse markets of New York, Chicago and Los Angeles altogether.

Take Citadel Broadcasting for one. Incorporated in 1991, the company has grown from a relatively small group owner to the sixth-largest in the nation as measured by revenue, owning and operating radio stations in 24 states, according to BIAfn.

That success has come in part from focusing on mid-sized markets. According to the company, smaller markets are less competitive, have fewer signals, derive a significant portion of their revenue from local advertisers and offer substantial opportunities for further

See RADIO GROUPS, page 48 ▶

MANAGEMENT CORNER

Re-Regulation: On the Horizon?

by Vincent M. Ditingo

"Fasten your seatbelts, it's going to be a bumpy night," actress Bette Davis once proclaimed.

Radio group owners, especially those with large consolidated operations, would do well to heed this warning today.

While slowly emerging from the economic doldrums of the past 18 months, local radio consolidators are finding themselves standing at a regulatory crossroads in which the possibility exists that severe limits may be placed upon their newly acquired marketing and programming clout.

Watershed

In fact, 2002 will now go down in the annals of radio history as a watershed year for consolidation as major radio groups weather criticism from lawmakers, particularly Sen. Russell Feingold, D-Wis., several music industry groups and the listening public over ownership concentrations. But mixed signals abound.

Coinciding with these events, the FCC said it may further relax the remaining newspaper/radio and TV cross-ownership rules in 2003, among other deregulatory moves, prompting the question, "Which way is the regulatory pendulum going to swing next?"

The economic constraints for radio companies have, indeed, expanded greatly since Congress passed massive legislation six years ago loosening market ownership restraints for radio. The move was designed to allow radio to compete more successfully in the advertising arena with

See RE-REGULATION, page 50 ▶

Top 10 Radio Groups

(Ranked by Revenue)

Rank	Group	Est. Group 2001 Revs (000s)	Number of Stations	Number of Markets
1	Clear Channel Comm.	\$3,256,482	1,231	190
2	Viacom International	\$2,092,050	183	41
3	Cox Radio	\$428,000	81	18
4	Entercom	\$408,075	104	19
5	ABC Radio	\$401,700	58	29
6	Citadel Comm.	\$313,360	205	41
7	Radio One	\$287,097	64	22
8	Emmis Comm.	\$258,900	21	7
9	Cumulus Media	\$253,035	243	52
10	Hispanic Bdcstng	\$251,600	55	15

Source: BIAfn's MEDIA Access Pro



(Too bad you can't scroll...)

www.**BEXT**.com

Home | About | Contents | Products | Support | Library | Links | Search | Contact | CGC | User List | Warranty | Specials!

The XL 1000



The most advanced compact kilowatt on the market --
Now available from stock at an amazing promotional price

Tel 619 B-E-X-T-I-N-C or 619 239 8462
US TOLL FREE 1 800 500 5769

REQUEST A FREE CATALOG

Products

- Radio Products
- TV Products
- Antennas
- RF Broadcast Line

Support

- Library
- Tech Bulletins
- 24Hr Emergency
- Field Service
- Contact us

Industry News

- CGC Newsletter
- SBE Report
- FM Analysis
- IBOC Evaluation

...but if you could, you'd see a world of RF equipment, from 10 watts to 30 kW liquid cooled, with monthly specials and other interesting information. Guess you'll just have to do it the old-fashioned way: Look it up on the internet. www.bext.com

Radio Groups

► Continued from page 47 consolidation.

Citadel also has grown by way of heavy acquisition, buying 17 FM and eight AM stations between 1992 and 1996 followed by a year of massive acquisitions in 1997, when it bought 61 radio stations for approximately \$230 million.

It continued to purchase stations nearly every year after that, now owning and operating 138 FMs and 61 AMs.

The company's growth brought out the investors. Citadel was acquired last June by Forstmann Little & Co. in a transaction valued at \$2 billion.

In February, Farid Suleman, formerly of Infinity, was named Citadel Communications chairman and CEO.

A local focus

Similar acquisition goals were set by Cumulus Broadcasting, which has transformed itself into the ninth-largest radio broadcaster on the revenue charts, according to BIAfn. It reached that spot by focusing on mid-level markets and increasing locally originated programming, Cumulus said.

With its focus on mid-sized and smaller markets, Cumulus has seen media revenues grow. It owns and operates more than 250 radio stations in 54 markets in the United States and the Caribbean.

This market strategy succeeds, the company said, due to lower overall susceptibility to economic downturns in smaller markets and rising ad revenues as national and regional retailers expand there.

"(Smaller-market) diversification, coupled with favorable advertising pricing, has provided us with the ability to compete successfully for advertising revenue against other media competitors such as print media and television," said

Cash Cows and Flankers

One key facet to success may be multiple station ownership, said James Boyle, an analyst with Wachovia Securities.

"Groups that will remain have a growing number of stations under their control," he said. This gives them more local audience, which not only allows stations to better compete with newspapers but also puts them in a better position if there is a format attack.

"In the old days, one big flagship station might have accounted for 50 percent of your cash flow," Boyle said. "Even if it was a part of a decent of a combo, if (a competitor) came straight at you, your station typically didn't have a lot of room to maneuver."

"Now it's very rare for a single station to account for more than 10 percent of a group's cash flow. And since many of these groups have a five- or eight-station cluster in a market, your 'cash cow' may have two or three flankers in the market. That makes it much harder to attack someone unless there's a disadvantage that can be played upon."

— Susan Ashworth

the company, which is led by Chairman Lewis W. Dickey Jr.

In addition to recently acquiring the assets of three AM and five FM stations in Georgia for \$35.5 million, Cumulus raised \$199.2 million in a stock offering in May, of which \$55.6 million was used for the acquisition of Wilks Broadcasting. Cumulus stock was trading around \$12.08 in early August.

According to financial analysts, groups with an impressive number of acquisitions under their belts have found success by following the simplest rule in the financial game: Buy low and sell high.

"That's the secret in any economy," Fratrik said.

When you talk to people in the industry, it would appear there are one public and two private companies that a lot of people want to work at: Cox, Susquehanna and Emmis.

— James Boyle,
Wachovia Securities

That's very difficult in this era, particularly in 2001 and in recent months, he said. The overall number of stations sold in 2001 decreased by 46 percent, with the value of those sales decreasing by 85 percent.

"But there are still groups out there who are doing it," he said.

Deregulation's effect

While acquisition is one of the flashiest ways to tout growth, "many of the groups don't have to get all that much bigger to continue to be very successful," said James Boyle, managing director of Wachovia Securities, who covers media stocks. With deregulation, many of the groups have sprung well past the long-abandoned 14-station cap and have built significant clusters in various markets.

The upside is that they no longer are disproportionately exposed to an individual region's economy, Boyle said. And even with consolidation, the top 10 radio groups still account only for roughly 45 percent of industry revenue.

"That's the most fragmented of all the media and entertainment segments, where the top 10 typically own anywhere from 60 percent to 95 percent of the revenue," Boyle said.

"Radio was so artificially constrained before deregulation that they were starting from a terribly difficult position compared to other businesses."

That leads analysts to look at other factors to measure a radio group's future.

One surprising factor: business culture. "When you talk to people in the industry, it would appear there are one public and two private companies that a lot of people want to work at: Cox Communications, Susquehanna Radio Corp. and Emmis Communications," Boyle said. "That's probably one of the better confirmations of being a standout group."

While size is not the only measure of a group's success, the larger owners have found success via market diversity, which helps reduce a group's reliance on the performance of any single station and

insulates the company against market downturns.

Infinity Broadcasting Corp., ranked by BIAfn as the second-largest U.S. radio broadcasting company as measured by revenue, owns approximately 180 stations in 22 states with a range of programming formats including rock, oldies, news/talk, adult contemporary, sports/talk and country.

Diversification

Stock in Viacom, Infinity's parent company, was trading at \$25.25 in early August.

Likewise, success has been found by diversifying outside the radio market alto-

gether. The nation's largest radio group, Clear Channel Communications, operates 37 television stations, controls 776,000 outdoor advertising displays and has its hand in the entertainment industry via Clear Channel Entertainment, in addition to owning and operating approximately 1,225 radio stations. Clear Channel's stock was trading at \$24.76 in early August.

Diversity works in the radio market, Wachovia's Boyle said, adding that "theoretically it's always better to have a combo than a standalone; better to have a duopoly than a standalone; better to have a superduopoly than a duopoly."

"If you have a single great station, but it is in, say, New York City, you would have been exposed to the (downturn in the local economy)," he said.

"It's smart to diversify your bets."

Ones to watch

Other analysts suggest that investors watch Entercom Communications Corp. and Radio One.

"As these groups acquire more stations, or do more sizeable deals or mergers, they have a chance to become a standout No. 3 (behind Infinity and Clear Channel) and move away from the pack," Boyle said.

Analysts are also keeping close tabs on smaller groups posting less than \$200 million in revenues, including Beasley Broadcast Group, Saga Communications and Entravision Communications Corp.

The latter two Boyle described as "inquisitive-minded groups" likely to secure major deals soon.

Another smaller, privately owned company to watch: Greater Media Radio Co. Although it lost its patriarch and founder Peter Bordes a few years ago, instead of selling out, the surviving family members have started to build that group up, focusing mainly on larger market clusters in Boston, Detroit, Philadelphia and New York.

Others to watch, say analysts, include Regent Communications, which acquired 18 stations in 2001; Mapleton Communications, which acquired 19 sta-

Where All the Deals Went

The year 2001 was a relatively slow one for radio station transaction activity, according to BIAfn. In a recent study the group found:

- While the number of stations sold in 2001 dropped by 46 percent, the total value of those sales decreased by 85 percent, to just below \$4 billion.
- Most markets saw a decrease in activity, but rated markets saw a larger decrease in the number of stations sold.
- The largest markets, those in the top 10, saw the most pronounced decrease, with the number of sales only 10 percent of the previous year.
- About 72 percent of all radio station deals in 2001 involved only one station, a noticeable increase from the previous year.
- Given the decrease in the number of large-market stations sold in 2001, the average price paid for a station decreased by nearly \$10 million.

Source: BIAfn's "State of the Radio Industry: Radio Transactions 2001: Where Did All the Deals Go?"

tions in 2001; Millennium Radio Group, which acquired 13 last year; and Entravision, which began with three stations in 1996 and now has 51.

Other stations have found success by focusing on formats. Analysts are watching Radio One, the largest radio broadcasting company primarily targeting African-Americans, as well as lesser-known players like Inner City Broadcasting Corp., also a big player in that market format, BIA's Fratrik said.

But some analysts see trouble ahead for the truly small radio groups.

"I do think that some groups are going to have to grow," Fratrik said. "I don't think that groups owning between 10 and 20 stations are going to be as successful as groups in the 60-plus range."

"I think the dynamics and economics of the industry are saying that mid-size groups at 10 to 20 stations are going to find it tougher. Those size groups are either going to have to acquire, or be acquired."

The mid-summer market downturn and ensuing volatility undoubtedly will have an impact on group owners, though analysts say it's hard to determine who will be hit hardest.

"Or the greater uncertainty in the economy caused by the recent downturn may slow transaction activity altogether, because everyone is more apprehensive," Fratrik said.

"But assuming this downturn ends or possibly reverses itself, the economy should grow at a decent rate for the remainder of the year and into 2003, with radio revenues showing consistent growth."

Susan Ashworth is former editor of TV Technology, sister publication to Radio World, and is a contributing technology writer/editor based in San Francisco. Reach her via e-mail to sunjeep@aol.com.

Leap Into Target Testing for Trends

"I love it," exclaimed the marketing director. "It's not bad ... not bad at all," said the program director. The market manager confirmed their feelings. "Yes, boys, that's it. We've got a new logo that is just perfect for the target!"

What was the target, you ask? Women 25-54. All intelligent readers (that means you!) are now wondering, "How do three men pick the perfect logo for women?"

That's a great question. The answer is: very often, they don't.

On target?

I wish logos were the only issue. We all make assumptions about our targets, and admittedly there are those who are much better at it than others.

Yes, highly successful PDs and marketing directors are in touch with their target audiences. They've worked in their respective formats long enough to have learned what they like and dislike.

Some PDs and marketing directors are even fortunate enough to work in formats in which they just happen to be the same age and gender as the target, which can make it easier.

However, everyone has different cultural references. If you think you know how your target group feels about everything, think again.

We can't even know how our spouses think and feel about everything, so how in the world can we know precisely how strangers feel about whatever we are about to push their way?

We can't. But we can improve our chances through testing.

We often forget that radio is really a mass medium. For those who live and die by ratings, that means pleasing as much of the mass as possible.

This is equally true for broadly targeted 25-54 stations as it is for stations more narrowly targeted. We still need

to capture as much of the mass as possible. We increase our odds once we know how a sample of the target feels.

The main stumbling block for most us regarding research — especially research beyond music testing — is money. The good news is that listener panels and mall intercepts don't cost much money and offer you a good idea of how folks in your target feel about something.

Let's go back to the logo presented in the beginning of this column. When you put logos down on a table in front of several groups of people, you'll get feedback. After a few groups, you will

notice trends. These trends will push you in the right direction.

When you don't see trends, it's most likely because you're presenting something that doesn't generate a lot of emotion or passion among the target group. This, too, may tell you that you're on the track or that you may wish to focus on something else that will ignite the target.

Panel considerations

How many people do you need for a good focus group? This depends a lot on what you're testing.

See TESTING, page 52 ►

Promo Power



by Mark Lapidus

NOW, a digital exciter that does what all digital exciters should do.

The new **FXi 60** digital FM exciter from Broadcast Electronics is the first exciter to offer all of the following in a single package, and all of it as standard equipment:

- Direct to channel digital synthesis
- Accepts all of the following inputs:
 - Composite
 - AES/EBU
 - Mono
 - Left and Right analog
- Automatically switches between inputs
- All operational parameters programmable from full color front panel screen
- Fully IBOC compatible: Allows for low level combining implementations without the use of a second exciter or costly external combiners and filters.

The latest in a long line of innovative FM exciters from Broadcast Electronics. A 250 watt version is also available.



www.bdcast.com

(888) 232-3268

©2002 Broadcast Electronics, Inc. The BE emblem is a registered trademark of Broadcast Electronics, Inc. All rights reserved.

Putting a Panel Together

Listener panels are easy to organize. Here are two methods:

- Go on the air and tell your audience what they'll probably like to hear: "WXXX would love to learn how you feel about radio here in Boomtown. If you like the kind of music we play and enjoy contests, you are invited to join the WXXX Listener Advisory Panel. To sign up, call (800) 555-WXXX or visit www.wxxx.com and register online."
- Go into your database and send out an e-mail initiation with the same basic message as above. Don't e-mail the whole list, as you'll want to get others involved later. Just e-mail enough people until you receive the number you want.

Superfast Solutions For Rectifier Problems

Original equipment component manufacturers



www.rectifiers.com
800-649-6370



Re-Regulation

► Continued from page 47

larger forms of media as well as emerging new media like the Internet.

During this time some groups like Clear Channel Communications, today radio's biggest station group garnering nearly 20 percent of all radio advertising, and CBS/Infinity, both of which already owned television stations, decided to further advance their advertising appeal by purchasing outdoor advertising properties. Other groups either bought or started regional magazines.

As radio approached the new millennium, Clear Channel extended its marketing reach even further, buying one of the country's largest concert promotion companies and venue owners, SFX Entertainment (which was a former radio group owner), adding a new dynamic and greater influence to the relationship between the music industry and radio.

Demographic dominance

The theory to these kinds of expansions is that advertisers could be offered a variety of local marketing platforms for their products led by radio's demographic dominance through station consolidation.

Consider radio revenue data from 1997, the first full year after passage of the Telecom Act, through 2000, the year before the recent recession took hold in this country. If these numbers are

any indication, consolidation fostered financial growth for virtually all tiered radio groups.

Revenues from 1997 to 2000, according to the Radio Advertising Bureau, rose 43.5 percent, from \$13.8 billion to \$19.8 billion. Even with a down year in

5-6 percent increase.

Meanwhile, according to BIA Financial Network, local consolidated operations account for just over 40 percent of all radio stations in all local markets, with the top 10 radio groups generating some 50 percent of all yearly

promoters in Feingold's home state and, in part, from a recent survey of the listening public by the Washington-based Future of Music Coalition.

In a nutshell, the survey found the issue of radio consolidation very unpopular. According to the findings, eight of 10 people in the survey favor congressional action to protect or expand the number of independently owned local stations. (See accompanying chart.)

Future of Music Coalition Survey

In response to the statement, "Congress should support policies that encourage":

	Total	Age <30	30-49	50+
Preservation of independent or locally owned stations	42%	33%	42%	49%
Policies that increase the amount of locally owned radio stations	38%	41%	38%	34%
More consolidation of radio stations by large corporations	10%	16%	10%	5%
None of the above: Gov't shouldn't be involved	4%	3%	6%	4%
Not sure	6%	7%	4%	8%

2001 to \$18.4 billion and the recent roller-coaster ride of corporate stock values, most revenue forecasts for radio remain mildly optimistic. Some analysts and industry executives are projecting year-end total billings to rebound with a

industry revenues in the United States.

Within three years, local consolidated operations are expected to be more than 50 percent, emerging as radio's new business model. (The BIA guideline for local consolidated operations is one entity owning more than two AM and/or two FM stations in a single market.)

The issue with which policymakers have wrestled since 1996, particularly in the last two years, is this: Does consolidation encourage larger consolidators to service local listeners more effectively while offering advertisers new major marketing platforms? Or will consolidators increasingly streamline local operations, including programming music that is voice-tracked by announcers outside of the market, while raising local ad rates?

Today, the battle lines have been drawn clearly over the future of radio's consolidated business structure and marketing reach. Feingold, concerned about the ever-broadening marketplace power of the large radio conglomerates, set the stage for introducing new re-regulatory legislation this summer by calling the concentration levels of radio station ownership "staggering."

Key provisions in Feingold's bill, titled "The Competition in Radio and Concert Industries Act," include requiring the FCC to revoke the license of any radio station that "uses its cross-ownership of promotion services or venues to discriminate against musicians, concert promoters or other radio stations." Feingold said that from 1996 through 2001, concert ticket prices grew by more than 61 percent while the Consumer Price Index increased by just 13 percent.

Feingold's bill also seeks ways to increase program diversity based on local input while protecting the interests of smaller, independent broadcasters by directing the FCC to prevent any upward revision of the current local radio ownership caps.

The bill's measures were fueled, in part, from complaints surfacing from independent station owners and concert

Results

The survey was conducted via telephone among 500 adults age 14 and older across the United States in May. Other results showed that more than half of the respondents (52 percent) prefer more new music, less repetition and more selections from local bands and artists.

And some 74 percent of those surveyed favor legislation for expanding the number of low-power FM stations for offering broader community service.

NAB President Eddie Fritts had a strong, negative reaction to Feingold's bill, saying that program diversity is "far greater now than six years ago." He cited a 200-station increase in Spanish-language programming and said local radio stations do respond to local issues.

The Feingold bill and Future of Music Coalition survey come on the heels of a comprehensive NAB study detailing how local commercial radio and television stations generated a record \$9.9 billion in public service in 2001, nearly \$7 billion from radio alone. (The \$9.9 billion figure also includes \$2.1 billion for raising funds for charities and \$1.2 billion for raising monies in times of crisis such as last Sept. 11.)

The study found that 64 percent of the PSAs aired by radio stations in 2001 were about local issues, compared to television's 56 percent. About three out of five radio station respondents aired local public affairs programming weekly for a least 30 minutes. The television percentage totaled 45 percent.

"Local broadcasters can stand proud for the enormous pro-social contributions stations make in bettering the lives of listeners and viewers," Fritts said in unveiling the report.

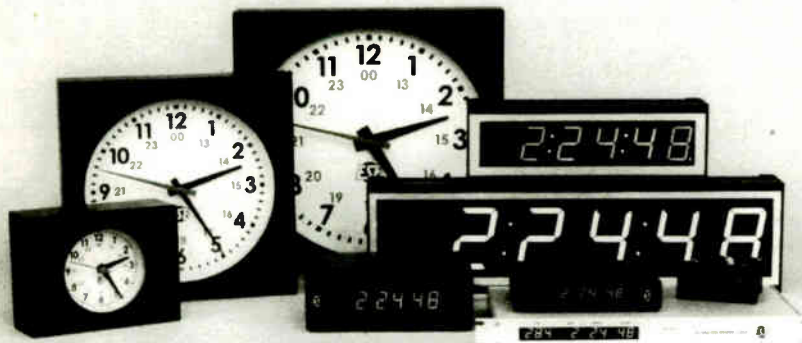
Even though competitive pressures in radio consolidation continue to grow, the FCC plans to conduct an extensive review of its remaining media ownership rules by next spring as Chairman Michael Powell has said many of the rules are outdated in this age of multiple media outlets. Observers predict the agency is likely to eliminate or loosen provisions to the rules that prohibit one company from owning both a newspaper and a radio station or a newspaper and a television station in the same market.

However, a select cross-section of radio group executives canvassed by RW remain concerned that the large conglomerates, such as Clear Channel, already have altered the playing field by raising the competitive bar to traditional advertising.

Responding to the Feingold bill and to questions about whether continuing consolidation in local markets can have a negative effect on business and consumers, Mark Mays, president and chief operating officer of Clear Channel Communications, stated, in

See RE-REGULATION, page 51 ►

When you require the ultimate in accurate timing



WHEN you require the best, most accurate in precision timing look only to ESE. Designed for "Precision Timing", ESE Master Clocks & Accessories have been the industry standard for over three decades.

Whether using GPS, WWV, Modem, Crystal or line frequency accuracy – all ESE Master Clocks can drive digital or analog slave clocks, as well as interface with video and/or computer based systems. Call or visit our web site for more details.



142 Sierra Street • El Segundo, CA 90245 USA
Phone: (310) 322-2136 • Fax: 310.322.8127

www.e-se-web.com

New Industry Forecast Hints at Rebound

Veronis Suhler Stevenson's annual Communications Industry Forecast calls for a rebound in the second half of 2002 thanks to a solid upside in the radio, cable and broadcast television segments of the industry.

According to the report, total communications spending in the United States will jump 4.8 percent to nearly \$610 billion this year. That's up from about \$580 billion in 2001. The forecast cites an uptick in radio advertising spending in the first quarter of this year.

Among the report's findings, American consumers continue to crave media, regardless of the economic and social backdrop (or, says the report, perhaps because of it); consumers have continued to spend more time with information and entertainment; and they will continue to do so over the next five years.

The average American spent 3,570 hours with various forms of media in 2001, a 1.4-percent increase over the previous year.

As for radio broadcasting trends overall, the report reveals radio-advertising expenditures declined 6.2 percent, to \$17.9 billion in 2001 on the heels of nine consecutive years of growth.

For all of 1996 through last year, however, radio marked one of the fastest-growing communications segments, rivaled only by the Internet in terms of ad growth; total spending on radio ads increased at a compound annual rate of 7.8 percent during the period, fueled by an 8.1-percent increase in local advertising and a 6.7-percent jump in national advertising.

According to the report, local ad spending will rebound 3 percent to \$14.6 billion this year, while national radio will post 4-percent growth, to \$3.2 billion. From this year through 2006, spending will jump 6.2 percent on a compound annual basis, reaching \$24.1 billion.

Re-Regulation

► Continued from page 50

part, "As the economy has become increasingly global, many industries have consolidated as companies strive to attain the economies of scale necessary to compete ... radio has modernized in a number of ways in recent years, which has not always been comfortable as everyone associated with broadcasting works to adapt to new ways of doing business.

In his statement, Mays said program diversity has actually increased since 1996 because "owners of multiple stations in a given market tend to provide a variety of formats to reach niche audiences" and that artists, not Clear Channel, set concert ticket prices at company-owned venues.

Consolidation, once radio's greatest ally, has become radio's greatest challenge.

Vincent M. Ditingo is an assistant professor of communication arts and coordinator of the radio program at the New York Institute of Technology. Contact him via e-mail to Vditingo@aol.com.

Avoid Legal Programming Hassles

by Paul Kaminski

Are you at risk from a lawsuit for invasion of privacy? Some legal experts say you may be.

Whether it's from a trash-talking morning host or an apparently innocuous "swap shop," radio programming carries risks, and managers need to be aware of them.

A panel at this spring's NAB convention offered solid advice from four industry experts in media liability that could pay future dividends.

Jerrienne Timmerman, NAB associate general counsel, moderated. The group discussed some real-world issues that found their way to litigation. The panel suggested ways and means for air talent, station Webmasters and management to use to avoid court battles or mitigate them.

Trends

The experts advised that more litigants are filing claims of invasion of privacy and emotional distress, which more easily sway a jury than a libel claim.

As an example, the panel discussed the "Rate the Bride" bit done by some morning show hosts. This bit, which rates the attractiveness of newspaper pictures of recent brides, can lead to claims of emotional distress.

Panelist Mark Prak of the law firm Brooks Pierce McLendon Humphrey and Leonard in Raleigh, N.C., recounted his involvement with a case that stemmed from remarks made on a small-market "Swap Shop" radio program.

Prak said the particular claim arose when the host made a claim that the caller was the "ugliest man" in the listening area. The caller was trying to sell commercial items on the program and this exasperated the host. The case never came to trial.

Prak said, "There's a lot (of litigation) that goes on that doesn't get reported."

Panelist Richard Goehler of Frost Brown Todd in Cincinnati said stations have to guard against "conduct that is so outrageous that it leads to the injury of reputation."

The panelists agreed that much of the problems come from off-hand comments during some ad-libs.

The attorneys mentioned that a defamation or emotional distress case is less likely to be dismissed and more likely to go before a jury trial than a libel case. Once that happens, the attorneys noted, juries were more sympathetic to (non-media) plaintiffs, and tended to label all broadcast media as "big," with the result of large jury awards for the plaintiff.

haunt the radio station.

Goehler said broadcasters who use Web sites should think more like traditional print publishers.

Get it on tape

All of the panelists agreed that taping talk programming could help solve problems should a suit be filed. The consensus

**If a story causes problems on the air,
get it off the Web site.**

— Mike DiSilvestro

Panelist Mike DiSilvestro of Media/Professional Insurance Agency in Kansas City, Mo., discussed problems that can arise with station Web sites.

Be careful

"Photos on station Web sites can lead to defamation cases," said DiSilvestro. For example, if a station puts pictures of wet T-shirt contestants from a station club remote on the Web site, and the subjects aren't happy about it, that can be grounds for an invasion of privacy action.

He said Web site content, like your on-air programming, should be monitored carefully, especially if it identifies people who are involved in law enforcement cases.

"With worldwide distribution, actions can be brought in other jurisdictions," he said, as well as your own. "You have a different exposure to liability."

His rule of thumb is, "If a story causes problems on the air, get it off the Web site."

Also, stories filed by other media partners on a Web site can come back to

opinion was that having such a tape — which is not required by law — can rebut a claim that the station is hiding something.

A tape can provide some context to the offending remarks and can help to craft appropriate mitigation strategies.

Prak said, "If I know that a story or program shows that the station screwed up, I have a starting point" from which to plan a defense.

The subject of recording and broadcasting telephone calls brought a unanimous caution from the panel for talent to advise the caller that the call was going to be recorded or broadcast live.

Retractions, apologies and corrections also were mentioned as ways to head off litigation. The panelists agreed that ongoing training, such as "risk-prevention" seminars, helps to keep employees aware of what can cause problems and what usually doesn't.

Paul Kaminski is news director for the Motor Sports Radio Network and contributes reports to CBS Radio News. Reach him via e-mail to motorsportsradio@compuserve.com.

STATION/STUDIO SERVICES

SPACE AVAILABLE

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

ATTENTION PROVIDERS!

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

"All of their work is just great! No matter what size the market, Associated Broadcast Group is the key to a higher bottom line and less problems on the air."

Charlie Cook, VP, Westwood One Radio Networks

Full Creative Production, Specs and Copy that will absolutely increase your bottom line.

"I need quick turnaround without sacrificing quality and affordability for my clients. My solution is Associated Broadcast Group."

Doug Howland, KNX, Los Angeles

"When it absolutely, positively has to be perfect, I just make a call to Associated Broadcast Group. I wouldn't use anyone else."

Al Connors
WQLD, Montgomery

Get the Creative Edge for your station at an affordable price.

A B

TOLL-FREE
888-772-8224

For demos and more information visit
www.associatedbroadcast.com

ASSOCIATED BROADCAST GROUP
LOS ANGELES

Testing

► Continued from page 49

I prefer smaller groups for things like logos — five to 10 people is enough. Just be sure to do several — at least three groups with the same materials, so you have the opportunity to track trends.

Numbers

If you're testing a morning-show tape, you may want to go as high as 20 people.

How do you moderate a group? First watch someone else do it. Many pros in radio are willing to teach. You may also be surprised to learn that you have

friends who work at companies that test products and are willing to let you watch.

for testing — recruiting those people is tough for them, so they may be happy to hear from you.

difficult things about moderating is not leading a group in the direction you want them to head. You may not even realize you're doing it until it's too late.

Another common pitfall is not being able to control the one or two leaders in any given group who are monopolizing the conversation. Let's face it, most of us in radio learned on the job in the beginning. That learning should never stop, so if you're not already involved in testing, take the leap.

Usually we say, "Look before you leap," but this is one case where the leap will open your eyes.

Mark Lapidus is president of Lapidus Media.

Reach him via e-mail to mark.lapidus@yahoo.com. ●

We can't even know how our spouses think and feel about everything, so how can we know precisely how strangers feel about whatever we are about to push their way?

Or you may want to call a research company in your area and see how you can become part of the people they use

Moderating groups does take practice and some people are just naturally better at it than others. One of the most

Are we redefining the concept of a sound card? Some industry professionals think so...

"While evaluating LynxTWO, I had to double-check my routing to be certain I wasn't listening to my reference converter. They were so close it was a bit scary. Lynx then went one better and uncovered a subtle mic phase problem that had not previously come to light. LynxTWO defies the conventional wisdom that mastering-grade conversion is not possible for a sound card.."

-Alan Silverman
Mastering engineer for multiple Grammy Award-winning recordings and owner of Arfi Digital, New York

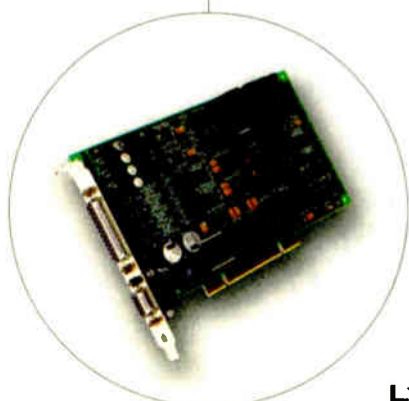
"First, the audio performance is exemplary. And second, the cost is reasonable compared to top-of-the-line stand-alone converter boxes and believe me, the comparison is apt. It looks like my recommendation that people keep audio out of the computer needs updating - the LynxTWO proves it can be done. What's more, it does it well."

-Craig Anderton
Executive Editor of EQ magazine

"It's certainly the best-sounding soundcard I've ever reviewed. With a milestone product like the LynxTWO, competition is understandably thin on the ground. However, the real comparison should be with high-end stand-alone converter boxes. The LynxTWO provides audio performance on a par with rack mount gear costing considerably more. In short, I can't think of any other product that comes close!"

-Martin Walker
Sound on Sound Magazine, March 2002

LynxTWO



LYNX STUDIO TECHNOLOGY, INC.
PHONE: (949) 515-8265 FAX: (949) 645-8470
WWW.LYNXSTUDIO.COM

DISTRIBUTED IN NORTH AMERICA BY HHB COMMUNICATIONS, INC. WWW.HHBUSA.COM (310) 319-1111



CBI Sets Sights On Orlando For Annual Convention

The 2002 College Broadcasters Inc. annual convention is set for this fall in Florida.

Organizers have put together 30 sessions related to radio, television and new media featuring speakers and applications for the college broadcasting world.

Session topics include streaming a signal on the Web, working with music companies, going digital, contests and promotions, getting that first job and starting a sales/underwriting program.

Events are scheduled for Oct. 31 to Nov. 3 at the Hyatt Orlando/Kissimmee. Cost is \$79 for student members, \$105 for nonmember students and \$40 for spouses, partners and family members.

For more information e-mail willr@ktru.org.

SCBA/UCLA Offers Radio Course

"Is radio right for me?"

That's the question to be explored in a 12-week course offered through UCLA Extension, in conjunction with the Southern California Broadcasters Association. The class will be offered this fall.

Course topics include radio station structure; identifying potential clients; getting the appointment; identifying the client's needs; and how to make radio work for your client.

Also covered: revenue streams, including NTR, promotion and brokered time; methods and measurement of radio; a visit to a radio station; copywriting; managing yourself and understanding your job; creating presentations and pitches; and local radio opportunities.

The class will be conducted under the auspices of the GSM Council of the Southern California Broadcasters Association.

For more information visit www.uclaextension.org or www.scba.com.

Studio Sessions

New ATI
Nanoamp
See Page 56

Radio World

Resource for Radio On-Air, Production and Recording

September 1, 2002

PRODUCT EVALUATION

Mbox: Software/Hardware Approach

by Ty Ford

I bought my first digital audio workstation in 1990. It was an AKG DSE7000. The original list price was \$46,500, which had dropped to \$37,500 by the time I was ready to buy. It has allowed me to create and sustain a business.

Ownership changes slowed development somewhat as Harman acquired AKG and the DSE7000 became the Audicy. It was moved under the Orban umbrella before being sold to CRL, where it is today.

As my business evolved, I found I needed more file import/export flexibility, mix automation, mix-to-pix and a system that would handle longer form projects.

The Audicy was — and still is — easier to use, especially for radio production; but my clients wanted me to do things I was unable to do with the Audicy.

That need led me to the modest

Digidesign Digi 001 and a 500 MHz G4 Mac with 256 MB RAM, a 10 GB internal and 40 GB external drive, and a 15-inch LCD display. Total cost: about \$5,000.

The Digi 001 runs Pro Tools LE software, which limits the user to 24 tracks and as many effects plug-ins as the G4 can handle.

Savings

While my cost dropped by a factor of 7.5, Pro Tools LE software is not as easy to use as the Audicy software. One helpful Digidesign tech noted, "Pro Tools is a software that is a foot wide and a mile deep." I will agree with that. But as with any software, the more you use it, the more proficient you become.

This year Digidesign has brought the Mbox to market. It is a two-in/two-out/24 inside, USB software/hardware solution for \$499. It basically equals what the

original DSE7000 could do, and then some. It runs on Pro Tools LE 5.2, a version designed exclusively for the Mbox.

It runs only on the Mac platform at this time. Digidesign says it hopes to have a PC version Q4 on WinXP. The Pro Tools 5.2 install CD includes OMS 2.3.8 and Quicktime 5.0.2.

The Macintosh host needs to be running Mac OS 9.2.2 with a minimum of 128 MB RAM (192 MB RAM to support DigiStudio). You must connect the Mbox directly to the host computer; no USB hubs for the Mbox. Mbox gets its power from the USB bus; no wallwarts are needed.

During the few months I have had the Mbox, a new USB driver and a firmware update have been made available for free from the Digidesign Web site at [support > downloads > mbox](#).

The Mbox manual says hard drives must be formatted with the HFS or HFS+ system, capable of 3 MB per second or faster transfers, spin at 7,200 rpm and have seek times of 10 msec or faster.

It also suggests that you use two drives, one for the system and applications and a second for the audio. For best results, you should create a dedicated set of extensions to start up with when using Digidesign software and hardware.

I have been lucky with the Digi 001. Although my audio is on a separate internal drive, I am using 5,400-rpm drives and I do not always use the exclusive Pro



Rear View of the Digidesign Mbox

Tools extension set. I even ran its 24-track demo song from the primary drive with no apparent problems. You may not be as lucky.

Software legacy

The good news is that Pro Tools LE has been around for several years. That means most of the bugs have already been worked out.

Using USB for audio is not as easy as it seems. I have seen several software/hardware companies stumble while trying to get it working. The USB bus can only record two channels at a time. If you need more than that, you will have to figure a way to premix the

See MBOX, page 54 ▶

PRODUCER PROFILE

DeWig Uses Method Acting in Promos

by Ken R.

Ann DeWig is the official station voice of Clear Channel's modern rocker WWDC(FM), known as "DC101" in our nation's capital. She also handles voice work and station imaging for about 40 other radio clients and does it all from her custom-built home studio.

"The way I got into this business was a little freaky," she said. "I was never into radio. I was at Morningside College in Sioux City, Iowa, studying advertising and marketing and got involved with campus radio, TV and the newspaper."

A friend told DeWig that a local commercial radio operation, KGLI(FM) and KWSL(AM), needed a board operator to handle some baseball games. DeWig took the gig to earn a few dollars.

See DEWIG, page 56 ▶



DeWig's custom-built studio was designed and installed by her engineer husband, Jerry Davis. The furniture is by Studio Technology.

Simple • Effective • Reliable



Con/Air Switcher

eliminates delay from headphone monitor
monitor audio can be individually tailored
immediate warning on air signal failure
air signal is not altered in any way
optional rack mount panel available

model cas-1



Telephone Announcement System

digital message storage - no moving parts
variable outgoing message format
inactive or defective line indicator
resettable incoming call counter
temperature in Fahrenheit or Celsius
battery backed AC synchronized clock
low cost system - no leased equipment

model tas-1



Message Board Controller

converts status inputs to LED display data
15 prioritized logic-level signaling inputs
momentary or maintained signal inputs
fully programmable display with graphics
pre-programmed "starter" messages
multiple displays from one controller
(display device shown not included)

model mbc-1

innovative solutions

Sine Systems

nashville, tennessee • 615.228.3500 voice • 615.227.2393 fax-on-demand • www.sinesystems.com

MBox

► Continued from page 53
inputs.

The Mbox hardware is well-designed. A quibble is that the Neutrik XLR/TRS input jacks on the back panel are flipped, with #1 on the bottom and #2 on top. Also, because the Mbox is a desktop and not a rack-mounted unit, it can be more easily stolen. A simple metal strap to hold the Mbox more permanently in place should not be too hard to fashion.

Each of the two combo Neutrik inputs can be switched to microphone, line or instrument. There is built-in 48 VDC phantom power for condenser microphones.

A pair of TRS insert jacks at the input lets you plug in your favorite external analog processing toys. While there is not any MIDI I/O, there is a 24-bit S/PDIF I/O. The Mbox has one pair of TRS analog outputs, no separate output for line and monitors. There are two headphone output jacks; a 1/4-inch TRS and mini-jack. With a little creativity you could use one of them for a monitor output.

Helpful hints

Because of USB limitations, there are latency issues that cause two types of problems.

First, if you monitor yourself on headphones and are listening through a record-enabled track with the mix knob in the playback position, the delay is disconcerting.

Second, if you are recording new tracks while listening to existing tracks (sync recording), the new tracks you record will be delayed by 164 samples. At 44.1 kHz, that is a delay of 37 milliseconds.

Solutions to these problems:

Tip 1:

A) Lower the recorded-enabled audio track in Pro Tools.

B) Adjust the Mix knob on Mbox to prevent echo or latency sound.

C) Press the Mono button on Mbox. This will prevent the input signal from sounding hard-panned left or right when adjusting the Mix knob on Mbox. The Mono knob does not affect the mix playing out of Pro Tools, just the incoming signal. These steps prevent the latency from being heard while recording; however, the 164-sample latency will be there.

Tip 2:

Because all tracks recorded into Pro Tools have 164 samples of latency relative to previously recorded tracks, each newly recorded audio track must be slid into sync.

To accomplish this, select the newly recorded track with the Grabber Tool. Edit Menu > Shift. Click Earlier and type in "164" in the Samples field. Click OK. Pro Tools now will locate the audio 164 samples earlier.

If you recorded your first audio at the start of the session, you will have to trim in the audio before the waveform starts to allow space for the audio to be shifted 164 samples ahead.

Unless you hear otherwise from Digidesign, do not try installing an Mbox on a Mac that is already running a Digi 001.

I have been there. The install went quite easily and for several hours I was opening, editing and recording into productions I had created on the 001 with the Mbox and vice versa. The next day, however, I could not get Pro Tools started. I had to uninstall 5.2 and reinstall 5.1 and then 5.1.1 and OMS 2.3.8.

and an external LaCie 40 GB Firewire pocketdrive.

The theoretical limit for the Mbox is 24 tracks. A 24-track demo song provided by Digidesign — some tracks of which were MIDI — was showing only 20 percent CPU usage. Knowing that host processing is consumed by the number of sends and effects and that a



My first success was on a 400 MHz G4, Mac Powerbook running Mac system 9.2.2 with 640 MB RAM, a 20 GB internal drive for the system and application and a 30 GB external Firewire drive for the audio, both 4,200-rpm drives. Running on batteries, the rig drops to 300 MHz, which caused some of my 24-track multitrack productions to throw up caution notices concerning how many tracks they would play back.

I also could not use my KOL RealVerb under battery power because it took up too much processing power.

With the AC power supply, the G4 complained a lot less, but there are a few Mac tweaks that will improve Powerbook performance.

First, adjust the battery usage. Go to Apple Menu > Control Panels > Energy Saver. Under Advanced Settings there are three checkboxes that affect system performance. Uncheck three items in Other Options: Allow processor cycling, Reduce processor speed, and Increase application idle time.

My final experience was with Drew Mazurek, who operates a music-recording studio in Baltimore and teaches professional audio at The Sheffield School.

We did a flawless install on his 800 MHz G4 Powerbook running OS 9.2.2, with 512 MB RAM, a 40 GB internal

good stereo reverb eats up quite a bit of processing, we set up our own 24-track production with four-band EQ and compressor and two Aux sends from each channel to two Digidesign stereo reverbs.

Smooth metering

We hit the wall, but found that we could run with 22 tracks configured that way. Metering was still fairly smooth, and even with jumping between Mixer and Edit screens we were only using three-quarters of the CPU power. We were impressed.

We also liked the combination of a Neumann TLM 193 and Focusrite preamps in the Mbox — thick and rich, very nice.

Mazurek and I did come up with three interesting thoughts. With the Mbox disconnected from the Mac, we could start a production, edit and do parameter and routing changes. Every time we hit play, however, we were prompted to attach the Mbox.

This prompts me to ask, how about a dongle? Maybe even one with a headphone output so you can edit and mix without having to lug the Mbox itself?

My second suggestion would be for an automatic macro that pulls each track you have just recorded back 164 samples so

Product Capsule: Digidesign Mbox Software/Hardware Audio Solution



Thumbs Up

- ✓Quite the bargain
- ✓No power supply needed
- ✓Nice preamps



Thumbs Down

- ✓164-sample latency creates monitoring and editing/mixing problems

Price: \$499

For more information from Digidesign, contact the company in California at (650) 731-6300; e-mail prodinfo@digidesign.com; or visit www.digidesign.com.

you don't have to contend with the latency issue. Or better yet, make the latency issue go away. According to Digidesign, this issue will be addressed in a future release.

My third thought is this: Even though you cannot input more than two tracks at a time, we armed and recorded 18 tracks at a time. There may be an application for that sort of redundancy, although we could not think of one.

Server service

Available option: DigiStudio is a server service offered by Digidesign. You pay for space on its server and upload productions to be accessed by others who can download your session and add their own parts.

Their parts then can be uploaded to the server and downloaded by you. Obviously, you need a pretty fast Internet connection to make full use of this feature, but radio stations on their own LANs and WANs might do something similar.

A 24-bit software/hardware solution with nice sounding preamps, automated mixing and S/PDIF I/O for only \$499? What's not to like?

If you can deal with or ignore the 37-millisecond latency and greater I/O monitoring latency, the Mbox is a steal.

Reach Ty Ford at www.jagunet.com/~tford.

PRODUCT GUIDE

New Wiring Interface Keeps It Simple

Radio Systems and AudioScience announced a wiring breakout box (BOB) accessory for the new ASI6000 series multichannel PCI audio cards.

The rackmount units are available in XLR and RJ-45 versions and permit users to have access to all channels of card analog and digital I/O, as well as clocking and sync signals.

One multipin connector unites the unit to the audio card; a single BOB is required for access to the card's digital I/O or up to four analog channels. Multiple BOBs can be ganged when access to eight stereo analog input and output channels is needed.

For more information from Radio Systems, contact the company in New Jersey at (856) 467-8000, e-mail sales@radiosystems.com or visit www.radiosystems.com.

Burns through SCMS.

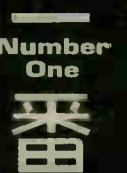
And smokes everything that can't.

Introducing the DN-C550R. The professional dual drive CD + CD-R/RW recorder that's heating up the industry. Designed with 90 years of Denon engineering know-how and progressive thinking, the DN-C550R is the luminary of CD technology. This innovative combi-deck incinerates recording obstacles like SCMS and accepts both CD-R/CD-RW data and audio blank media. Leaving you with a huge range of recording and playback options for independent use or in combination. Plus, we stoked it with every feature a professional would expect. The DN-C550R. The hottest CD recorder in the industry.



www.denon.com • Denon Electronics, 19 Chapin Rd., Pine Brook, NJ 07058 (973) 396-0810
Denon Canada, Inc., 5 - 505 Apple Creek Blvd. Markham, Ontario L3R 1B5 (905) 475-4085

DENON
The first name in digital audio



PRODUCT EVALUATION

New Nanoamp Drives Headphones

by Mario Hieb

The HDA600 stereo headphone amplifier from Audio Technologies Inc. is not your ordinary headphone amp.

This is a versatile product that can be at home in many audio applications, such as in the radio studio, recording studio and language lab. It can even be used as an intercom system.

The headphone-driving circuitry uses a combination of high-output voltage swing (16 V p-p) for high-impedance headphones and a protected high current capability (0.2 A) for low-impedance phones. The HDA600 will drive 32- to 600-ohm stereo headphones to near 120 dB SPL.

A word of warning — the high output of the HDA600 may be required for the aging rock-jock with marginal hearing, but those who still have pristine hearing should employ caution.

Distortion is published as less than 0.1 percent with response flat to +/-0.25 dB from 20 to 20 kHz.

Housed in a one-rack-unit enclosure, the HDA provides a stereo program input plus a mono cue input that drives six stereo headphone outputs. The HDA600 will bridge balanced and unbalanced program input lines with individual left and right XLR and 1/4-inch tip-ring-sleeve (TRS) input connectors.

The high output of the HDA600 may be required for the aging rock-jock, but those with pristine hearing should employ caution.

The spare connector set may be used to loop through the input signal to additional HDAs. Inputs are electronically balanced but will operate properly when an unbalanced 1/4-inch plug is inserted.

An internal input selector plug optimizes the input stage gain for either -10 or +4 dBu nominal inputs and the program input clip indicator shows input overdrive. A master level control and mono/stereo switch adjust the program signal fed to the output channels via an internal stereo distribution bus.

The mono/stereo switch allows a quick check of the mono compatibility of the stereo mix; two separate mono signals, applied to the stereo inputs, can be summed easily for monitoring. Each of the six headphone output channels has a level control.

A balanced cue input at microphone or line level is brought into the unit through paralleled XLR and TRS connectors. Microphone or line level for this input is selected with the rear-panel mic/line switch.

Line level for stereo inputs is selected at -10 or +4 dBu with an internal jumper plug. Phantom power suitable for most electret-type microphones (+12 VDC) can be selected with an internal jumper

plug and is switched on only in the microphone mode with the mic/line switch. The cue signal may be selected into right, left or both distribution busses with front-panel pushbuttons.



A cue-level control and cue-clip overdrive indicator is included. The cue input could be used to add an IFB or mix-minus feed into the mix in an on-air application or a click track into one channel in a recording studio.

It would be nice to have another cue input so that separate audio could be sent to either left or right channels.

Six individual output channels bridge the internal stereo distribution bus and drive paralleled front- and rear-panel 1/4-inch TRS output jacks. The high-compliance output circuitry comfortably drives stereo headphones from 32 to 600 ohms.

Although the unit is designed to drive either front or rear outputs, two sets of headphones can be plugged into a single channel with reduced drive to each. The rear jacks also can feed remote headphone distribution boxes. This is a nice feature for those who like to rack-mount their equipment and hide the wiring. Individual output channels can be setup for mono headphones with a tip-sleeve plug.

Direct inputs into each output channel are available on the rear panel. A TRS plug wired as unbalanced stereo, inserted into a direct input, will interrupt the main mix and feed its own stereo signal through that channels amplifier and output jacks.

Individual direct inputs can be configured as balanced mono inputs by moving internal jumper plugs to the "Bal Mono" position. I would prefer that the direct inputs be bridging like the line inputs. A signal present indicator LED for each output channel glows at about 30 dB below nominal input levels.

The HDA600 will operate at 115 or 230 VAC depending on where the internal jumpers are set. I am not sure why the internal bipolar DC supply is not regulated; an unbalanced supply could cause

distorted waveforms.

I tested the amp with a pair of Sony MDR-7506 headphones and was pleased with the sound. With the channel and master controls at full level, I could not

hear any noise. The sound was clean and balanced, with no perceptible distortion at normal listening levels.

The 100 mW outputs of the HDA600 could drive a speaker for a paging or intercom system. Just add a push-to-talk

De Wig

► Continued from page 53

"I was soon handling swing shift on the FM and helping the program director on the AM," she said. "I just got sucked in and was working full-time and going to school full-time."

During her tenure at those stations, then owned by Cardinal Communications, she learned the rudiments of how a radio station operates. It was 1993.

Within a few short years she would be playing in the major leagues. By 1998 DeWig had jumped from stations in Denver and Dallas to Washington, picking up a lot of varied experience on the way. She learned that it paid to be a utility player.

While in Sioux City, DeWig had had to teach herself how to run the RDS Phantom live-assist automation system. Now it was time to move from learning software to gaining an overall understanding of radio station operations, department by department.

"In Denver I did a little of everything: traffic, continuity, commercial production, and part-time on-air work for Jacor sister stations KBPI(FM) and KRFX(FM). I even helped with very simple imaging pieces," she said.

"In fact, because I kept running around asking everyone what I could do, management had to ask me to stop working so many hours."

Promos create a sound picture

When she arrived in Washington, DeWig spent a lot of time creating elaborate theater-of-the-mind promos with sound effects, multiple voices and strange background music (see sidebar).

"I was about 23 years old and so excited that I thought every piece had to be produced like 1940s radio. I was doubling my work efforts producing off-the-wall bumpers and sweepers," she said.

"Then I'd have to spend even more time going back and producing the 'black and white,' simpler material required for the station. Gradually I have morphed the two styles so the station has solid imaging with just a touch of the bizarre."

Product Capsule:

ATI Nanoamp Series
HDA600 Stereo
Headphone Amplifier

Thumbs Up

- ✓ Useful in many applications
- ✓ Can be configured through internal jumpers
- ✓ Cue insert capability in left, right or both channels

Thumbs Down

- ✓ Unregulated power supply
- ✓ Stereo direct inputs are unbalanced

Price: \$599

For more information from Audio Technologies Inc. contact the company in Pennsylvania at (215) 443-0330 or (800) 959-0307 or visit www.atiguys.com.

switch and a microphone to the cue input and you are set.

Mario Hieb CPBE, CBNT is a Salt Lake City-based broadcast technical consultant. He was radio frequency coordinator for the 2002 Olympic Winter Games. 🌐



Ann DeWig

DeWig said she no longer feels she needs to produce material just to impress people who hear her demo reel.

"Now I just come up with what works for the station and the listeners," she said. "Buddy Rizer, our program director, lets me have a long leash because he's seen me grow over the last three and a half years. He knows I work hard and he trusts my judgment."

DeWig writes many of DC101's promos, scripting them for multiple voices. She frequently uses fellow Clear Channel talent Kenny Hobbs from KEG(FM) in Dallas; the two exchange MP3 files via Internet.

"He makes my job easy, and I hope I help him, too," she said. "It's always great to work with someone you can bounce ideas off of."

At this writing, one can hear WWDC(FM) as streaming audio at www.dc101.com.

Taking care of business

DeWig has an agent at New York's Atlas Talent Agency. He regularly picks up work for her with big clients such as ESPN, "A&E Biography" and even the newly named WWE, formerly WWF (the wrestlers, not the wildlife folks).

Her agent, John "Hoss" Hossenlopp, takes 10 percent of each production fee.

Because DeWig is a member of the American Federation of Television and Radio Artists (AFTRA), she is able to voice national spots or production for major-market stations.

See DEWIG, page 57 ►

De Wig

► Continued from page 56

"If a station is union, the voices have to be union," she said. "DC101 is union, for example. I love that AFTRA insurance plan."

DeWig also has agreements with about 40 radio stations, only some within the Clear Channel group. Each station pays a retainer of anywhere from \$200 to \$800 per month for an agreed-upon number of pages of voiced script from DeWig.

These voice tracks are provided to the stations via ISDN; MP3 e-mailed or uploaded to her Web site; or CD or DAT via overnight delivery. DeWig provides only the voice; the station finishes the production locally in most cases.

"I just broke into this voiceover business hot and heavy a few years ago," said DeWig. "The one thing I think I do fairly well is interpret copy in a personal manner with a realistic read. What I'm not so hot at is that 'untrained girl next door' sort of voice you hear popping up all over these days. I think I picked up my cultured voice from my father, who was a monk who taught English."

"Just because you have a good voice doesn't mean you have a career," DeWig said. "I worked extremely hard for seven years before I hit anything big. If you're at a radio station, take advantage of the equipment around you and do commer-

cial production whenever you can."

She advises aspiring announcers who don't have an important national spot in their portfolio that the material in the demo had better be "smoking."

Advice to the young

"You should have separate demo reels for promos, commercials, radio work and industrial narration," she said. "Each demo should be no longer than one minute."

But how does a voice talent imbue copy with special meaning in a way that will break through the radio clutter?

"It comes down to method acting," said DeWig. "When I was reading some promos for USA Network, the producer painted a gruesome mental picture for me of someone holding a knife to someone's throat. I captured

that feeling and ran with it and she liked the outcome."

DeWig has been producer and voice talent, so she has seen copywriting from both sides. As master of her own production facility, she often works with other diverse voices.

"The best advice I can give you when you are hiring talent to read a spot is hire the right person, then trust him or her," she said. "Be able to let go of your preconceived idea. If you can't do that, you've hired the wrong person."

To learn more about Atlas Talent, visit www.atlastalent.com. DeWig's site is www.annedewig.com.

Ken R. was a production director in the days before hip-hop was big — in fact, before disco was big. Reach him at ken@kenr.com.

Ann DeWig Studio Gear

- Neumann TLM 103 microphone
- Zephyr Xstream codec
- Sony PCM-R500DAT machine
- Symetrix 528E voice processor
- Denon DN-C680CD player
- Klotz Digital Paradigm console
- DirecTV
- VHS/TIVO
- Color TFT LCD monitor
- Dell Precision 530 computer — Intel XEON 2.2 gig processor/1.5 gig RAM
- Sonic Foundry Vegas Video 3.0 editing software package

Only one thing could endanger the reliability, durability and quality of an OMB equipment

(ok, movie monsters are rare and unusual ...but it could happen)

Signal Promo

This script for WWDC(FM) was designed to emphasize that station's strong signal.

(Western music score; SFX: chickens, cows, dirt footsteps)

Announcer: Back in 1972 ...

Young Southern Boy: (running into the scene) Ma! Ma! Come quick! I done seen some strangers in town ... and they is building something big! It's as big as a mountain!

Announcer: The people of Washington had never seen anything like DC101's new radio tower.

(SFX: wooden benches creaking, crowd murmur, gavel hit three times)

Old southern man No. 1: Here-ye, Here-ye, this town meeting is now in order ... come here to discuss that new tower.

Southern crowd: I say shoot it ... Yeah shoot it! (Crowd: Shoot it!)

SFX: GUNFIRE


Old southern man No. 2: Sheriff, that new tower scares the whores ... It's pure evil!

(Crowd: Shoot it!)


SFX: GUNFIRE


Announcer: But DC101 wasn't so easily deterred ... they killed those dirty whores, so now — with DC101's gigantic radio tower, you can pick up DC101 practically anywhere.

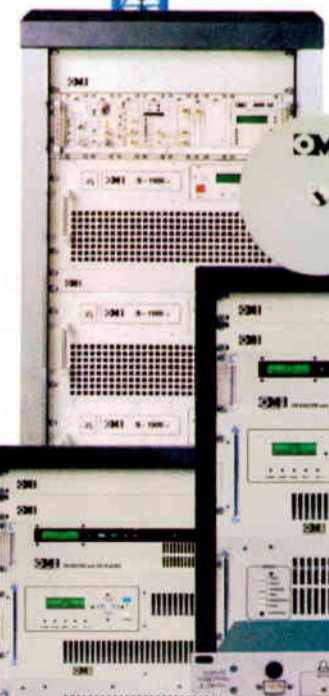
FM TRANSMITTERS
STL UNITS

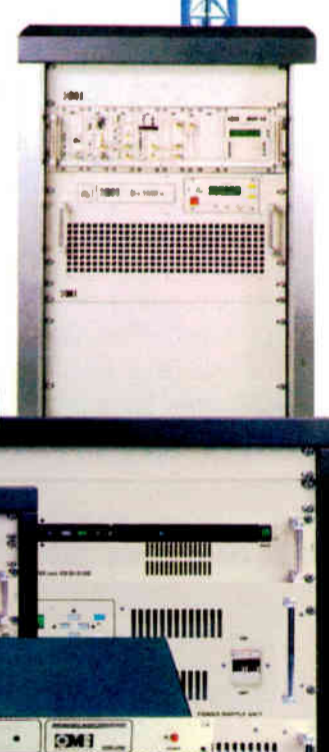



TV TRANSMITTERS
BROADCAST ANTENNA SYSTEMS











EUROPE
Commercial & T.V. Factory:
Avda. San Antonio, 41
Teléfs.: 976.50.46.96 (6 lines)
Fax 976.46.31.70
50410 CUARTE DE HUERVA
(Zaragoza)

Antenna & Radio Factory:
Camino de los Albares, 14, bajos
Teléfs.: 976.50.35.80 (6 lines)
Fax 976.50.38.55
50410 CUARTE DE HUERVA • (Zaragoza)
Internet: <http://www.omb.es>
e-mail: ombcom@infanegocio.com
VideoConference(RDSI) 976 46 32 00

INTERNATIONAL DIVISION
3100 NW 72 nd. Avenue Unit 112
MIAMI, Florida 33122
Ph.: 305 477-0973 — 305 477-0974 (6 lines)
Fax: 305 477-0611
Internet: <http://www.omb.com>
e-mail: ambusa@bellsouth.net
Videoconference: 1 305 5940991/92

THE POWER PORTABLE

Only PORTADISC has the strength, sound quality and features necessary for the most demanding portable recording applications.

USB Connectivity

PORTADISC is the only MD portable with a USB interface for transferring audio to and from computers. So a PORTADISC and a laptop with the appropriate software is all you need to record and edit finished pieces in the field.



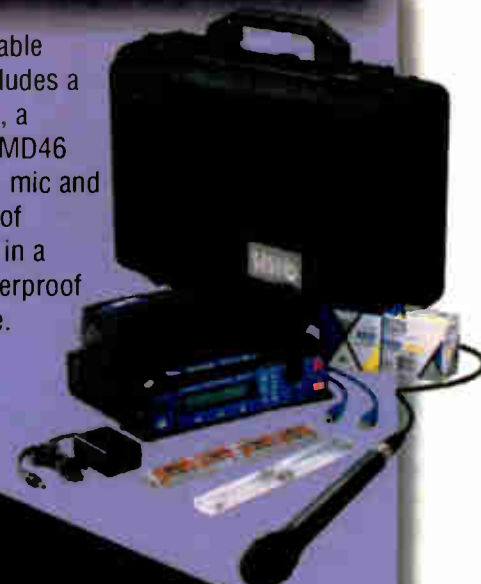
Flexible Powering Options



Three separate powering options are all supplied as standard: Rechargeable Nickel Metal Hydride batteries, an AC mains adaptor/charger (that connects to the 12-15V DC input) and a spare caddy for 8 standard AA alkaline batteries.

PORTADISC Reporter's Kit

This unbeatable package includes a PORTADISC, a Sennheiser MD46 interviewers mic and a full range of accessories in a rugged, waterproof Pelican case.



The PORTADISC portable MiniDisc recorder combines exceptional sound quality, a rugged, dependable MD drive and a full complement of professional features including a 6 second pre-record buffer, 40 second memory buffer and lockable controls. Comprehensive connectivity includes balanced

XLR Mic/Line inputs, RCA/phono line outputs and coaxial and optical digital I/Os. An On-board sample rate converter is included and Mic inputs feature switchable attenuation, bass roll-off, limiter and 48V phantom power.

An intuitive menu structure makes it easy to configure the PORTADISC for your precise requirements. There are five user programmable set ups so you can switch quickly for different recording applications. The large illuminated display also provides clear metering, margin indication and track, time and battery information while working in the field.



Comprehensive Connectivity



5 User Set-Ups

www.hhbusa.com

HHB Communications USA Inc., 1410 Centinela Avenue, Los Angeles, CA 90025-2501, USA T: 310 319 1111 F: 310 319 1311 E: sales@hhbusa.com • **HHB Communications Canada Ltd.**, 260 King Street East, Toronto, Ontario M5A 4L5, Canada T: 416 867 9000 F: 416 867 1080 E: sales@hhbcanada.com • **HHB Communications Ltd.**, 73-75 Scrubs Lane, London NW10 6QU, UK T: 020 8962 5000 F: 020 8962 5050 E: sales@hhb.co.uk



Buyer's Guide



Tech Updates
Inside

Radio World

Studio Design, Furnishings & Accessories

September 1, 2002

SPECIAL REPORT

Walters-Storyk Redesigns WETA

by John Storyk
Principal
Walters-Storyk Design Group

WASHINGTON During the course of more than 30 years as the architect/acoustical designer of more than 1,400 media production facilities, Walters-Storyk Design Group has been involved with many types of media production facilities and performance venues. These range from recording studios to audio-for-video mixing suites to high-end home theaters and radio stations.

One of our most satisfying projects was designing the new home for WETA(FM) 90.9, the Greater Washington Educational Telecommunications

Association NPR/PBS station. The goal was to consolidate and update the radio and TV technical facilities into a six-story building in Arlington, Va., creating a space that would support the company for the next 20 years.

'Be prepared'

As an NPR station, WETA offers such programming as "Morning Edition," "All Things Considered" and "Marketplace." The 30-year-old station also records live music performances, including symphony orchestra recordings at the Kennedy Center. WETA's credo of being prepared for whatever production needs may arise guided several technology purchases — most prominently the station's move to digital gear.

The equipment centerpiece of this strategy was Studer's OnAir 2000 digital console, whose features were well-suited for recording, post production (editing) and on-air audio capabilities. Because the console is software-configurable, operators easily can tap into settings like equalization and reverse

phase. If the need arises to broadcast from a production room, recalling the on-air studio's settings is simple.

Previously, when WETA recorded NPR programs that required delay, they were recorded directly to DAT. But in keeping with its new location and direction, the station now records to Broadcast Electronics' AudioVault hard-disk system. The station still uses Sony and Tascam DATs for archiving

See STORYK, page 61 ▶

USER REPORT

NCC Creates N.Y. Studios

by Wally Smith
General Manager
WLIU(FM) 88.3

SOUTHAMPTON, New York

When Long Island University decided to move its radio station, WLIU(FM) 88.3, out of the basement of the administration building and into a digital broadcast and production center in the premiere new building on the campus of Southampton College, it decided to make the necessary investment to do it right.

New York City-based Mitchell/Giurgola Architects was engaged to design the multipurpose building that would include housing for the radio station.

I arrived at the station as general manager during the construction phase of the project and discovered the original plan created by the general architect and another studio design group for the new build-out was rather awkward.

A visit to the NAB trade show in Las Vegas allowed me to identify the right option to salvage the project — Northeast Communications Concepts Inc. (NCC).

They not only had the design expertise and technical knowledge necessary to help us redesign the studio portion of our building project, but they were the most

congenial and helpful people with whom I have worked in 30 years in broadcasting. Their management of the project earned the praise and gratitude of the contractor, the architect and the client.

Studio details

WLIU's new broadcast and production center includes bright and airy offices; a central master control room for the digital studio equipment, satellite and automation systems; and an FM broadcast studio, a performance studio, a news/talk studio and a news production studio.

NCC designed the studios using Acoustic Systems pre-engineered rooms and assisted in the layout of the master control center.

The project originally was designed with drywall rooms to be built by the general contractor. In fact, the contractor had begun construction before I stumbled onto NCC's founder, Al D'Alessio, and an Acoustic Systems display on the floor of the NAB convention. That night I telephoned the architect and contractor from the convention center and told them to stop building because I had a better idea. They agreed.

We discovered that the mythology that pre-engineered studios are more

See NCC, page 72 ▶



A WETA(FM) Studio Created by the Walters-Storyk Design Group

Olympic Gold

DIGITAL AUDIO ROUTING POWER

The Impact and Caddy were the preferred equipment used in the Audio Switching Control Room in Salt Lake City.

AEQ Impact Digital Router:

- Capable to sum all inputs to all outputs
- Able to distribute one input to all outputs
- Gain control for each individual IO Port
- Modular one rack unit 12x12 or 24x24 AES/EBU
- Expandable: adds more units and easily enhances routing, summing and distribution capabilities.

AEQ Caddy AD DA Converter:

- A companion to the Impact digital router, it is also an ideal stand alone AD DA Converter.

AEQ
phone: 954 581 7999
fax: 954 581 7733
sales@aeqbroadcast.com
www.aeqbroadcast.com

USER REPORT

Ram Furnishes ESPN in Chicago

by John Hurni
Chief Engineer
ESPN Radio WMVP(AM) 1000

CHICAGO I recently had the opportunity to use the services of Ram Broadcast Systems to construct the studio complex for our all-sports talk station.

I was particularly pleased with the results I obtained with the studio cabinetry installation. Every broadcast engineer knows the challenges of trying to squeeze maximum utility into a limited floor space, and I have found that the key to this is close control of the furniture layout.

The studios we built needed to balance the placement of three hosts plus up to three guests on our live shows, and provide through-the-glass eye contact with the producers, screener and audio engineer.

In addition, we periodically have more than one show going on at the same time, as we originate satellite network programming for Bulls or White Sox sports play-by-play affiliates. When shows are happening concurrently, it's like a huge dance; at such times we appreciate the placement of the main players as well as the smooth rounded edges and contours of the layout.

Every broadcast engineer knows the challenges of trying to squeeze maximum utility into a limited floor space.

I have found it a challenge to locate a cabinetry builder who understands broadcasting and is responsive to custom needs. I have had other manufacturers produce proposals and quotes, but I often felt that as soon as I released my specifications to them, I was no longer in charge.

There seems to be a tendency on their part to try to squeeze my needs into their predetermined cabinetry styles and designs. Sometimes their designs are better than my specifications; but more often than not, their pricing is beyond my expectations.

But working with Ram President Ron Mitchell on furniture design was satisfying due to his expertise and responsiveness.

On this project, Ron took my room dimensions and conceptual pencil sketches and quickly returned a set of CAD drawings with multiple views and perspective prints. These were used for review and revision until a satisfactory layout was devised. A few adaptations and changes were made during installation, but on the whole I received what I specified.

I am impressed with the level of craftsmanship applied to the manufacture of the cabinets, which used welded steel tubing for the frames that support the Corian surfaces. This allowed Ram to



John Hurni in the ESPN Radio 1000 Station Furnished by Ram

USER REPORT

Birmingham Radio Uses Wheatstone

by Scott Tanner
Director of Engineering
Cox Radio Birmingham Cluster

BIRMINGHAM, Ala. As director of engineering for Cox Radio Inc.'s Birmingham, Ala., stations, I am responsible for the facilities' daily technical operations as well as expansions and upgrades.

When three of our stations, WBHJ(FM), WBHK(FM) and WAGG(AM), moved to a new facility, I was tasked with evaluating and selecting the new furniture and equipment.

The challenges were considerable. I had to outfit three stations with varied formats, diverse audiences and individual on-air personalities with the highest-quality furniture and consoles available, within limited budget constraints.

Selection process

Our selection process included evaluating several manufacturers. We chose Wheatstone because of its reputation, performance and reliability. The fact that Wheatstone was also capable of furnishing us with a complete package that included consoles, wiring and furniture made the final decision a no-brainer.

Not only was this decision financially appealing, it made the whole moving process easier for everyone involved.

Our final order included six audio consoles and seven suites of customized Wheatstone top-of-the-line Preference and Eclipse series studio furniture. Each production room and on-air studio had specific applications that required customization, and we ended up getting just what we needed.

The consoles included two Wheatstone D-5000 digital audio boards, three Audioarts Engineering R-60 radio consoles and one Audioarts MR-40 multi-track production console. The D-5000s handle duties in WBHK and WBHJ's on-air studios. The R-601s and the MR-40 facilitate production and dubbing for all three stations.

Because I was under a great deal of time pressure, designing the furniture became a big hurdle. Wheatstone provid-

ed incredible support through Jay Tyler, our sales representative. Jay worked with me beyond the call of duty, stepping in and virtually handling the furniture design function, e-mailing drawings for my review and approval. The company's attention to detail in general, and Jay's sensitivity to our needs in particular, relieved a great deal of potential stress.

The furniture incorporates numerous features that enhance functionality and promote ease of use. Brackets at the base of the removable doors and on the racks guaranteed an instant fit, and the modular design made installation a snap. Built-in top and bottom ventilation ensure that equipment doesn't overheat.



Scott Tanner With a Wheatstone Console and Furniture

Wheatstone's furniture design ensures easy installation and maintenance access via wiring trays and thumbscrew latches on exterior panels, eliminating the need for handtools. Ample rack space allows wiring and components to be mounted under the work surface, keeping countertops neat and clean and the jocks more comfortable and organized.

Wheatstone transformed every challenge we experienced into an opportunity to demonstrate its concern for pleasing the customer.

produce the desired angles that we needed for optimum placement of the air staff.

Everything fits as we visualized, with multiple flatscreen monitors for the AudioVault, Screener displays and NewsBoss PCs just below eye level, and over-the-monitor eye contact with the other team players in the shows. The studios and control rooms are configured for stand-up operations.

The proof is in the satisfaction of the air talent and show staff. All are pleased with the results, thus eliminating distractions that often are blamed on keeping them from doing their best at showtime. The cabinetry looks great; and from an engineering point of view it is well-designed, with appropriate and easy access for equipment and wireways.

I would give high recommendations to others who are looking for a great product to fit their custom needs for studio furniture.

For more information including pricing, contact Ram Broadcast Systems in Illinois at (800) 779-7575 or visit www.ramsyscom.com.

The high-end furniture in the FM rooms were supposed to be mirror images of each other, but through a mix-up, one set didn't arrive exactly as planned. Wheatstone made a new countertop and shipped it out immediately.

In another instance the mic risers we ordered were not in stock, so they sent someone all the way to New York to pick up the equipment from an alternate source and get it to us on time. They do what they say they are going to do — the support is there.

Wheatstone's furniture has worked out great for us, but another attractive factor was that we were able to purchase the company's totally modular,

24-bit D-5000 digital consoles as part of the total package. I'm a big believer in broadcast consoles with a traditional look and feel, and the D-5000 is a great-sounding, flexible console with an unimpeachable control surface, friendly alpha displays and unparalleled sonic integrity. Our talent has embraced it since day one.

For more information, including pricing, contact Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

USER REPORT

Harris Furniture Goes Up and Down

by Warren Shulz
Chief Engineer
WLS(AM)

CHICAGO Radio studios rarely are built with comfort in mind.

When we decided to replace our 10-year old existing furniture at WLS NewsTalk 980 AM, however, we made a commitment to find a platform that would specifically address the physical needs of our shows' hosts.

With one push of a button, the level of various parts of the furniture can be raised or lowered to any position.

As one of the nation's most high-profile talk outlets, the comfort of our hosts was a key component in our design process. WLS is home to local personalities such as Don and Roma, Roe & Gary, Jim Johnson, Bill Cameron, Yvonne Greer and Jay Marvin, and national personalities like Rush Limbaugh and Sean Hannity.

The table that we needed to replace was used daily by 12 people of all shapes and sizes. Some of the talent like to stand while conducting interviews; others prefer to sit; still others want to change during their show.

Our current table had been designed to conduct interviews while in the sitting position, and we needed to find a work surface that would allow our talk show



WLS(AM)'s Talk Show Setup on a Harris Hydraflex Desk

host staff to move freely during their shift depending on what made them comfortable.

Harris had just introduced its Hydraflex furniture, which sounded like the solution for us.

Push-button parts

The line consists of furniture that can change height levels using a power hydraulic system. With one push of a button, the level of various parts of the furniture can be raised or lowered to any position depending on what makes the talent comfortable.

Aside from the obvious benefit of having an adaptable table, I was impressed with the Corian countertop on the Hydraflex table. In the past, the laminated plastic tops have presented delamination problems for us, whereas with the Corian, the tabletop is durable.

With the restricted space available in our studio, the Hydraflex furniture had to be designed specifically for us. The installation presented interesting challenges, such as the need to joint the two-section Corian top in the field.

Harris took the time to work through eight drawing revisions to create the right furniture that would meet our user needs and allow us to place our five flat-screen PC monitors where two hosts can view their monitor screens at the same time comfortably.

We were able to install the Hydraflex furniture this past Memorial Day weekend. Our system is able to rise eight inches from its initial sit-down to stand-up height. Our air staff loves what I call our new "articulated" table. In fact, when I asked our afternoon shift about the furniture, they said on average they change the height of the table four times per each

five-hour shift.

We are one of only five stations nationwide to have Hydraflex, and we could not be more pleased with its performance.

For more information, including pricing, contact Harris Broadcast in Ohio at (513) 459-3400 or visit www.harris.com.

Storyk

► Continued from page 59 shows, but hard disk has taken over the reins for short-term storage.

The AudioVault features 72 GB of storage (more if you count the backup RAID array drives). Incidentally, there is not a cart machine to be found in the building. The station also is converting all field equipment to digital.

The architectural master planning and acoustic design allow virtually any one of the three control rooms to communicate visually and technically with either of the production live rooms.

Additionally, as with many NPR radio stations, the public tour aspect of the facility has been recognized as important. People are able to see the room workings from a number of window positions.

Location shift

The original location of the on-air production studio and control rooms was shifted from the first floor, with a ceiling height of more than 16 feet, to the second floor, with a ceiling of 11 feet. To accommodate the limited height, technical spaces were built with a raised floor level of only 4 inches.

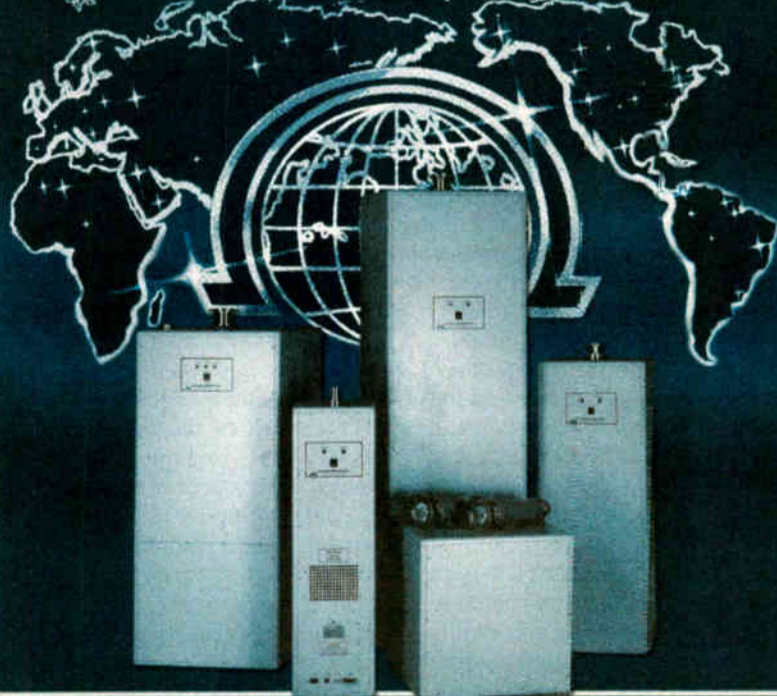
Up and running since early 2000, WETA's new facility has enabled the station to continue to reach its diverse Washington audience and prepare it for new broadcasting innovations as they are introduced.

John Storyk is a member of the American Institute of Architects.

For more information contact the Walters-Storyk Design Group in New York at (845) 691-9300 or visit www.wsdg.com.

ALTRONIC RESEARCH INC.

Performance By Design



MANUFACTURER
OF RF COAXIAL LOAD RESISTORS.

DUMMY LOADS FROM 1 KW TO 1500KW,
AVAILABLE IN AIR, WATER OR SELF
CONTAINED HEAT EXCHANGERS.

HIGH POWER NON-REACTIVE CERMET
RESISTORS FROM 1 OHM TO 20 MEGOHMS.



ALTRONIC RESEARCH INC.

P.O. Box 249 • Yellville, Arkansas 72687 870-449-4093 • Fax: 870-449-6000

E-mail: altronic@mtnhome.com Web Site: <http://www.altronic.com>

USER REPORT

Meridian Creates WCBS Facility

by **Mark S. Olkowski**
Engineering Manager
WCBS(AM)/WINS(AM)/
WNEW(FM)/WFAN(AM)

NEW YORK In the fall of 2000 I led the process of relocating Infinity Broadcasting's WCBS(AM) NewsRadio 880 New York to new, state-of-the-art facilities in the CBS Broadcast Center, 513 West 56th Street.

Designed by **Meridian Design Associates, Architects (MDA)**, the 20,000-square foot project was planned and constructed in seven months, including offices, on-air and production studios.

Experience. That's the first thought that comes to my mind when considering architecture firms. What facilities have they designed? Where? What were the special challenges and considerations?

Is their expertise primarily in broadcasting, and particularly radio, or do they primarily design office space with an occasional broadcast client? Do they understand that the radio station is not only a bunch of broadcast studios, but is also a business with offices and support areas that interact?

Big picture

MDA's fluency in the technical aspects of radio station design and management allowed them to help us see the big picture, and to make that vision happen.

WCBS had been broadcasting from studios at Black Rock on the Avenue of the Americas since 1964. These facilities were not designed for a 24-hour, all-news format. The station originated some local DJ music shows and live interview programs, but the bulk of the programming was taken directly from the CBS Radio Network.

The all-news/all-the-time format of WCBS did not begin until August 1967, the day after an airplane lost in the early-morning fog while looking for LaGuardia crashed into the station's main tower; but that's another story.

What we called "the newsroom" was a less-than-informal arrangement of metal desks and typewriter tables cobbled together. This was before the advent of "combo" operations.

The original technical answer for a combo operation was to stack some additional cart machines on top of each other and move the talent into the control room. When there were dual anchors, the solution was placing another desk chair and microphone in front of the console. Talent sat side-by-side and could not directly see each other while talking into the microphone.

To sum it up, WCBS was a pit. The station needed a whole new facility designed for the 24-hour news format and the digital age.

When we were selling the idea of new facilities for WCBS to upper management, the real estate that the 1964 Black Rock studios occupied was in a prime location at 51st St. and Sixth Ave. The financial rationale to relocate to a more cost-effective location was obvious.

Serendipitously, space became available at CBS Broadcast Center on West



This WCBS(AM) studio was created by Meridian Design Associates.

57th St. As the home for the CBS Television Network, WCBS(TV) and the CBS/Westwood One Radio Networks, the building has 24-hour HVAC, security and full UPS/emergency electrical power. None of that was available at Black Rock, which was in an office building.

MDA has an 11-year partnering relationship with CBS, designing and managing nearly 100 projects in radio, television and other aspects of the

broadcast workplace.

Besides WCBS(AM), the firm refurbished WCBS(FM)'s radio broadcast facility of 15,000 square feet in the Viacom Building. At the CBS Washington Radio News Bureau, MDA designed the first installation of a paperless digital radio news system in 1994, including newscasters' digital workstations with integrated editing systems, studio, control room and offices in 2,500 square feet

With 22 years of designing broadcast facilities, MDA understands the interrelationship among all the departments that operate a radio station. They understand the need for collaboration. Not only are studio operations and technical space important; the integration of supporting office space, and the people who work there, must be considered. MDA's architectural "program" explores and defines how the station's business translates into spatial terms.

Sit and listen

Sitting down with the department heads and understanding their relationships makes for a more-intelligent and cost-effective design. It also is cheaper to construct, because you are not making dreaded change-orders that cost dearly after construction begins. Such change orders usually arise because someone was not involved in the original discussions and his or her particular needs are not being met.

It was beneficial that Meridian also is experienced with the pitfalls of new construction in New York. Their knowledge of local fire and building codes, their guidance regarding union jurisdictional issues and recommending general and specialty contractors were important to the process.

Choosing the right architectural firm will save you money and a whole lot of aggravation. But most important, the result is a radio station facility that will work well for another 36 years.

For more information contact Meridian in New York at (212) 431-8643 or visit www.meridiandesign.com.

USER REPORT

Mager Furnishes Purdue Radio

by **Michael Gay**
Manager, Broadcast Networks
and Services
IT Telecommunications
Purdue University

WEST LAFAYETTE, Ind. It has only been a few months since the completion of the multimillion-dollar, Russ Berger-designed renovation of Purdue University's NPR affiliates WBAA(AM) 920 and WBAA(FM) 101.3.

It was the first major upgrade to the stations' physical facilities since the station moved to its current location in the basement of Purdue's Edward C. Elliott Hall of Music more than 60 years ago.

The Hall of Music is one of the largest proscenium theaters in the world, seating 6,025, with the main floor directly above the broadcast studios. (For information about the Hall of Music, visit www.purdue.edu/hlmc; about WBAA visit www.wbaa.org.)

The space designed by the Russ Berger design team consisted of oddly shaped rooms with many right angles and straight lines. Striking as the design was, we knew we needed furniture that was equally striking. With a renovation history of once every six decades, we needed studio furniture for the long haul.

Mager Systems developed two furniture designs: one for the main control rooms and one for a five-person voice studio.

Our facility called for each of the designs to be mirror-imaged to fit its counterpart studio. This resulted in four

studios' worth of furniture. The designs Mager proposed were strikingly fluid, with curved lines and flowing countertops. One was nicknamed "The Amoeba" by Mager's installation crew. These curves were in sharp contrast to the straight lines and rectangles of the Russ Berger design.

The curves and fluidity of the furniture made it all seem to grow from the floor and take center stage. One feels as though he or she is walking into an art gallery rather than a radio studio.

Mager worked well with the architects and coordinated with them to choose the solid-surface countertop and laminate

The curves and fluidity of the furniture made it all seem to grow from the floor and take center stage.

Mager was required to meet some odd requests to fit our needs.

For example, we required the furniture to accommodate our Denon digital-output turntables, used during a Sunday-morning jazz show. Obviously, turntables are not the norm anymore for modern radio broadcast studios, but the solution Mager fashioned was innovative and allowed us to stow the turntables away when not in use.

The solution was heavy-duty custom sliding shelves that fit into a space that could accommodate standard 19-inch rack equipment, should the time come to remove the turntables. Mager met this and other needs and gave us a custom furniture solution that is hard to beat.

materials to fit the prescribed decor.

Mager Kizziah and his crew were great to work with during the installation. They were prompt, courteous and professional. These guys were more than cabinetmakers; they were artists, proud of their creations. I found it hard to believe how quickly the cabinetry was installed.

The result of the installed furniture was incredible, and most important, functional. If you are ever in West Lafayette, Ind., call or stop by to see the results for yourself. Mager should be proud of the results. I know we are.

For more information, including pricing, contact Mager Systems in Arizona at (623) 780-0045 or visit www.mager.com.

Radio **Promotes.** Radio **Provides.**

98.1KKFM

98.1KKFM

Radio has **Power.**

September 12–14, 2002 • Washington State Convention and Trade Center • Seattle, WA

The power of new ideas. The power of cutting-edge sales strategies. The power of making the right contacts at exactly the right time. This is the degree of power that we've harnessed for you this September at The NAB Radio Show.

Friday, September 13

The NAB Radio Show Keynote

Sponsored by:



Keynote Address
Bill O'Reilly
The Radio Factor with Bill O'Reilly

WESTWOOD ONE



Saturday, September 14

Radio Luncheon

Sponsored by:



Keynote Address
Jon Spoelstra
Author, Marketing Outrageously



NAB National Radio Award Recipient
Dick Ferguson
Cox Radio, Inc.

Saturday, September 14

NAB Marconi Radio Awards Reception, Dinner & Show



Master of Ceremonies
Jeff Foxworthy
Comedian & Host



PREMIERE

Thursday, September 12

Independent Promotion Super Session



Moderator
Jeff Baumann
NAB



Tom Barsanti
Jeff McClusky & Associates



Eric Bernthal
Latham & Watkins



Rick Cummings
Ennis Communications



JUST A BEDI!
Mitch Glazier
Recording Industry Association of America



Ted Kalo
Office of the Honorable John Conyers, Jr.

Friday, September 13

Group Executive Super Session



Moderator
Sam Donaldson
Live in America ABC Radio Networks



Ed Christian
Saga Communications



David Field
Entercom Communications



Mark Mays
Clear Channel Communications



Mary Catherine Sneed
Radio One, Inc.



Bill Stakelin
Regent Communications

REGISTER ONLINE TODAY!

www.nab.org/conventions/radioshow

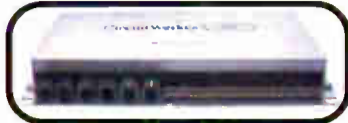
THE NAB
RADIO
SHOW®

Products & Services SHOWCASE

Telephone Solutions by CircuitWerkes



The HC-3 hybrid telephone autocoupler
The HC-3 is ideal for many tasks like listen & concert lines, remote broadcasting, IFB interfaces, & More.



The New Telco-6, six line, incoming, ring detector
Is someone calling? Find out with the new Telco-6! The telco-6 detects telephone ring signals from one to six lines and provides a dry relay output for each line.

More Features.
Better Price.



CP-1 & CP-2 call progress decoders
Did you ever connect a telephone coupler to a phone line or PBX only to discover that it won't hang up? CircuitWerkes' call progress decoders can save the day on most systems. They listen for dial-tone or busy signals and, when present, force your couplers offline.



The AC-12 telco autocoupler bank
Get up to a dozen, full featured, telephone autocouplers in just 5.25" of rack space. The coupler bank features a common power supply and two audio busses for easy mass feeds. Individual couplers can be used for sending or receiving separately from the rest - perfect for IFBs. Newly updated design improves audio performance and overall reliability to a new standard of excellence!

CircuitWerkes - 13521 335-6555 Fax 380-0230 <http://www.circuitwerkes.com> 2805 NW 6th Street, Gainesville, FL 32609

WEATHER RADIO Model CRW



Price \$540.00

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm audio output. Double conversion crystal controlled, crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel (± 25 kHz) down to 70 dB. 19" rack mount, 3.5" H, all metal enclosure. In stock—available for immediate delivery.

GORMAN REDLICH MFG. CO
257 W. Union St. • Athens, Ohio 45701
Phone 740-593-3150 • FAX 740-592-3898
www.gorman-redlich.com/jimg@gormanredlich.com

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



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

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

Cortana
Corporation Inc.

Write or call for a free brochure and design
P.O. Box 2548, Farmington, N.M. 87499-2548
Toll Free: 888-325-5336 • Fax: 505-326-2337 • www.cortanacorporation.com

SOUND CHOICE FURNITURE

High quality stock studio furniture from the manufacturers of The Best Custom Studio Furniture

Call Today before \$5,995+ Introductory Price Expires!

Introducing "Sound Choice Furniture," new from Mager Systems, Inc. the manufacturer of The Best in Sound Furniture. Sound Choice Furniture is high quality stock studio furniture, featuring the same high quality construction methods and materials found in Mager Systems, Inc. custom furniture. All "Sound Choice Furniture" includes solid surface countertops. The standard color is cherry gray for the solid surface top and a medium speckled gray on the cabinets (see photos). Call today to see how Sound Choice Furniture will benefit your studio.

MAGER SYSTEMS, INC.
The Best in Sound Furniture

Starting as low as \$1,295

*As shown, excluding Console & Guest Top

Winner NAB 2002

Radio
BE Radio Magazine

Sound Choice Furniture offer these Fine Standard Features:

- Solid Surface Tops
- 1-1/2" thick 19-ply plywood cabinet construction
- 13-ply Finland Birch access panels
- No Particle Board or melamine
- 10-year Limited Warranty
- Reversible Punch Block cabinet
- Modular - Many Configurations, add-ons and colors available
- Built in ventilation
- Fast Installation - No cabinet assembly

TEL: 623-780-0045 • FAX: 623-780-9860
www.magersystems.com • mager@magersystems.com
Visit our website for more information

Satellite tools

BROADCAST tools INC.™

Innovative Problem Solving Tools for Broadcast

PSC-11 Programmable Schedule Controller
With 512 events intended for controlling up to two RS-232/RS-422 serial devices; 16 - SPDT relays; auxiliary serial ports and relays all in a single rack space. The PSC-11 controls functions by either scheduled time and date, time and day of week, serial port commands and remote input contact closures.

DSC-32/64 Satellite Channel Controller
The DSC-32/64 allows complete remote control of two StarGuide II/III, Wegener Unity 4000 or ComStream receivers. An encoder control with a 16 x 2 LCD display provides local control and program descriptions, while external control may be in the form of serial or 64 contact closures. Custom programming is accomplished with a non-dedicated computer.

SDD-8 Serial Data Director
The SDD-8 is a Serial Data Director, with one master RS232 port, and 8 - RS232 target ports that can be selected under software control, from a host computer, or other serial device. The function of the unit is very similar to a mechanical port selection switch (A, B, C, etc.)

DSC-20 Dual Satellite Controller
The DSC-20 adds remote control capability to two StarGuide II/III, Wegener Unity 4000 or ComStream receivers, allowing complete control of receiver functions by serial or contact closures. Customized programming is accomplished with a non-dedicated computer.

COA-37 Connect O' Adapter 37
The Connect O' Adapter 37 provides an effective way to convert the DB-37 connector to removable screw terminals. The COA 37 is designed to plug into the male 37-pin D-Sub connector on any StarGuide II or III Relay Module.

COA-15 Connect O' Adapter 15
The Connect O' Adapter 15 provides an effective way to convert the DB-15 connector to removable screw terminals. The COA 15 is designed to plug into the male 15-pin D-Sub connector on any StarGuide II or III Audio Module.

COP Connect O' Pad
The Connect O' Pad, (COP), provides an effective way to connect and adjust the audio outputs on your StarGuide II and III receiver. The COP is equipped with an eight position removable screw terminal for connection to the balanced left, right, monoaural outputs, audio and chassis ground.

USC-16/SG Upgrade
The USC-16/SG is a firmware upgrade for the USC-16, Universal Satellite Channel Controller. The USC-16/SG is field programmable to switch all functions on StarGuide II / III or other satellite receivers.



PSC-11



DSC-32/64



SDD-8



DSC-20



COA Connect O' Adapter 37



COA Connect O' Adapter 15



COP Connect O' Pad

Check out our web site for product information, list pricing, and distributor locations!

www.broadcasttools.com • Email: info@broadcasttools.com • Phone: 360-556-2000

Designed by broadcast engineers for broadcasters, our controllers and connectors give you the functionality you need for your satellite system. Choose the model that best fits your application.

TECH UPDATES

RackTools Design Software Updated

RackTools software from Middle Atlantic Products lets engineers and studio designers create professional elevation drawings of racks, enclosures and studio furniture in an intuitive software program.

RackTools operates on the Microsoft Visio platform and allows the user to drag and drop Middle Atlantic components into systems drawings to create proposal and layout drawings, including room layouts.

Visio shapes for amps, receivers and other components can be included, making it possible to create drawings of configured racks and enclosures.

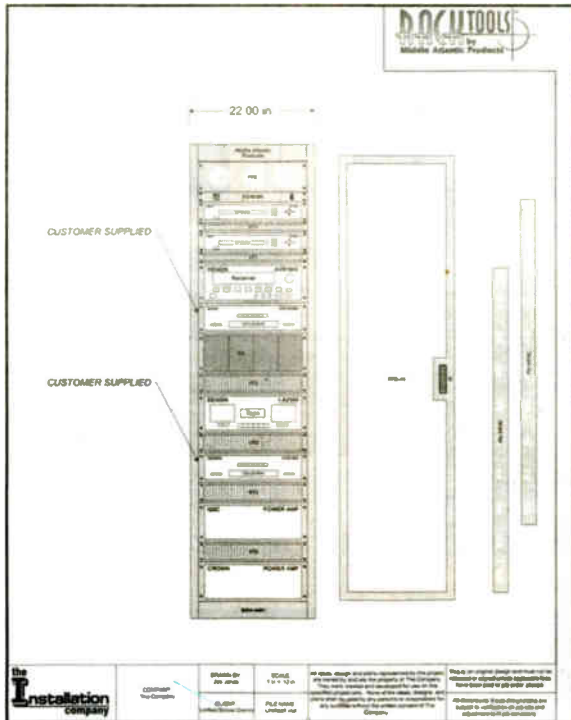
Version 2.1 lets users update the program via the Internet and download current information, including the custom rackshelf-measured unit database, as well as new product shapes, prices, part numbers and related accessories.

Other features include the ability to export reports, including purchase orders and quotes, as Word, Excel or text files, allowing users to import RackTools-generated information into their current accounting package.

An additional feature adds components specified to mount into an RSH custom rackshelf to the "Non-Middle Atlantic Items" pick list.

Engineers can request a free copy at www.racktools.com. Registered users can get new files and updates online.

For more information, including pricing, contact Middle Atlantic Products in New Jersey at (973) 839-1011 or visit www.middleatlantic.com.



Wenger Offers Panels, VO Chair

Wenger produces acoustical panels for studio applications, designed to optimize the internal acoustical characteristics of a studio.

The diffuser panels are made of impact-resistant PVC/acrylic plastic and come in a variety of types, including wall and ceiling models. Panel sizes range from 2 x 2 feet to 4 x 8 feet, with other sizes available.

Quadratic diffuser panels are based on quadratic number theory and are effective over a frequency range of 750 Hz-3.3 kHz. Pyramid and trapezoid diffuser panels feature offset shapes to address specific acoustical requirements.

Absorber panels are constructed of 3-inch, high-density, glass-fiber insulation with a foil backing and formed steel frame, and are designed to absorb sound across a broad frequency range. Fabric-covered panels are available in five colors and meet Class A fire safety standards. The panels come in the same sizes and shapes available.

The company's Voice-Over Chair promises comfort for long sessions. Features include adjustable backrest and pneumatic height adjustment for the seat and footrest. The chair swivels 170 degrees or locks in position. Six upholstery colors are available; the chair price is \$450.

For more information, including pricing of acoustical panels, contact Wenger Corp. in Minnesota at (800) 326-8373 or visit www.wengercorp.com.



The Wenger Voice-Over Chair

Lawrence Group Helps Northwestern

Lawrence Group Architects says it seeks to determine development costs for a broadcast project first, during the conceptual phase, by understanding its clients' goals better than other companies do.

According to the company, Clear Channel, Infinity and Emmis have sought its services. Since 1996, it has built 400 stations and developed a cost database from its projects.

Its budgets include line items beyond construction costs for furniture, teledata, technical equipment and security.

To illustrate its value-added technical service, the company pointed to a project under construction for Northwestern College Radio Network.

Lawrence Group had discussions with the administration, the school's board and users to develop goals beyond the building's technical and program requirements.

One goal stated that because a visitor's first interface with the Christian college was in the Media Center, it should be welcoming and reflect its mission. So the firm incorporated a 67-foot backlit tower as a "beacon to the community" and other architectural references to religious forms.

Another goal was that the building acknowledge the historic architecture of the campus while showing the college's commitment to the future.

According to the company, "The architectural vocabulary of the Media Center respects the campus through its materials, while the building looks to the future via function-specific technical equipment like the tower in the development of architectural features."

For more information contact the Lawrence Group in Missouri at (314) 231-5700 or visit www.thelawrencegroup.com.



A Computer-Generated Rendering of the Northwestern Radio Station Building by LGA

AcoustiKit Ready to Treat Studios

The Model 1014 is part of the Acoustics First AcoustiKit series. It's designed to provide the basic elements necessary to treat a room with dimensions of 10 x 14 feet.

The kit contains Cutting Wedge acoustical foam in 12-inch tiles as well as 2-foot square panels. The extra surface area created by the Cutting Wedge pattern makes it an efficient sound absorber. The foam comes in standard "studio gray."

Complementing the wall panels are Bermuda Triangle Traps, which extend the absorption range, providing bass control in room corners. The kit also comes with Art Diffusers, "Binary Array" diffusers that come in white and may be painted to match the room décor. The sound-scattering devices, when combined, will make a room sound larger by breaking up reflections.

The Model 1014 provides enough acoustical treatment for desktop music production or a small mixing room. It can be expanded as the facility grows.

Installation instructions and room layouts are included. The designs, created by a professional acoustician, illustrate placement of materials for various listening positions.

The kit carries a user price of \$398. It can be shipped within the 48 contiguous United States for approximately \$35.

For more information contact Acoustics First in Virginia at (888) 765-2900 or visit www.acousticsfirst.com.



The 1014 ACOUSTIKIT™

The Contents of Acoustics First's Newest AcoustiKit

Products & Services SHOWCASE

Got a problem? We Build Solutions...

Since 1982, Henry Engineering's "blue boxes" have been solving your problems!

- Audio Interface
- Audio Mixing
- Audio Distribution
- Telephone Information
- Digital Audio Storage
- Control Interface

Over 60,000 units in use worldwide.
How can we help you?

www.henryeng.com
Tel: 626.355.3656
Fax: 626.355.0077



AM Antenna Solutions



LBA Tunipole™
Folded Unipole Systems



RF Components



Antenna Tuning Units



Diplexer, Triplexer and
Phasor Systems



LBA
Since 1963

LBA Technology, Inc. is your proven supplier of innovative, digital-ready AM antenna systems. Our products include tuning units, phasing systems, multiplexers, AM/wireless isolation systems and components for every power level. We help hundreds of broadcasters in the USA and worldwide to --

Reach further - sound better!

LBA Technology, Inc.

3400 Tuppur Drive, Greenville, NC 27834
800-522-4464 / 252-757-0279 / Fax: 252-752-9155 / Email: LBAtech@Lbagroup.com
www.Lbagroup.com




Auralex Clarity:
Your Studio. Your Sound. Your Choice!

Auralex Total Sound Control™ products continue to outperform much more expensive alternatives. Our industry-leading Studiofoam™ acoustical panels, LENRD™ bass traps, diffusers, MAX-Wall™ modular environment and a full line of construction products to greatly reduce sound transmission & resonance can be custom-tailored to your specific needs via Personalized Consultations and advice from the experts at Auralex.

Don't be fooled by inferior, underspec'd, overpriced, flashy imitations!
Compare the quality, quantity, variety, personal service and price...

www.auralex.com • www.auralexuniversity.com

Affordable Custom Broadcast Furniture



32 Pennsylvania Avenue, Malvern, PA 19355

Designed,
Constructed,
Delivered and
Installed by

STUDIO
TECHNOLOGY

TEL: 610-640-1229
FAX: 610-296-3402

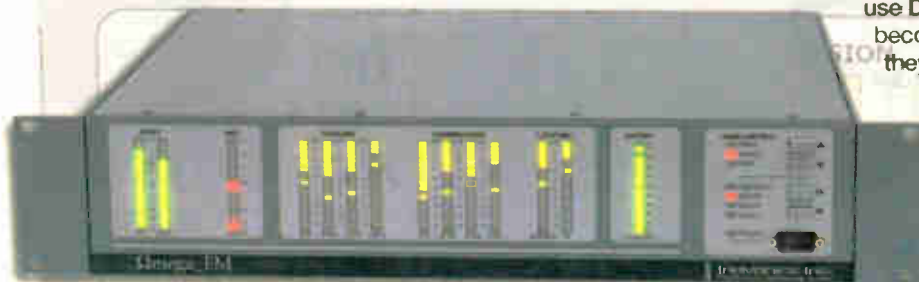
email: sales@studiototechnology.com
web: www.studiototechnology.com

Digitally Different Omega_FM - \$5880

NEW!
v2 Software

OUR GOAL WAS TO DEVELOP A DIGITAL PROCESSING SYSTEM FOR FM THAT WOULD RIVAL ANYTHING ON THE MARKET. WE MET THAT GOAL...AND THEN SOME.

Omega_FM is a 100%-digital, software-based design. It doesn't use DSP chips or other application-specific parts that rapidly become obsolete. Upgrades don't plug into 'expansion slots,' they're simply uploaded.



Omega_FM is straightforward and uncomplicated. Hardware simplicity keeps the signal path short and your audio clean. Low latency lets you monitor off-air.

Omega_FM is loud, clean and versatile. We don't expect you to take our word for this, and you shouldn't. Schedule a demo at your station through an equipment supplier of your choice.

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

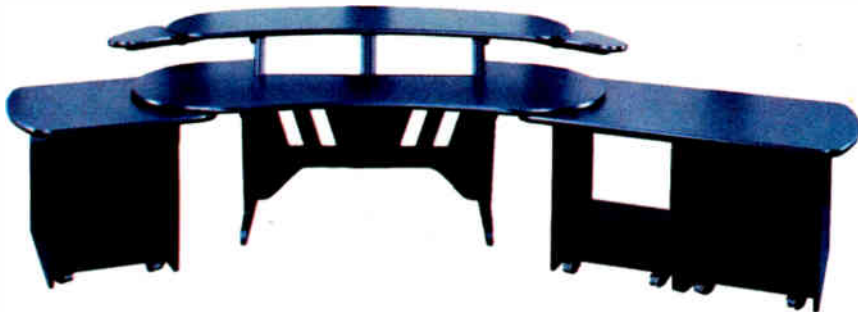
Hear It... Processing doesn't get any better than this.

TECH UPDATES

Middle Atlantic Creates Edit Center

Middle Atlantic Products has developed the Edit Center line of modular studio furniture, which includes a user-configurable series of 60-inch and 84-inch desk designs.

An Edit Center desk system ships with one of two types of attached over-bridge (two integral under-bridge rackbays or an under-bridge open span) and rotating speaker monitor platforms. An Edit Center includes grommeted desktop cable pass-throughs and a cable manager that accommodates Middle Atlantic power strips.



Standard features on side-bay racks include gasketed plexiglass front doors for noise control and a quiet fan and filter on gasketed rear doors.

The Edit Center system can be arranged to suit user preferences by rotating the unique side bay racks to the desired angle. The system components are available in cherry or graphite laminate finish.

List price starts at \$1,850; pricing is dependent on configuration.

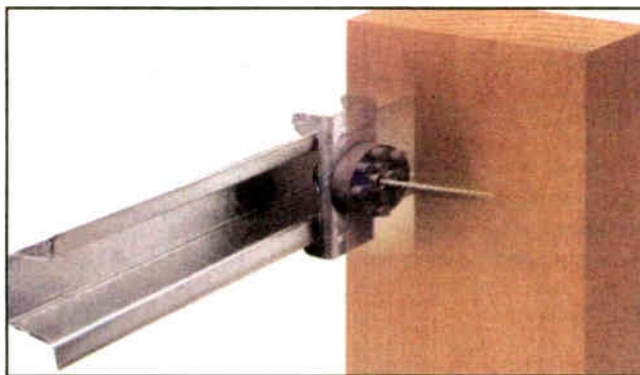
For more information contact Middle Atlantic Products in New Jersey at (973) 839-1011 or visit www.middleatlantic.com.

Acoustical Solutions Stops Sound

Acoustical Solutions Inc. manufactures Alpha Resilient Isolation Clips and Audioseal Sound Barrier for use in achieving a high STC rating with new or existing wall, ceiling or floor construction. Used together, the products can achieve a Sound Transmission Class rating of 60.

Alpha Resilient Isolation Clips are made with a natural-blend rubber grommet pad and threaded shaft.

A clip is attached to a center bushing made of electroplated zinc mild steel. The center bushing is approximately 20 mm long, with a 10 mm shaft section and 21.5 mm end clip. The rubber grommet has a Shore A indentation hardness of 50 ±5 (out of 100), tensile strength of 10-11.2 MPa and heat resistance of 70 degrees C for 70 hours.



An Acoustical Solutions Alpha Resilient Isolation Clip

A clip typically is required on only one side of an assembly.

The Audioseal Sound Barrier reduces sound transmitted through walls, floors and ceilings. It is a limp-mass material made of high-temperature fused vinyl and no lead fillers. The barrier is dense (at a weight of 1 lb. per square foot), which gives it effectiveness at reducing airborne and outside noise.

The barrier is available in reinforced and nonreinforced versions. Rolls come in 54 inches x 60 feet, and barriers also are available by the linear foot.

The barrier is caulked using the company's Sound Sealant for filling potential air leaks with nonhardening acoustical caulking.

The clips are \$5 each, the barriers are \$472 per roll or \$2.25 per square foot and caulking is \$4.50 for a tube.

For more information contact Acoustical Solutions in Virginia at (800) 782-5742 or visit www.acousticalsolutions.com.

illbruck's Fabritec Reduces Sound

Fabritec Wall Panels from illbruck inc. are designed to improve sound quality by reducing reverberation and echo and add a custom look to studios, offices and other interiors.

The lightweight panels feature high noise-reduction ratings (0.85 NRC) and are available in a range of colors, fabrics and textures.

Made from a core of willtec, illbruck's proprietary foam, the panels are wrapped with a choice of fabrics, including Guilford FR701, Style 2100 and a durable microperforated vinyl, which resists staining and is easy to clean. A 1/16-inch substrate keeps the panels sturdy and accommodates pushpins and tacks. Components meet Class 1 (ASTM-E84) requirements for flame spread and smoke density.

Built with square or beveled edges, the panels are 1-inch or 1.5-inches thick and measure 2 x 2 feet or 2 x 4. Custom sizes are available. The wall panels are light enough to lift and glue into place; standard installations do not require mechanical fasteners.

For more information, including pricing, contact illbruck inc. in Minnesota at (800) 662-0032 or visit www.illbruck-sonex.com.

Rosendahl Features Clock Server

Rosendahl's Nanoclocks system is a word clock distributor with an integrated audio master clock generator.

The unit has two word clock inputs (A and B) and 12 outputs that are controlled by a programmable output matrix. LEDs show incoming sample rates for each input and routing status for the outputs.



The Nanoclocks system has three modes of operation. In Distributor Mode, inputs A and B can be routed individually to the 12 outputs. Input A supports sample rates from 32 to 100 kHz, while input B handles sample rates between 32 and 200 kHz, including Super Clock.

In Generator mode, the Nanoclocks system becomes a low-jitter master clock generator with 12 programmable outputs, supporting 44.1-, 48-, 88.2-, 96-, 176.4- and 192-kHz sample rates as well as Super Clock. In Failsafe mode, it is a distributor that monitors the two inputs and performs an automatic switchover of the 12 outputs if the primary word clock signal present at an input should be interrupted.

The Nanoclocks' crystal accuracy is +/-5 ppm and clock jitter is <10 picoseconds RMS (20 Hz-20 kHz). The design also addresses the four main sources of noise that can affect a clock distributor's performance.

To minimize effects of noise common to distributors, each channel and processing logic block is decoupled from the power supply and ground. The use of low gate-count ICs throughout reduces interlogic noise. Word clock inputs are transformer-isolated to reduce cable interference, allowing longer cable runs from the main clock source.

The Nanoclocks system retails for \$1,299.

For more information contact HHB in California at (310) 319-1111 or visit www.hhbusa.com.

Ram Offers Digi & Analog Cables

Ram Systems has a pair of new analog and digital cables.

The 22-GA A2422SSBLU is an analog cable with 24 pairs. The 24-GA D1224s is a 110-ohm digital cable with 12 pairs.

The cables are designed for flexibility and easy stripping. Individual pairs are color-coded for identification.



Ram System's A2422SSBLU Analog Cable

Each cable has individual and overall shielding for layered isolation from RF and high-speed data interference.

For more information, including pricing, contact Ram in Illinois at (800) 779-7575 or visit www.ramsyscom.com.

Techline Open to Modest Budgets

Wheatstone's Techline Studio Furniture incorporates the interior and structural details of the company's more expensive furniture lines but is adapted for smaller budgets.

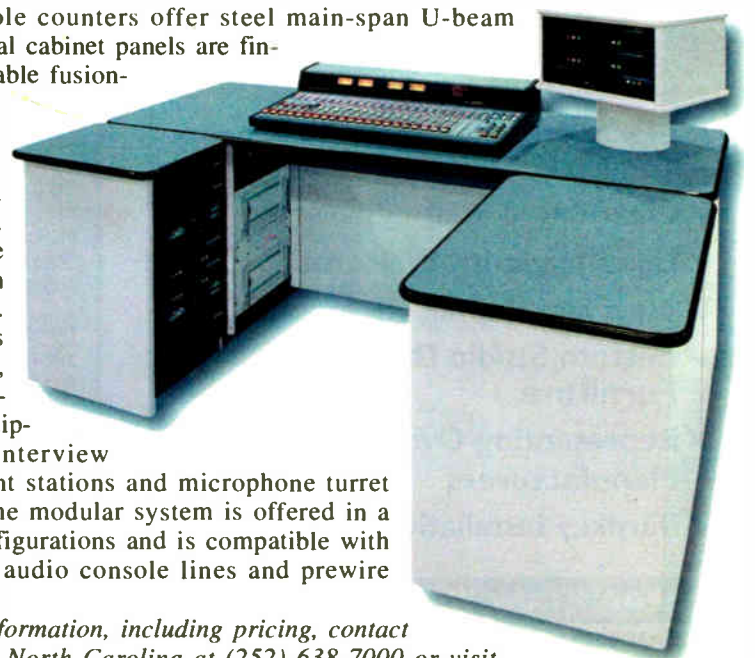
Techline features a steel, machine-tapped interior skeleton with top and bottom ventilation, adjustable levelers, an integral dual-access punchblock enclosure, removable cabinet doors and access to rack space.

The series' countertops use the horizontal-grade, high-pressure laminates found on higher-end Wheatstone furniture. They are ringed with large-geometry vinyl bullnose trim.

Main console counters offer steel main-span U-beam support; vertical cabinet panels are finished in a durable fusion-bonded epoxy.

Assembly requires two wrenches and a screwdriver, and can be completed in a few hours. Accessories are available, including over-the-counter equipment bays, interview counters, talent stations and microphone turret assemblies. The modular system is offered in a variety of configurations and is compatible with Wheatstone's audio console lines and prewire assemblies.

For more information, including pricing, contact Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.



SHS SHOWCASE SF

Products & Services

Broadcasting to the World

COMET NORTH AMERICA
421 Wards Corner Road
Cincinnati, Ohio 45140
Ph: (513) 831-5000
F: (513) 831-7889
www.cometna.com

- 100% Employee Owned Capital Structure
- Broadcast:
 - Flood and Vandalism
 - Air and Water Cooled
- Standard equipment in all major AM & SW transmitters
- Professional HV test equipment to regularly test spikes
- Teamed in North America with Kintronic Labs to provide engineering expertise to broadcasters

Kintronic Labs, Inc.
144 Pleasant Street
Burlington, MA 01803
Ph: (978) 250-5141
F: (978) 250-4274
www.kintronic.com

ERI ELECTRONICS RESEARCH, INC.

SHPX Series FM Antenna

For single or multiple frequencies
15 Mhz duplex bandwidth
120 kw input power rating

Accept No Imitations!

www.ERInc.com 812-925-6000

NAB RADIO SHOW BOOTH #809

Mini Mix 8A

Proven...Affordable...
Reliable.

AUTOGRAM

800.327.6901
www.autogramcorp.com

RECEIVERS

OUTSTANDING specifications and pricing on professional quality receivers for **EAS**, monitoring and translators.

The **AFC3** is a three receiver rack mount that is configured to your **EAS** or monitoring specific application. Each receiver has internal frequency selection (PLL) switches, front panel controls and indicators, and rear panel connections.

Price: Approximately \$1000 (depending on receiver choice)

Select three receivers from our FM or FM/SCA, NOAA Weather, Public Service and/or AM Monitor/Receivers. All receivers are PLL (synthesized) designs using the latest state of the art components and are available as stand alone receivers as well as in AFC3 combinations.

DAYTON INDUSTRIAL CORPORATION
2237 Industrial Blvd., Sarasota, FL 34234 Tel. (941) 351-4454
Email: SCARadio@aol.com WebSite: www.DaytonIndustrial.com
Quality Receivers Designed and Manufactured in the USA since 1980

RAMSEY The Complete Radio Station...
IN A BOX!

Everything You Need

Everything you need to get on the air FAST!

- ✓ 35 watt FM stereo transmitter
- ✓ Integrated CD player
- ✓ Integrated cassette player
- ✓ Integrated audio mixer
- ✓ Professional microphone and cables
- ✓ Omnidirectional antenna and coax
- ✓ Installed and prewired in a high impact road case!

ONLY \$3795⁰⁰

One of the most requested FM broadcast products over the past year has been a "radio station in a box". Overseas customers, as well as some of the new LPFM licensees have a need to quickly "get on the air" at temporary locations or in the interim to their installed studio/transmitter setup. A number of overseas customers also had to originate short term programming from various remote origination sites for disaster preparedness broadcasts! Well, here you go...a radio station in a box!

RAMSEY ELECTRONICS, INC.
793 Canning Parkway • Victor, NY 14564
(800) 446-2295 • (585) 924-4560
www.highpowerfm.com fmsales@ramseyelectronics.com

S.C.M.S., Inc
Charlotte, N.C.

26 Years of Service 1976-2002

- ✓ Competitive Prices
- ✓ Extensive Rental Fleet (RF Codex Test Equipment, Audio)
- ✓ Experienced Staff
- ✓ Used Trade-Ins Welcomed
- ✓ New and Rebuilt RF and Audio
- ✓ Custom Studio Design and Furniture
- ✓ Representing Over 600 Quality Manufacturers
- ✓ Turnkey Installations Available

You Know We Know Radio

800-438-6040 • www.scmsinc.com • Fax 704-889-4540

MAGER SYSTEMS, INC.
The Best in Sound Furniture

Custom Studio Furniture

Since 1979 Mager Systems, Inc. has been custom designing and fabricating **award winning** furniture for the broadcast industry nationwide. We are still the innovators and leaders in **solid surface tops** and applications which comes with a **10-year warranty**. Our complete **one-stop-shop** includes installation, **turnkey prewiring**, switches and components, conference rooms, reception desks, and office furniture. Our blending of art form with cutting edge techniques, and a clear understanding of each client's application allows us to produce your **showplace** tailored to your budget.

WBAA Purdue University

MSI introduces our new award winning "Sound Choice" furniture. Our modular in stock furniture boasts unsurpassed quality for the economical budget with a 10-year limited warranty. See details on our website.

Touch Sensitive Switches & Keyboards

TEL: 623-780-0045
FAX: 623-780-9860
mager@magersystems.com
www.magersystems.com
Visit our website for more information

TECH UPDATES

Belden Makes Brilliance Cables

Belden makes a variety of audio cables intended to ease the transition from analog to digital technology.

One group is the Brilliance series; its AES/EBU Digital Audio Cable (1800B) also is available as Multi-Pair Snake Cables (4-, 8-, 12-, 16-, 24- and 32-pair versions).

AES/EBU Digital Mic and Patch Cable (1800F) offers flexibility and analog and digital performance. Low-Loss 50-Ohm RF Coaxial Cables (7805 series) (RG-8, RG-58 and Intermediate Types) are suitable for low-power transmitter applications, designed to deliver lower loss, EMI/RFI shielding and lower VSWR than traditional designs.

Precision Digital Video Coaxial Cables (RG-59U Types 1505A and 1855A) are built for AES-3id audio applications, and are available in Multi-Channel Snake Cable versions.

Belden also makes UTP Category Cables (DataTwist 350, MediaTwist and DataTwist 600e). These can perform in digital audio applications and studio data networks.

For more information, including pricing, contact Belden in Indiana at (800) BELDEN-1 or visit www.belden.com.

NCC Designs Custom Modular Studios

Northeastern Communications Concepts Inc. and Acoustic Systems create custom modular studios that they say will provide control over studio construction projects and eliminate delays and cost overruns.

NCC uses computer-aided techniques to model studios to integrate available building space with ergonomic workstations, digital equipment, doors, draftless air conditioning, accessible cable management and other technical and aesthetic considerations.

Designs are fabricated by Acoustic Systems in Austin, Texas, where the modules are built; they are shipped for installation by a factory-authorized agent. The venture between the companies and a network of installers reduces the time and costs of design and construction, they said.

Steel composite studios can be built to most sizes and shapes, from a small announce booth to a multistory television or asymmetrical recording studio. Structural studio roofs provide a platform for supporting ductwork, acoustical ceilings, lighting, audio and video monitors and maintenance access.

Optional floating floors provide noise and vibration isolation from adjacent studios and tenants, and eliminate the need for computer-access flooring.

To save space and reduce structural building requirements, pre-engineered studio components can be made 25 percent lighter and 50 percent thinner than comparable drywall constructions, the companies said; they are available in single-panel ratings of Sound Transmission Class-45 to STC-59. Dual-panel constructions can provide 70 dB of isolation.

For more information, including pricing, contact NCC in New York at (212) 972-1320 or visit www.nccnewyork.com.

Gepco Expands Multi-Pair Series

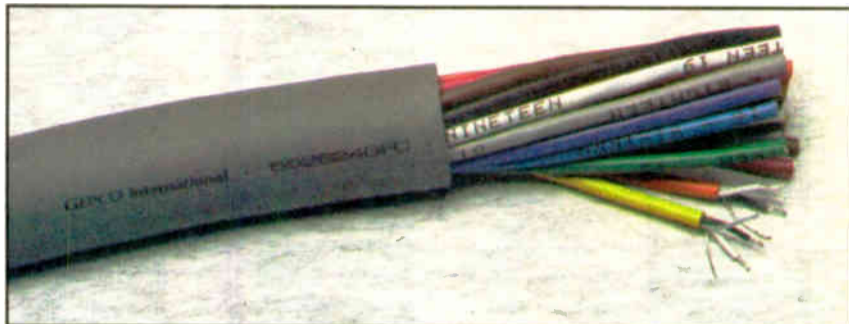
Gepco International Inc. is expanding its 5526GFC series of 110-ohm AES/EBU digital audio multipair cables to include the 24-pair 552624GFC.

It can be used to interconnect between digital audio consoles, recorders, processors and routers. Other versions are four-, eight- and 16-pair.

The new cable has 110-ohm impedance, low jitter and attenuation, ease of termination and flexibility. Pair construction consists of two stranded 26-gauge conductors, foam polypropylene insulation, foil shield with drain wire and a color-coded and alphanumerically numbered PVC jacket. Each pair uses a nonconductive polyethylene rod that maintains the impedance, lowers the capacitance and provides structural integrity.

The outer jacket is extruded from GEP-FLEX compound, which remains flexible in high- and low-temperature environments and provides abrasion resistance and durability. The 552624GFC is rated UL type CMR.

For more information, including pricing, contact Gepco in Illinois at (800) 966-0069 or visit www.gepco.com.



October 5-8
2002

Los Angeles
Convention Center
Los Angeles, CA, USA

113th AES Convention

workshops • tours
exhibits • technical papers
educational events



Audio
Engineering
Society

800-541-7299
212-661-8528

register
online now

at www.aes.org

Products & Services SHOWCASE

Need a new **STEREO FM TRANSMITTER?**

Compact size,
Lightweight unit,
Switched mode power,
Universal 85-260 mains,
Adjustable RF Power,
Harmonic Filtering,
Built-in Stereo Encoder
& Compressor/Limiter,
BNC Composite/mpx Input,
Fan Cooled,
RS-232 Controllable,
SWR & Overtemp Protection.
Unsurpassed Specifications.

Available in 5 power ratings:

Model **TX5** from 100mW to 5 watts output:
Only \$899 plus shipping

Model **TX25**: 2-25 watts. **TX50**: 2-50 watts.
TX150: 10-150 watts. **TX300**: 25-300 watts.

Progressive Concepts

305 South Bartlett Rd., Streamwood, IL 60107
(630)736-9822 Fax (630)736-0353
www.progressive-concepts.com

RAPIDFIRE

the most reliable digital automation system

Save over \$10K

- New Windows Programs & Utilities
- Powerful and reliable software at prices YOU can afford
- A fully featured system including on-air, production, and music scheduling software
- Live! Product Support 24/7
- Complete integration with all traffic and music schedulers
- Add last-minute spots and reconcile them for billing
- Record & edit phone bits
- Record & time-shift audio programs
- LAN & WAN compatible
- Se habla español

www.pristinesys.com
1-866-240-6497

DON'T
FIGHT
IT...



JUST
BUY
IT!

Pristine Systems

Match-Maker™

Disc-Patcher™



IHF ↔ PRO

Level and Impedance Converters

BI-DIRECTIONAL FOR

- Digital Workstations
- Equalizers, Recorders and Sound Card
- Audio Effects Processors and Digital Reverb
- Dual Line Amp, DA, Splitter or Combiner

UNI-DIRECTIONAL FOR

- Disc Players and/or DAW
- ENG Cassette Dubbing
- Off-Air Monitor/Tuner
- Console Audition Outputs

Interface consumer/industrial IHF (-10db) stereo source equipment and signal processing devices into professional studio +4dBm, 600 ohm systems without loading distortion, crosstalk, hum, response roll-off or RF pick-up.

True transformer output isolation, balance and protection with dynamic range better than 18 bit digital! Rugged gold connectors. Adjustable 6dB reserve gain - all channels. - Excellent RF immunity. Distortion 80dB below +22 dBm peaks (20 - 20Khz), under noise at +4dBm. Rack mount kits - Internal 115/230VAC Power * UL and CE markings.

AUDIO TECHNOLOGIES INCORPORATED **ATI**

Free Brochure Available Upon Request
http://www.atiguys.com

28 W. State Street, Hopkinton, MA 01944
800-959-0307 • (215) 449-0330 • Fax: (215) 449-0394

CUSTOMIZABLE REAL FURNITURE STUDIO SYSTEMS ARE AT SPACEWISE



SAVE AT LEAST 5%
MANUFACTURE OR DIRECT FROM
WHOLESALE, SPECIAL PRICES
THROUGHOUT THE WORLD!
CORPORATE & MULTIPLE
PURCHASE DISCOUNT!

DELUX SYSTEMS START AT \$1000!

FULL U "DELUX" AS SHOWN \$4395!

QUALITY WOODSHOP STUDIO FURNITURE! EASILY CUSTOMIZED!
HARD LAMINATED & BULLNOSED 1 1/2" COUNTERS! EURO HINGED REMOVABLE ACCESS PANELS! PRE ASSEMBLED STURDY BASE COMPONENTS! UP TO SIX RACK UNITS PER FULL U SYSTEMS! ROOM FOR 2 OR MORE PC'S! WOOD TRIM AND KICKS! AIRSPACE SYSTEMS SHIP IN 5-8 LARGE COMPONENTS! NOT A KIT! SHIPPED CRATED FOR FAST, SAFE DELIVERY!



STARTING AT \$2195!

GUEST "RADIAL" AS SHOWN \$4540!

SPACEWISE

"Quality Broadcast Furniture for Every Budget!"

CALL US TODAY AT 800-775-3660

www.spacewise.com info@spacewise.com

SF1000 SERIES

\$3,995
AS SHOWN



- LAMINATED PLYWOOD TOP WITH T MOLDING
- INDUSTRIAL GRADE MELAMINE VERTICALS
- REVERSIBLE PUNCH BLOCK PANEL
- 4 3/8" KICK BASE
- 30" HIGH TABLE TOP (38" OPTIONAL)
- 12 RACK UNIT UTILITY HOUSING
- 7 - 12 RACK UNIT PEDESTAL BAYS
- POP OUT REAR PANELS
- CABLE WIRE TRAYS
- OPTIONAL VENTED PANELS FOR AIR FLOW
- OPTIONAL ASSORTMENT OF COLORS
- OPTIONAL GUEST WINGS AVAILABLE
- OPTIONAL OVERBRIDGES AVAILABLE

SF2000 SERIES

\$4,995
AS SHOWN



- LAMINATED PLYWOOD TOP 1 1/2" THICK
- RICH STAINED OAK TRIM
- LAMINATED PLYWOOD VERTICALS
- REVERSIBLE PUNCH BLOCK PANEL
- 4 3/8" KICK BASE
- 30" HIGH TABLE TOP (38" OPTIONAL)
- 12 RACK UNIT UTILITY HOUSING
- 7 - 12 RACK UNIT PEDESTAL BAYS
- POP OUT REAR PANELS
- CABLE WIRE TRAYS
- OPTIONAL VENTED PANELS FOR AIR FLOW
- OPTIONAL ASSORTMENT OF COLORS
- OPTIONAL GUEST WINGS AVAILABLE
- OPTIONAL OVERBRIDGES AVAILABLE

SF3000 SERIES

\$5,995
AS SHOWN



- SOLID SURFACE TOP
- RICH STAINED OAK TRIM
- LAMINATED PLYWOOD VERTICALS
- REVERSIBLE PUNCH BLOCK PANEL
- 4 3/8" KICK BASE
- 30" HIGH TABLE TOP (38" OPTIONAL)
- 12 RACK UNIT UTILITY HOUSING
- 7 - 12 RACK UNIT PEDESTAL BAYS
- POP OUT REAR PANELS
- CABLE WIRE TRAYS
- OPTIONAL VENTED PANELS FOR AIR FLOW
- OPTIONAL ASSORTMENT OF COLORS
- OPTIONAL GUEST WINGS AVAILABLE
- OPTIONAL OVERBRIDGES AVAILABLE

RAM BROADCAST SYSTEMS, INC.

USA
(847) 487-7575

www.ramsyscom.com

CANADA
(705) 722-4425

TECH UPDATES

Zaolla Connects With Silverline

Zaolla Silverline microphone cables use solid silver conductors with 1/7th the resistance of copper. The cables are made with multiple PE dielectrics, enamel-coated oxygen-free copper windings, PVC and OFC shielding, which the company says improve clarity, sonic definition and response compared to copper-based cables.

The design enables a decrease in high-frequency "smearing" and other time-based phase or amplitude-induced signal degradation, making the cables quiet in RF- or EMF-intensive environments.

Zaolla uses proprietary XLR connectors; connections are silver-soldered and have gold-plated contacts for connectivity and an internal strain relief mechanism for durability.

The cables are available in standard and custom lengths of 3 to 100 feet at costs from \$60 to \$828. Zaolla also provides balanced and unbalanced interconnects, instrument, word clock, digital, 25-pin breakout and video connectivity solutions using solid silver technology. Cables carry a lifetime warranty.

For more information contact Zaolla in California at (800) 255-7527 or visit www.zaolla.com.



O.C. White Upgrades Mic Arm Line

O.C. White is improving on its microphone arms and risers with the Model 61900 mic arm/riser combination.

The model is designed to hide the microphone wire and improve appearance. The wire is hidden for most of the length of the arm, but is easy to install and remove.

The base has an invisible vertical wire channel through the riser, which is wired to an XLR female imbedded at the top (set-screw removable), and three feet of pigtail extends from the base, making attaching a mic cord to the outside of the riser unnecessary. The riser extends to a height of 15 inches. The riser mic wire exits down through the countertop or a side channel at the bottom as needed. The wire appears only at the mic end, the "elbow" and the mount end. The arm provides a channel for an optional cable. The cable may be prewired with connectors and installed or removed.

The arm requires no threading, and connectors don't need to be removed or reinstalled. The riser-installed connector is wired 1 shield, 2 white and 3 blue or red. A blunt-cut pigtail of wire protrudes at least three feet out of the bottom of the riser for connections.

The wire channel includes a unique wire cover, making the arm a four-sided unit, covering and securing the cable. The top snaps into place and is removable. Strong music-wire springs provide holding power and remain silent when moved or adjusted.

The support system is available in several configurations and mounting choices, including a multiple-arm mount that accommodates roundtable on-air discussions. The unit comes in a black and gold finish.

For more information, including pricing, contact O.C. White in Massachusetts at (413) 289-1751 or visit www.ocwhite.com.

Products & Services
SHOWCASE

FOR AM DIGITALLY COMPATIBLE ANTENNA SYSTEMS.

AM Broadband Diplexer Installation

Kintronic Labs Will Supply What You Need When You Need It

With Top Quality

At A Competitive Price



WGRV/WSMG Radio Greenville, TN



DA Phasing System Cabinet
KMJ Radio Fresno, CA
4-Tower 50kW 580KHz

Also shown is Kintronics Model DL-50 Dummy Load

Kintronic Labs, Inc



Phone: (423) 878-3141

Fax: (423) 878-4224

Product Brochures Available At www.kintronic.com

We Design And Build For DRM Or IBOC Digital Audio Broadcasting

WhisperRoom INC.

SOUND ISOLATION ENCLOSURES

Celebrating over 12 years of reducing sound to a Whisper

Recording, Broadcasting, Practicing



MDL 102126S (8.5'X10.5')

Various Sizes and 2 Levels of Isolation Available

Immediate Shipping!

www.whisperroom.com

PH: 423-585-5827 FX: 423-585-5831

EAS
JUST GOT EASIER !!!

WITH

EAScriber Pro™

Awesome NEW SOFTWARE for Broadcast Engineers
Connect up to Eight EAS Receivers to a Single PC
Automatically Log All Activations to a Database
Generate Hard Copy EAS Reports
Soothe those Part 11 woes !!!
NO MORE MANUAL LOGS !!!

Join stations in CO, MD, VA, and TX that are saving time and enjoying the benefits of using EAScriber Pro™

Order today for EASier EAS logging!!!

\$392



for up to four stations info@tdmdatasolutions.com
5 or more please inquire www.tdmdatasolutions.com

Without Advertising
A Terrible Thing Happens...

...NOTHING

Place your ad here and reach key broadcast professionals with purchasing power.

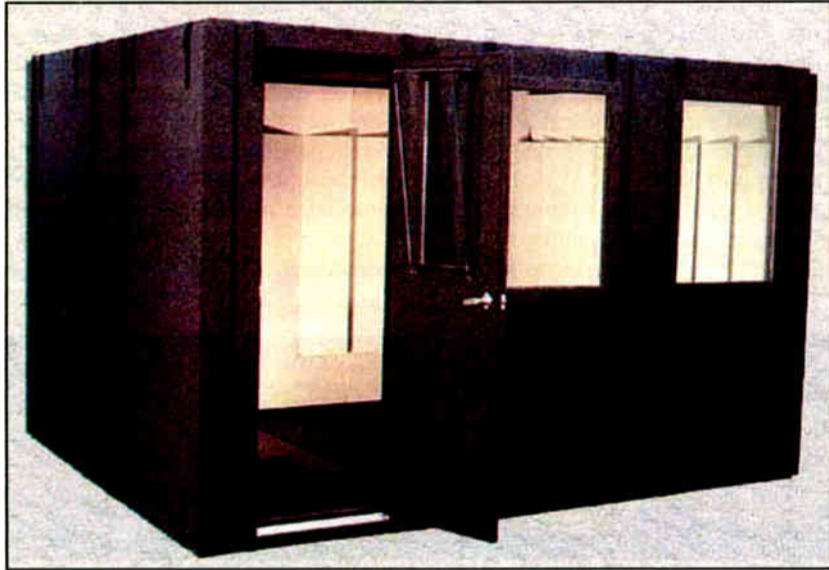
Call your area sales representative or Simone @ 703-998-7600 ext. 154 to request a media kit.

TECH UPDATES

WhisperRoom Readies Iso Booths

WhisperRoom Inc.'s SE 2000 series of portable/modular sound isolation enclosures are suitable for broadcast applications. Nineteen sizes and two levels of isolation (a Standard single-wall system and an Enhanced double-wall system) are available.

WhisperRoom booths can be tailored to customer needs. Along with choosing the enclosure size and level of isolation, the user can choose from four optional wall window sizes and doors hinged on the left or right. Optional caster plate platforms are available for customers who require mobility or need additional downward sound control.



SoundWave Deflection Systems are available to convert interior WhisperRoom walls from parallel to nonparallel.

According to the company, the isolation enclosures' best attribute is upgrade capability. The level of isolation and size of each enclosure can be upgraded to suit a customer's changing needs.

The units come with a five-year warranty.

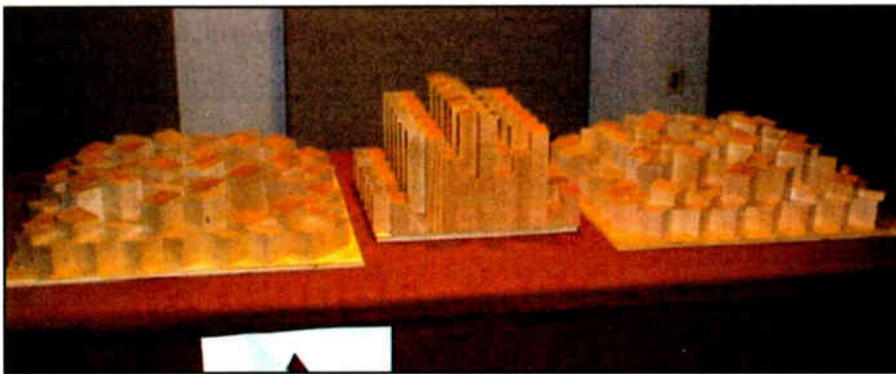
For more information, including pricing, contact WhisperRoom in Tennessee at (800) 200-8168 or visit www.whisperroom.com.

TECH UPDATES

Acoustics First Expands Diffusors

Acoustics First is introducing two models of its Art Diffusor this fall, citing customer demand.

The first is an addition to the original wood series. Several years ago its Model W (wood) Art Diffusor was reconfigured in a low-profile, thermoplastic version for drop-tile grid ceilings. To fill the need for a low-profile wood version, the Model C will be available in oak, walnut, cherry, maple, poplar, mahogany and other woods and finishes.



The Acoustics First Model F Transparent Diffusors (Left and Right) and Model C Wood Diffusor (Center)

Continuing the Transfusor transparent Art Diffusor series is the Model F. This unit functions primarily to break up flutter in regions above 1 kHz. The company says it is aimed at clients with limited space and those seeking to create visual lighting effects.

Transparent diffusion allows use of ceiling grids for diffusion surfaces by including coverage of lights. Light diffusion is an added benefit and, with the use of gels, allows interesting color effects.

The Wood Model C and the Model F Transfusor are "Binary Array" devices. The wood models are custom-made and priced based upon the cost and availability of the wood selected. Typical delivery is four weeks.

The Model F and Model C Transfusors are available from stock. They are priced the same as the standard Class A thermoplastic models.

For more information, including pricing, contact Acoustics First in Virginia at (888) 765-2900 or visit www.acousticsfirst.com.

Mager Makes Custom Furniture

Mager Systems Inc. is offering budget-conscious furnishings among its new products.

The company's Touch Keyboard and switches won a Radio World "Cool Stuff" Award at NAB2002. The keyboard keys are touch-sensitive switches made of solid-surface material. They are sealed against spills and easy to clean; no particles can be trapped inside. Installation is straightforward using mounting bolts; it seals into a panel or can stand alone.



Also new is the company's computer hard-drive pullout, which sits in a carriage, pulls out of a cabinet or sits under a top, rotating 180 degrees to give access to computer wiring.

Sound Choice is Mager's series of stock studio furniture. The system is modular, with multiple configurations, stand-up and sit-down heights. The punchblock cabinet is accessible on either side.

Sound Choice can accommodate tabletop or cut-in consoles. Zolatone paint is used on rack cabinets, allowing detailed rounded corners. There is no laminate to come loose, chip or crack. Countertops are acrylic solid-surface material.

Rack openings have ventilation with wire raceway throughout the system. No cabinet assembly is needed; the furniture bolts together. Heavy-duty levelers are part of the furniture, which comes with a 10-year limited warranty.

For more information, including pricing, contact Mager Systems in Arizona at (623) 780-0045 or visit www.magersystems.com.

NCC

► Continued from page 59
expensive than drywall construction is wrong. Pre-engineered studios have fewer problems to correct after construction and are cost-effective. They accelerate design time and reduce design costs.

Another benefit to using pre-engineered steel rather than drywall construction is space savings from thinner walls and its inherent strength for supporting wall- and ceiling-mounted equipment. Saving inches of space in tight-fitting environments allows for more floor space for circulation, furniture and equipment, as well as increased vertical space to accommodate noise barrier ceilings and the elimination of large HVAC ducts and bulky hangers and rods to support speakers, shelves and other wall- and ceiling-mounted equipment.

Studio savings

Pre-engineered studios provide further cost and space savings by incorporating the electrical, broadcast and mechanical elements into the system. The studios are built on an isolation floor that provides cable access for broadcast connections. This saves space and limits noise and vibration transmitted to and from studios.

Studios are designed to maximize the use of available space. NCC designed studios for us that were built to the nearest 1/4-inch of our allotted space.

Once the design was completed and the studios installed, we plugged them in and turned them on. The general contractor connected the acoustically silenced air distribution system to the building's HVAC system and wired the

rooms through cable chases built into the modular walls, floors and ceilings.

Chief Engineer Bob Anderson wired the broadcast equipment through the designated access boxes in the floor at the base of the studio furniture and connected it to the master control center through the cable access trays in the floors.

The design and pre-engineered parts would be useless without proper installation. Tommy Farrar of Farrar Contracting managed the assembly and installation of the studios. He and his staff ensured compliance of the product to the specifications of the contract. His positive attitude, commitment to high-quality work and desire to meet or surpass the expectations of his client and his colleagues at Acoustic Systems and NCC guaranteed a successful end to the project.

My accidental discovery of NCC and Acoustic Systems in Las Vegas changed a flawed building project into an extraordinary success. The architect and contractor were relieved to discover a way to build our studios to meet the high expectations of their client, and NCC and Acoustic Systems stand behind their work even after the warranties expire.

There is no greater business success than a satisfied customer, unless it is a customer who is willing to recommend a company (NCC) and its products (Acoustic Systems) to anyone without qualification. And so I do. In fact, we were so impressed with their design work and the Acoustic Systems product that we have asked them to design and install new broadcast studios on the Brooklyn campus of Long Island University.

For more information contact NCC in New York at (212) 972-1320 or visit www.nccnewyork.com.

BROADCAST

Equipment Exchange

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

ACOUSTICS

Want to Sell



AcousticsFirst
888-766-2900

Full product line for sound control & noise elimination.
www.acousticsfirst.com

Want to Buy

Hughes & Kettner tubeman pre-amp, \$150, very little use. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

ANTENNAS/ TOWERS/CABLES

Want to Sell

AM GROUND SYSTEMS: Reliable, On-time Installation, Quality Workmanship, Ground System Evaluation & Repair. www.amgroundsystems.com. 1-877-766-2999.

Dielectric 3-5/8" motorized four port coaxial switch. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.



THE ANTENNA SITE STORE
Tower Registration Signs
FCC and OSHA Compliance
Tower Leasing Signs
Your Wording Added

610-458-8418
www.antennaid.com
Antenna ID Products Glenmoore, PA

Andrew HJ7-50A, 1-5/8" air helix, 300' on original shipping spool, still pressurized, \$1500. Bruce Campbell, KORQ Radio, 1740 North First St., Abilene TX 79603. 915-673-5289.

Piroid 100' galvanized free-standing tower, never erected, on ground with all parts & drawings in Western PA, \$4750. Gerald Meloon, WDBA, 28 W Scribner Ave, DuBois PA 15801. 814-371-1330.

Rohn 100' SSV tower, new, never erected, 90 MPH basic wind speed, 1/2" radia ice load, Call for additional specs. \$5500. Scot Mathews, KSFI/Simmons Media Group, Salt Lake City UT 84102. 801-524-2600 or scot@simmonsmedia.com.



YES!
Space is available!

Advertise in Radio World's Broadcast Equipment Exchange

For more information, call Simone Fewell @ 703-998-7600, ext. 154 or e-mail: sfewell@imaspub.com.

Rohn 65, 440' tower with lighting, on ground, \$18,000. Ken Diebel, KHMB, 1707 Louisa St, Rayville LA 71769. 318-728-3578.

Rohn 267' AM tower w/ 6 guys in excel condition, S.E. Utah & you ship. Paul Muellen, KUTA, 2575 North Radio Hill Rd (6-1), Blanding UT 84511. 435-678-2261.

AUDIO PRODUCTION

Want to Sell

Shure FP 410 automatic 4-input mic mixer, used only a few time, in box, \$750; Ramsa WR8210A 10x4 mixer, \$200; WBS 8205 ADA's w/11 DA's in tray, \$150; Hedco ADC patchbays, solder, punch-down & screw terminals, \$50-\$150/ea. Derek LeDoux, PixMix Video, 156 Western Ave, Boston MA 02134. 617-254-3388.



AUTOMATION EQUIPMENT

Want to Sell

ATC DCU-S 25Hz tone detector, \$25. Jim Feasel, WHBG, 13549 Morse Rd SW, Pataskala OH 43062. 740-927-2592.

Want to Buy

RDS Phantom digital broadcast automation & switcher. Dick McGraw, WELK, 228 Randolph Ave, Elkins WV 26241. 304-636-8800.

CART MACHINES

Want to Sell

Audicord 1265 stereo recorder, gd cond, \$150; ITC PD2 mono player, gd cond, \$50 ea; (3) stereo ITC Premium players, gd cond, \$100 ea; ITC Premium stereo record unit, \$50; mono ITC Premium player, gd cond, \$50; ITC Delta 3-play stereo, gd cond, \$350; BE 900 3-play stereo, gd cond, \$350. David Rose, KSOR, 1260 Siskiyou Blvd, Ashland OR 97620. 888-380-7423.

COMPLETE FACILITIES

NEW OR USED COMPLETE PACKAGES

STUDIO/STL/TRANSMITTER/ANTENNA OR ANY COMBINATION OF ABOVE.
-LEASE OPTIONS-
-EMERGENCY RENTALS-
-REMOTE BROADCAST RENTALS-

SCMS, Inc. (800) 438-6040
"You Know We Know Radio"

CONSOLES

Want to Sell

Cetec 8000 broadcast console, 16 modules, 3 buss plus phone, p&g faders, spare parts, integrated 50W amp, monitor, \$2000. Pat Wahl, WWIB, 2396 Hwy 53, Chippewa Falls WI 54728. 715-723-1037.

Harris Stereo 80 console, call for price. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

FURNITURE

Want to Buy

Digitech DSP-256XL digital multi-effects processor/reverb/delay 100 presets 100 user presets, \$175. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Orban 8100-A/1 Optimod, in excellent condition, call for price. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

Orban Optimod 8100 in gd condition, \$3000. Dennis Semple, Calhoun Comm, 1831 Fourth St., Sioux City IA 51101. 712-490-8290.

Want to Buy

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

EV644 with shockmount & cable, very nice, \$180. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.



Buying or selling used equipment? You're in the right place!

Radio World
Broadcast Equipment Exchange

www.rwonline.com

MICROPHONES

Want to Sell

RCA44 \$2200; 77D \$2000; 77DX \$2000; 74B \$800. Take all four \$5500. Can Email pix. 303-973-2829. Jray718@aol.com.

Want to Buy

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantmgmt@yahoo.com.

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

Motorola TA-42 input & output terminals, T&R 2-25 amp fuses, 1-15 amp fuse, \$20. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

SAMS Project Studio Blueprint by Greg Galluccio, 236 pages; The Studio Business Book by Jim Mandrell, 335 pages, \$25/both. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Switchcraft A3F XLR 3 pin female plugs (28 new), \$30/all. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Two boxes (19 total) of new motors. Oriental motor, Japan S-301 motors, 7.5W 115V 1500/1800 rpm, \$20/all. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

MISCELLANEOUS

Want to Sell

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

MONITORS

Want to Sell

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

TFT 845 FM SCA monitor, brand new, \$2000/BO. Greg Hilton, KSOP, POB 25548, Salt Lake City UT 84125. 801-972-1043.

TFT EAS monitor, almost new, call for price. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

RECEIVERS/ TRANSCIVERS

Want to Sell

WATKINS JOHNSON WJ8618B Premium Digital Receiver for Broadcast Monitoring and Spectral Analysis. AM-FM-SSB, 20 to 500MHz at 100Hz resolution. \$3500.00, Guaranteed. RF Enterprises, 415-332-3905, (r-ent@att.net).

Vertex VX200 5 UHF hand helds 6 channel, can program, charger included, \$75 each. Peter Russell, Boudoin College, Sills Mall, Brunswick ME 04011. 207-725-3066.

RECORDERS

Want to Sell

Eventide VR320 digital audio logger with DVD, new in box, \$7000/BO. Jake or Scot, KSFI/Simmons Media Group, Salt Lake City UT 84102. 801-524-2600.

REMOTE & MICROWAVE

Want to Sell



REMOTE EQUIPMENT RENTAL

Silver Lake Audio
(516) 763-1776
silverlakeaudio.com

WE RENT FOR LESS

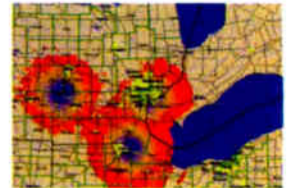
Hotlines	FM Exciters
Zephyrs	STL's
Nexus	FM Pwr Amps
Audio	Test Equipment

If we don't have it, we will get it!
SCMS, INC. (800) 438-6040
"You Know We Know Radio"

Want to Advertise?
Get all the details by calling 703-998-7600, ext. 154.

BROADCAST ENGINEERING CONSULTING SOFTWARE

Professional software packages for preparing FCC applications and plotting coverage. For Windows and NT.



- ✓ Create "real-world" coverage maps with Longley-Rice, TIREM, PTP & other models using polygon map features.
- ✓ Prepare concise FCC model coverage maps and allocation studies using USGS geographic map databases. Census calculations, tower and airport databases.
- ✓ Search for AM, FM, TV, DTV & LPTV channels with graphics oriented programs and FCC databases.
- ✓ Plot STL paths in 3-D using NGDC terrain databases... and more!



VSoft
Communications
800-743-3684
www.v-soft.com

REPAIR SERVICES



Broadcast Equipment Repair

- AM Antenna Monitors
- AM/FM Modulation Monitors
- Audio Processing
- Exciters
- RPU Transmitters/Receivers
- STL Transmitter/Receivers
- Test Equipment
- Transmitter Field Repair

Rapid Turnaround - Professional Service

DIVERSIFIED COMMUNICATIONS SYSTEMS

(814) 756-3053

E-mail: rpgoson@aol.com

Radio World

5827 Columbia Pike, 1st Floor ■ Falls Church, VA 22041
PHONE: 703-998-7600 ■ FAX: 703-671-7409

Classified Advertising Rates Effective January 1, 2002

	1x	6x	13x	26x
1-9 col inch (per inch)	\$100	95	90	85
10-19 col inch (per inch)	\$85	75	65	55
Distributor Directory	\$125	120	115	110
Professional Card	\$95	90	85	80
Station/Studio Services	\$185	157	133	113
Classified Line Ad	\$2/word			
Blind Box Ad	\$15 additional			

Call Simone Fewell, Ext. 154,
Classified Ad Manager,
to reserve space in the next issue.
Use your credit card to pay,
we now accept VISA,
MASTERCARD and American
Express.

SATELLITE EQUIPMENT

Want to Sell

Microphase MP20305 demodulator, \$250; Comstream ABR200 Ku satellite receiver, \$800; Crown DR2000 Ku-C satellite receivers, \$1000; Wegener 1806 satellite receiver, \$250; Cal-Amp C-band PLL-LNB, \$150; 1.2 meter prodelin Ku Band dish, \$350. David Rose, KSOR, 1260 Siskiyou Blvd., Ashland OR 97620. 888-380-7423.

STATIONS

Want to Sell

CHRISTIAN/GOSPEL Radio Station, 1000 watt AM 1080. Good location in the Virginia area, 45 minutes from Lynchburg, Virginia and Greensboro, North Carolina. Room for expansion. Contact Van Jay at 718-541-6214 or fax at 718-658-3090.

Owners declining health, forcing sale of 5KW in Uppereast Tenn and a 500Watt in Central Virginia. Christian format last 22 years. Call Jennings at 423-968-5221 or 276-466-2893.

We have a 1K full time AM station we would like to make a quick sale on. This station is located on 1490 and covers North Salt Lake City up to Tremonton. The property is included which houses the studio location. We are asking \$650K or BO. Call Michael Reley at (704) 523-5555 for more information or e-mail at Mreley@bbradio.org.

Want to Buy

Want to Purchase or Lease Small Market Radio Stations
1-800-330-7292

TAPES/CARTS/ REELS/CD's

Want to Sell

Fidelipac carts & racks, new, BO. Greg Hilton, KSOP, POB 25548, Salt Lake City UT 84125. 801-972-1043.

TRANSMITTERS

Want to Sell

AEL FM-25-KE 25KW grounded grid FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.



BE FM-30-B 30KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

Continental 814-R1 2.5 KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

McPherson Radio Corporation

Specializing in pre-owned QEI FM transmitter products. All tuned and tested on your frequency, 6 month warranty included!

MRC has a facility to meet your broadcast needs for repair and complete overhaul of QEI exciters and low power transmitters. Other broadcast manufacturer products are also welcome.

Bob Brown
Phone: 856-232-1625 • Fax: 856-232-2075
Email: rbrown@aol.com

Continental 816-R2-C 25KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

TRANSCOM CORP.

Serving the Broadcast Industry Since 1978

Fine Used AM & FM Transmitters and Also New Equipment

300W	FM	1988	Harris FM 300K Solid State Single Phase
2.4KW	FM	1995	QEI Quantum Solid State Single Phase
2.5KW	FM	1984	Harris FM 2.5K Single Phase
2.5KW	FM	1980	Harris FM 2.5K Single Phase
5 KW	FM	1992	Continental 815A
10KW	FM	1974	Harris FM10H/K
15KW	FM	1980	McMartin BF15.000
20KW	FM	1981	Harris FM20K
20KW	FM	1980	Harris FM20H/K
25KW	FM	1980	CSI T-25-F
25KW	FM	1987	Harris FM 25K-1
30KW	FM	1983	BE FM 30
50KW	FM	1982	Harris Combiner w/auto exciter-transmitter switcher

5KW	AM	1980	Harris MW5A
5KW	AM	1978	Harris MW5
10KW	AM	1982	Continental 316F
10KW	AM	1982	Harris MW10A
10KW	AM	1986	Continental 316F
50KW	AM	1982	Continental 317C2
50KW	AM	1986	Nautel Amplet 50-Solid State

EXCITERS

Harris MX-15
BE FX30
Harris MS-15

Miscellaneous Equipment:

Polomac Inc. AAS1 Audio Anyt. (new)
Moseley TRC-15 Remote w/ Hallikainen
SCA Generator (MX-15 Module)
Optimod 8100A (cards 3, 4, and 5 only)
Dummy Load 80 KW air cooled
Technics SH9010 Equalizer

2655 Philmont Ave #200, Huntingdon Valley, PA 19006

800-441-8454 • 215-938-7304 • FAX No. 215-938-7361

VISIT OUR NEW INTERNET SITE: www.fmamtv.com
SEND YOUR E-MAIL REQUESTS TO: transcom@fmamtv.com

CONSULTANTS

EVANS ASSOCIATES Consulting Communications Engineers

FCC Applications • Design • Field Engineering • Tower Detuning Upgrade & Relocation Studies • AM Directional Array Tuning & Proof

EXPERTS IN:

TV • DTV Transition • FM • Directional Antennas • RF Exposure

210 S. Main St., Thiensville, WI 53092. (262) 242-6000. FAX (262) 242-6045
<http://www.evansassoc.com> Member AFCCE

T. Z. Sawyer Technical Consultants

www.sawyer.com

AM-FM-TV-LPTV

• FCC Applications & Exhibits

• Experimental Authorizations

• AM Directional Antennas

• High Power Antenna Arrays

• Frequency Studies

• Class Upgrades

• STL Applications

• Station Inspections

1-301-913-9287

FAX: (301) 913-5799

5272 River Rd. #460, Bethesda, MD 20816

GRAHAM BROCK, INC.

BROADCAST TECHNICAL CONSULTANTS

Full Service From Allocation to

Operation AM/FM/TV/AUX Services:

Field Work; Antenna and

Facilities Design

Over 35 years engineering

and consulting experience

912-638-8028

202-393-5133

www.grahambrock.com

Consulting Communications Engineers EMC Test Lab

• FCC Applications and Field Engineering

• Frequency Searches and Coordination

• AM-FM-CATV-ITFS-LPTV

• EMC Test Lab-FCC and European (IEC)

OWL ENGINEERING, INC.

1-800-797-1338 Fax (763) 785-4631

E-mail: info@owleng.com

8899 Hastings St NE, Minneapolis, MN 55449 (763) 785-4115 Member AFCEE

Doug Vernier

Telecommunication Consultants

Broadcast Engineering Consulting

AM/FM/TV/LPTV/DTV

Custom mapping service

Frequency searches

Propagation prediction

FCC application preparation

Software for your PC

(800) 743-3684

www.v-soft.com

System One Communications

Broadcast Constructors & Consultants

Houston, Texas

888-625-5649

➤ AM-FM Site Construction

Specialists

➤ Complete Tower Service

➤ Antenna & Transmission

Line Diagnostics

Radiotechniques

402 Tenth Avenue - PO Box 367

Haddon Heights, NJ 08035

856-546-8008 - Fax 856-546-1841

E-mail: ted@radiotechniques.com

Consulting Engineers

AM - FM - TV

FCC Applications

Directional Antennas

Transmitter & Studio Design

Edward A. Schuber, PE

Member AFCCE

M Celenza

Communications Consultants

TV-\$550; LPTV-\$550; FM-\$250;

AM Freq Searches-Call for quote

Applications, Amendments

& Upgrades

Antenna Structure Registration,

Field Work Avail

631-928-0077

Fax: 631-928-1905

MULLANEY ENGINEERING, INC.

Consulting Engineers

• Design & Optimization of

AM Directional Arrays

• Analysis for New Allocation,

Site Relocation, And Upgrades

AM-FM TV LPTV

Wireless Cable

(MDS/MMDS/ITFS/OFS)

• Environmental Radiation Analysis

• Field Work

• Expert Testimony

9049 Shady Grove Court

Gaithersburg, MD 20877

Phone: (301) 921-0115

Fax: (301) 590-9757

email: mullengr@aol.com



Market Analysis
Engineering Software
Ethnic/Demographic Data
Custom Full-color Mapping
Sales Marketing Packages

www.dataworld.com
800-368-5754

info@dataworld.com
fax: 301-656-5341

Communications Technologies, Inc.

Broadcast Engineering Consultants

AM FM TV LPTV

Cellular/PCS Site Analysis

♦

P.O. Box 1130, Marlton, NJ 08053

Phone: (856) 985-0077

Fax: (856) 985-8124

Internet: commtechrf.com

♦

Clarence M. Beverage

Laura M. Mizrahi

FASTER... MORE ACCURATE RADIO COVERAGE

• Real Time 3-D Displays

• Interference calculations

• Cost effective mapping

• Fully integrated databases

• Used by the FCC

• Latest standards built-in

Visit us on the web at www.radiosoft.com

109 West Knapp Ave. • Edgewater, FL • (386) 426-2521

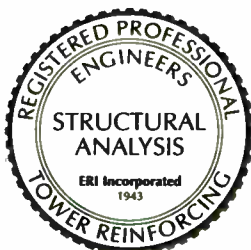
PROMOTE YOUR BUSINESS!

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

Structural Analysis



Electronics Research, Inc.
7777 Gardner Road
Chandler, IN 47610
(812) 925-6000
www.ERInc.com



FM FREQUENCY SEARCH - \$950

FCC FM APPLICATIONS - \$1350

Amendments & Upgrades

Field Work • Site Construction

New Allotments • Petitions

Duopoly Studies • Maps

MBC Consulting

800-219-7461

www.mbcradio.org • engineer@mbcradio.org

DISTRIBUTOR DIRECTORY

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

CORNELL-DUBILIER MICA CAPACITORS

FROM STOCK

JENNINGS VACUUM CAPACITORS

FROM STOCK

JENNINGS VACUUM RELAYS

SURCOM ASSOCIATES

2215 Faraday Ave., Suite A

Carlsbad, California 92008

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

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

...country, top 40, news, urban, talk, jazz, the classics, mixed bag...

RADIO! The beat goes on!

CROUSE-KIMZEY OF ANNAPOLIS

tops in broadcast equipment

1-800-955-6800

ask for Kathleen

kkannapolis@worldnet.att.net

STUDIO FURNITURE?

Durable - Attractive - Quality

Room systems starting at \$2695!

PRE-BUILT COMPONENTS!

FAST & EASY ASSEMBLY!

WE CUSTOMIZE!

VERY AFFORDABLE SHIPPING!

SPACEWISE®

"It fits as well into your budget..."

As it does into your studios!"

800-775-3660 spacewise.com



NEW

ECONCO NEW TUBES

New tubes are now manufactured by **ECONCO** at our award winning facility in Woodland California! Of course, we continue our 34 year tradition of high quality power tube rebuilding.

TEL: 800-532-6626
 INTL: +1-530-662-7553
 FAX: +1-530-666-7760
 www.econco.com
 SE HABLA ESPAÑOL



McMartin BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

BTF 20E transmitters (2) plus combiner & harmonic filter good for parts, good power supplies. You ship. Make offer on entire package. Pat Christensen, Miller Bdcg, 603 F St., Eureka CA 95501. 707-445-8104.

CCA-1000-D FM transmitter, no exciter, new IPA tube, \$4500. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

OFF THE AIR?
Emergency Back-up Rentals

FM Exciters - STLs -
 FM Pwr Amps - Antennas -
 Studio & Test Equipment

SCMS Inc (800) 438-6040
"You Know We Know Radio"

Gates 10G service manual, new, \$50. Herman Gibbs, WCWS, Box C-3177, College of Wooster, Wooster OH 44691. 330-263-2212.

Harris 10-H 10 kW, no exciter, \$10,000; CSI 5 kW AM, call for price; Energy-Onix 15 kW FM xmtr, \$12,000 +shpg; Continental 316-F 10 kW AM xmtr, call for price. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

Harris Gates II, 2500 watts, solid state AM transmitter with lots of extras, 1510 kHz, never used, excellent condition, \$21,500 or BO. Angie Sugalski, Wilkins Comm, POB 444, Spartanburg SC 29304. 888-989-2299 or angie@wilkinsradio.com.

Harris MW-1A 1 kW Am transmitter for sale. Station went dark. Transmitter was working fine, \$4500 or BO. 321-427-3512.

Peter Dahl, three phase to single phase plate transformer & filter choke for 10 kW FM transmitter, call for price. Joseph Bahr, POB 6556, San Juan PR 00914. 787-725-4164.

RCA BTF-20E1 20 kW FM transmitter with Harris MX15 exciter, \$15,000. Jon Zecherle, WCCN, W10273 Walkers Rd, Humbird WI 54746. 715-984-2515.

Collins 20V2 1K xmtr in excellent condition, you ship. Paul Muellen, KUTA, 2575 North Radio Hill Rd (6-1), Blanding UT 84511. 435-678-2261.

Collins 30L1 linear amplifier, excel condition, \$250. George Arroyo, WONQ, 1033 Jemoran Blvd #253, Casselberry FL 32707. 407-830-0800 ext 110.

Yaesu FT-1000D H.F. transceiver, 200 watts. Will sell or trade for Shortcut editor or digicart, \$2200. George Arroyo, WONQ, 1033 Jemoran Blvd #253, Casselberry FL 32707. 407-830-0800 ext 110.

TUBES
Want to Sell

EIMAC, AMPEREX, ED-COM, 3CX2500F3, 3CX3000A7, 4CX250B, 4CX300A, 4CX1000A, 4CX1500B, 4CX5000A, 4-400C, 811, 833C, ETC. WESTGATE 800-213-4563.

FOR THE BEST PRICE & 24 Hr service on transmitting tubes & sockets/ports, new & rebuilt call Goodrich Ent. at 402-493-1886 day or night, FAX 402-493-6821.

D And C Electronics Co.

NEW TUBES

We have the alternatives for all your needs, at the lowest prices, direct from OUR STOCK!!!

EIMAC, SVETLANA, PRO-TEK®, EEV and many others.
 (352) 688-2374
 PH: (800) 881-2374
 FAX: (352) 688-9595

SE HABLA ESPAÑOL WE EXPORT
 VISA/MASTERCARD ACCEPTED

RF PARTS

• Broadcast • Industrial Communications

• EIMAC • TAYLOR
 • ECONCO • SVETLANA

Also
 Motorola • Toshiba • SGS-Thomson & Mitsubishi Semiconductors

Catalog: www.rfparts.com
 Se Habla Español • We Export
 760-744-0700 • 800-737-2787
 Fax: 760-744-1943
 E-mail: rfp@rfparts.com

POWER
Eimac
YOU CAN TRUST

ISO 9001 Certified
The Answer for a
Reliable Clean Signal

NEW POWER TUBES

Triodes
Tetrodes
Pentodes

NEW SOCKETS & REPLACEMENT PARTS

Worldwide Availability

Made in U.S.A.

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

Visit our Web Site at
www.eimac.com

TURNTABLES
Want to Sell

Technics SP-15 complete with PRD tonearm/cartridge & shock mounts, \$200. Pat Wahl, WWIB, 2396 Hwy 53, Chippewa Falls WI 54729. 715-723-1037.

GET USED TO IT!

Radio World BROADCAST EQUIPMENT EXCHANGE

For more information, call 703-998-7600, ext. 154. or e-mail: stewart@imaspub.com.

EMPLOYMENT

HELP WANTED

Director of Engineering, Staff Associate
Public Radio Station, WFRC, Amherst, Massachusetts

Manage transmission & studio systems; assist in computer support; maintain high-quality air sound; plan a new bdcg facility; comply with FCC regulations; plan improvements for studios & xmtrs; manage the budget; coordinate with station & university departments; respond to emergencies outside normal working hours.

Minimum Qualifications: Bachelors degree in electrical engineering or related field, +five yrs experience in radio engineering, or an Assoc. degree in electrical engineering or related field, plus eight year's relevant experience. SBE Certification as Certified Bdcg Radio Engr (CBRE) preferred. Advanced knowledge of RF, STL & transmission systems, & studio equipment & systems. Working knowledge of desktop & networked computer systems. Thorough knowledge of relevant FCC regulations. Demonstrated ability to manage a technical department & to work effectively with other departments. Strong managerial, analytical, communication & interpersonal skills. Able to work well under pressure, schedule work hrs flexibly, respond to emergencies at all hours, perform the physical tasks necessary for the installation & maintenance of equipment.

Salary \$46,200-\$60,000 (normal starting salary \$46,200-\$52,000). For candidates with exceptional qualifications, salary up to \$65,000 may be considered.

Send letter of application & resume to Search #R16959, Employment Office, 167 Whitmore Bld, Univ of Massachusetts, Amherst, MA 01003 by 9/21/2002. Comprehensive benefits package included. The Univ of MA is an Affirmative Action/EOE. Women & members of minority groups are encouraged to apply.

POSITIONS WANTED

Everyone in the Talent Pool has drawn, but me. Radio's next big star needs his big break. Willing to move anywhere in the U.S. on my way to New York. Jeremy, 918-629-1108.

Radio rookie Rodney is ready for radio realm. Relocatable, highly regarded & recruited. Ready for any role, anywhere. Reach for your receiver & respond. 405-601-3396.

Rookie with smooth bass voice, recent graduate, A average, trained in production, on-air & copywriting. Michael, 405-912-5156 or email: mward41@cox.net.

ADVERTISE YOUR EMPLOYMENT AD ON OUR WEB SITE FOR ONLY \$2 PER WORD!

ADS GET POSTED THE NEXT BUSINESS DAY AND WILL RUN FOR A FULL TWO WEEKS!

COMBINE THIS WITH AN AD IN OUR RADIO WORLD NEWSPAPER EMPLOYMENT SECTION AND REALLY COVER THE BROADCAST INDUSTRY AND THEN SOME!

www.RWOnline.com

Call Simona Ferrell for all the details at
703-998-7600 Ext. 154
 between 9-5 EST

POSITIONS WANTED

Clifford A. Potts, on-air talent, news, sales. Rookkie. One year webcasting. Digital production specialist. Will relocate. 817-797-4843 or 817-798-7972.

Contract Engineer North East Florida or relocate to your facility full time. AM, FM construction or maintenance. Currently employed as Chief Engineer 1st Class FCC & other certificates. Contact Chuck @ 904-680-1101, mychucky@funport.net.

Friendly, industrious, FCC commercial-1st Class with Radar, amateur-extra radio licensed, CE, asst CE, seeking FT, PT, contract work, Am/Fm, cable, TV, within 75 mile radius of metro NYC area. 718-969-5224 or write: Mitchell Rakoff, 81-12 Roosevelt Ave #702, Jackson Heights NY 11372-6746 or email to: MitchellRakoff@Yahoo.com.

Help! I've graduated from radio school & I need a job. Young & ambitious, seeking on-air or production position. Call Joe, 918-437-1936.

Recent broadcasting graduate, looking for production job. Willing to relocate. Contact Lance at 918-650-2472 or bloodlust6@aol.com.

"Big Rip", recent ABS graduate. Great personality. Cool Edit Pro, copywriting, ca delivery, will travel. 817-370-6319.

ABS graduate seeking employment in Oklahoma in sports, news or country or Christian formats. Milton, 405-528-5872.

ACTION-GRAM

EQUIPMENT LISTINGS

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

Please print and include all information:

Are you currently a subscriber to Radio World?
 Yes No

Signature _____ Date _____

Contact Name _____
 Title _____
 Company/Station _____
 Address _____
 City/State _____
 Zip Code _____
 Telephone _____

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

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

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

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

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.
Broadcast Equipment Exchange
 PO BOX 1214, Falls Church, VA 22041 • Tel: 703-998-7600 • Fax: 703-998-2966

ADVERTISER INDEX

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

PAGE	ADVERTISER	WEB SITE URL
10	360 Systems	www.360systems.com
59	AEQ	www.aeqbroadcast.com
61	Altronic Research	www.altronic.com
28	Armstrong Transmitters	www.armstrongtx.com
51	Associated Broadcast Group	www.associatedbroadcast.com
70	ATI	www.atiguys.com
23	AudioScience	www.audioscience.com
2	Auditronics/Wheatstone	www.auditronics.com
66	Auralex	www.auralex.com
68	Autogram Corporation	www.autogramcorp.com
32	Belar	www.belar.com
47	Bext	www.bext.com
12	Bradley Broadcast	www.bradleybroadcast.com
46	Broadcast Data Consultants	www.broadcastdata.com
15	Broadcast Electronics	www.marti-electronics.com
37	Broadcast Electronics	www.bdcast.com
49	Broadcast Electronics	www.bdcast.com
33	Broadcast Richardson	www.broadcast-richardson.com
21	Broadcast Software Int'l (BSI)	www.bsiusa.com
64	Broadcast Tools	www.broadcasttools.com
24	Broadcasters General Store	www.broadcastdealer.com
40, 41	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
64	Circuit Werkes	www.circuitwerkes.com
49	CKE/HVCA	www.rectifiers.com
68	Comet North America	www.cometna.com
6	Comrex	www.comrex.com
7	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
64	Cortana	cortana@cyberport.com
30	Creative Studio Solutions	www.creativestudiosolutions.com
68	Dayton Industrial	www.daytonindustrial.com
55	Denon Electronics (USA) Inc.	www.denon.com
25	Dielectric Communications	www.dielectric.com
68	Electronic Research Inc.	www.eriinc.com
50	ESE	www.esweb.com
45	Eventide	www.eventide.com
32	Gepco International	www.gepco.com
64	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
17	Harris	www.broadcast.harris.com
39	Harris	www.broadcast.harris.com
66	Henry Engineering	www.henryeng.com
58	HHB Communications U.S.	www.hhbusa.com
10	IEEE Broadcast Technology	www.ieee.org/btsymposium
35	Inovonics	www.inovon.com
66	Inovonics	www.inovon.com
16	JK Audio	www.jkaudio.com
71	Kintronic Labs	www.kintronic.com
27	Klotz Digital AG	www.klotzdigital.com
66	LBA Technology	www.lbagroup.com
3	Lightner Electronics	www.lightnerelectronics.com
8	Logitek	www.logitekaudio.com
52	Lynx Studio Technology	www.lynxstudio.com
14	Mackie	www.mackie.com/SRM450
64	Mager Systems	www.magersystems.com
68	Mager Systems	www.magersystems.com
31	MediaTouch	www.omt.net
18	Nautel	www.nautel.com
34	Northeastern Communication Concepts	Not Available
57	OMB America	www.omb.com
9	Omnia, a Telos Company	www.omniaaudio.com
70	Pristine Systems	www.pristinesys.com
70	Progressive Concepts	www.progressive-concepts.com
19	Prophet Systems Innovations	www.prophetsys.com
22	Radio Computing Service (RCS)	www.rcsworks.com/howitworks
5	Radio Systems	www.radiosystems.com
11	Radio Systems	www.radiosystems.com
28	RadioSoft	www.radiosoft.com
70	RAM Broadcast Systems, Inc.	www.ramsys.com
68	Ramsey Electronics, Inc.	www.highpowerfm.com
68	S.C.M.S., Inc.	www.scmsinc.com
43	Sierra Automated Systems	www.sasaudio.com
30	Sine Systems	www.sinesystems.com
53	Sine Systems	www.sinesystems.com
70	Spacewise Broadcast Furniture	www.spacewise.com
66	Studio Technology	www.studiotechnology.com
26	Superior Electric	www.superiorelectric.com
29	Susquehanna Radio Corp	See ad for contact information
71	TDM Software	www.tdmdata.com
13	Telos Systems	www.zephyr.com
20	Tieline America	www.tieline.com
44	Valcom	www.valcom-guelph.com
79	Wheatstone	www.wheatstone.com
80	Wheatstone	www.wheatstone.com
71	Whisper Room	www.whisperroom.com

◆ READER'S FORUM ◆

Radio World, September 1, 2002

Streaming royalties

On June 20, you ran an article titled "Streaming Royalties Reduced" on RW Online.

This article leaves the reader with the impression that the decision by the Library of Congress was favorable to Webcasters. Sure, the rate was cut in half; but does the editor realize that the new rate is still more than 100 percent of gross revenue for many Webcasters?

Here are some numbers:

The royalty rate is 0.0007 dollars (or 0.07 cents) per listener per song. The CARP ruling proposed an average of 15 songs per hour for calculating back fees, which was upheld by the LOC. So, for an Internet station that averages 100 simultaneous listeners over a month, their monthly fee will be: 0.0007 x 15 (songs) x 100 (listeners) x 24 (hours) x 30 (days) = \$756.

Now compare that to typical monthly advertising revenue for the same station (advertising is the primary and often sole source of revenue for Webcasters).

A generally accepted figure for expected advertising revenue for Webcasting is 1 cent per total listener hours. Thus, 0.01 x 100 (listeners) x 24 (hours) x 30 (days) = \$720 in monthly advertising revenue.

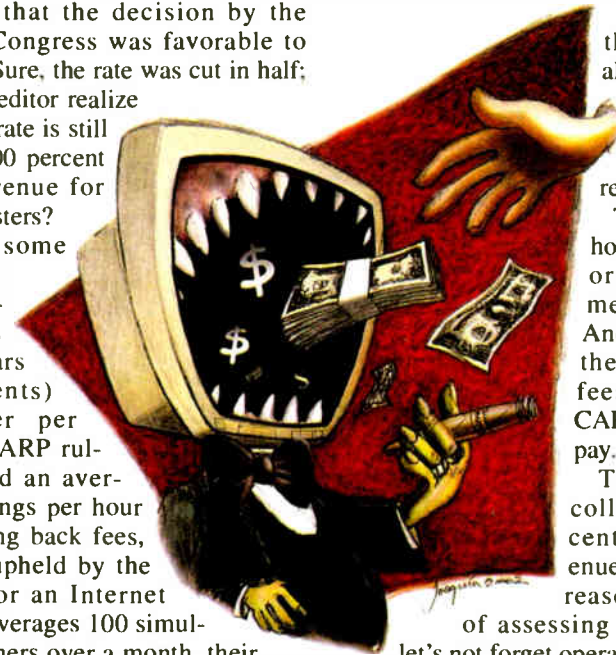
As you can see, the RIAA fee alone surpasses a typical Webcaster's anticipated revenue.

This just shows how ridiculous the original recommendation was. And there are still the performance fees of BMI, ASCAP and SESAC to pay.

These agencies collect 2 to 3 percent of gross revenue (a much more reasonable method of assessing fees). Oh yes, let's not forget operating expenses.

You tell me: How in the world is Webcasting suppose to survive this new fee?

Herman Nieuwendaal
DJ
ElectricBlues Radio@Live365.com
Riverview, Fla.



Super Engineer

Faster than a fiber connection — more powerful than a clear-channel station — able to climb tall towers (or smart enough to hire a good crew) in a single bound. It's a bird! It's a plane! No?! It's Super Engineer!

As radio engineer managers, we tend to do it all. Isn't there a coat of arms somewhere with a toilet and a transmitter on it?

When we encounter a technical problem, the real difficulty is deciding which of 30 ways to resolve it. Usually time and money become the deciding factors. We can only do so much in 24 hours. Perhaps if we changed to a 36- or 48-hour day, we could get everything done and not have to hire anyone else.

Engineering departments often are terribly understaffed, and we need only look in the mirror to see the guilty party. Station managers and peer departments are noticing the magnitude of our workloads and are encouraging us to address this new technical-resource difficulty.

A good engineer now is also a good personnel manager. As our responsibilities grow, so should our staff. Many engineering departments are juggling audio production, Web sites, RF, IT functions, digital enhanced services, studio maintenance and facility maintenance. Overwork and low pay make Jackie a dull engineer.

Costs of increasing staff size include the need to manage more personnel; increased time to write job descriptions and fill positions; space for new employ-

ees; budget for salaries; and time and cost for training and development.

Benefits include the creation of jobs and interest in the engineering fields (building a future resource); relieving overworked employees and reducing burnout (allowing the use of sick and vacation time); redundancy and backup (cross-training); the ability to focus on a project to increase the quality and reliability of the resolution; more innovation in engineering departments because of the influx of creative people; quicker response time; and a resource base that allows a broader range of issues to be addressed.

There are other costs and benefits, and each station has its own. Again, two of the biggest factors are time and money. And just when we thought Super Engineer had a handle on computers and audio, dawning on the horizon is a revolutionary change with IBOC and digital broadcasting.

So come on, Super Engineer, start recruiting for sidekicks. Use a retro-era announcing voice to talk about your newest super-power, IBOC.

"Tune in now for the exciting adventures of Super Engineer's digital broadcasting, bringing truth (data packets of information), justice (content controlled locally and targeted locally) and the American Way (capitalism and the opportunity to generate revenue)."

Up, up and away!

Deana Coble
Engineering Supervisor
WUNC(FM)
Chapel Hill, N.C.

Radio World, September 1, 2002

GUEST COMMENTARY

dMarc, Building on What Exists

by Chad Steelberg

In response to David Maxson's commentary "IBOC and the Birth of Feature-Rich Radio," which appeared on this page in the July 3 issue:

Leaving the enhanced audio aspects aside for a moment, and focusing on the data services ranging from in-vehicle, real-time data to tertiary devices such as toys with subcarrier receivers — the vision and the broadcast equipment have existed in some cases for decades (RBDS, RDS, DARC, IBOC). So where are the services, devices and revenue?

The vision has been well defined from a broadcaster's perspective for years: monetization of the unutilized spectrum. But despite the goal, various broadcast technologies have arisen and fallen into the "abyss," as Mr. Maxson bluntly points out.

He identifies two key factors for the success of "feature-rich" radio: open platform and object-oriented data. Sounds a lot like Linux to me. But I agree, despite the rhetoric.

However, the picture needs to be broadened outside the scope of IBOC and merely the engineer's view. Let's explore the realities of what a system needs to generate hundreds of thousands in revenue per station. The requirements are that it be accessible, flexible and extensible, easy to use, reliable, scalable and cost-effective.

Accessible: The annals of subcarrier data broadcasting in the United States are filled with killer applications (pagers, sprinklers, watches, navigation systems, telemetry devices). But in the end not one has survived, with little money, if any, paid to the broadcasters.

The common factor in all cases is that each application used only a fraction of the available subcarrier space, yet each required a dedicated subcarrier network. So a station can choose to either run a navigation subcarrier feed or a pager network, but not both.

For the application/service providers, each had to bear the full financial burden of not only the station's monthly service charge but the capital expense to deploy the equipment. It has been a lose-lose proposition from the beginning.

The solution: a software/service model whereby stations could form "subcarrier" virtual networks, on a common platform, where applications providers coexist and share the infrastructure costs.

Second, these networks would allow three primary constituents to have permission-based access to the network:

- 1) The station engineers, for configuration, installation and maintenance of the system;
- 2) Data providers, to publish content

for broadcast (with pricing, terms of use, etc.) via multiple protocols and methods including UDP, TCP, Push, Pull, Upload;

3) The applications providers (which may also be data providers), to transform content on the fly, dynamically schedule and broadcast data, via a single station, a group of stations or the entire network based upon events in the data feeds, station data or a fixed time schedule, with full subcarrier support spanning RBDS, DARC and IBOC.

Cost-Effective: Application providers should have a range of pricing packages available to them that optimize their costs based upon the demands and guarantees they expect regarding data delivery. The pricing models range from a per-bit charge for highly dynamic application providers with little or no guarantee of constant data flow to bulk rates based upon narrowly defined schedules and consistent network utilization.

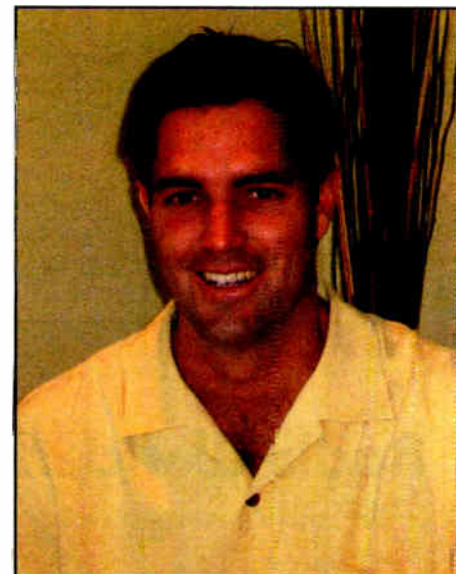
The subcarrier system I describe is now a reality, through dMarc Networks. The technology recently went live on 10 stations in Los Angeles.

Flexible & Extensible: The subcarriers' system design should use standard transformation and scripting languages (i.e. XSL, Java, Visual Basic) to enable application providers to dynamically control almost every aspect of the network and have virtually unlimited real-time data transformation capabilities. By decoupling the data inputs, the resulting broadcast data, the scheduling system and lastly the subcarrier stations, the system, with a programmable layer, can simultaneously serve the simplest data broadcast requirements to the most complex.

Easy to Use: An oxymoronic statement in lieu of the aforementioned flexible and extensible requirements, but achievable. Much in the same way Microsoft has wrapped and automated much of the complexities in building distributed Web applications via its .NET framework and .NET IDE, the system's user interface should support wrapper objects that remove the underlying complexities for standard/common application, but still enable power-users to harness the full power of the open platform.

Reliable: Refers to three critical aspects of the network design and business process: 24 x 7 monitoring, real-time notification of error or delivery failure; N+1 server design with both geographic and process redundancy; and externally audited by a reputable third party that the data was delivered accurately and on schedule.

Scalable: The subcarrier system should support a single station or thousands; hundreds of data providers; and as many application providers as required. The physical network design should enable both slow-speed data transfer and high-speed connectivity via multiple subcarrier technologies including FM, TV, etc. The transport layer should have no impact other than capacity constraints on the system.




Chad Steelberg

went live on 10 stations in Los Angeles, with a national rollout planned this fall.

Third-party application providers already have generated hundreds of thousands in revenue for only 10 stations. These providers range from record labels to advertisers to radio-greetings to telematics services.

Mr. Maxson is correct. IBOC needs a champion, but more than that, it needs services, receivers, broadcasters — in a nutshell, everything other than the standard and the equipment. dMarc is building upon what exists today, what can generate revenue today and yet still encompass and embrace IBOC when, if ever, deployed.

Chad Steelberg is chairman and CEO of dMarc Networks Inc. 

Environmental concerns

This concerns the "Easy to Be Green?" opinion piece on page 54 of the April 24 issue.

The last sentence of the second paragraph says, "CRT monitors contain phosphorous" — but the phosphors contained inside a CRT are completely different from phosphorous. Also, where is all of the arsenic that's supposedly inside a CRT monitor?

Finally, "PCB-laden capacitors and transformers" have been out of production for at least 30 years, which is long before the PC-era began.

Steven Karty
Vienna, Va.

RW replies: "Phosphor" describes a chemical compound that emits light when excited. CRTs usually contain zinc, cadmium and other elements, but according to a report by the EPA, phosphorus is indeed used in the manufacture of CRTs, although discarded tubes do not contain it in a pure elemental form. CRTs also contain significant amounts of lead — enough to be declared hazardous waste in 2001 by the California Department of Toxic Substances Control.

Nowhere did the editorial say that arsenic is contained in the CRT; rather, it is used in chip manufac-

ture. Is it a lot of arsenic per unit? No, but multiply that across the number of PCs being disposed of, and it becomes significant. You also will find cadmium in SMD chip resistors and batteries; and mercury is used in the manufacture of printed circuit boards.

We did not intend to suggest PCB-laden transformers and capacitors are part of the manufacture of computers; but their use in high-voltage transmitters has left repercussions years after manufacturing was ceased. In drawing a comparison to that moment in Toxic History to what we have before us today, we conclude we don't yet know how serious the situation is, and may not for years.

Readers may wish to read an excellent report on the subject, "Poison PCs and Toxic TVs," on the Web site of the Silicon Valley Toxics Coalition (www.svtc.org/cleancc/pubs/ppc-ttv1.pdf). If for nothing else, the report is interesting for one fact: Stanford Research Inc. projects there will be 500 million obsolete computers totaled up for the years 1997-2007.

We recognize the environmental impact that 500 million junked PCs could cause. Broadcasters should be doing their part.

Write to Us

RADIO WORLD READER'S FORUM
P.O. Box 1214 Falls Church, VA 22041
radioworld@imaspub.com

◆ READER'S FORUM ◆

Pirate radio

In response to your cover story in the July 17 issue ("Pirate Radio Is Still Afloat"), I would suggest the pirates want the easy government fix.

I started out as a pirate many years ago broadcasting around the neighborhood. My goal had always been to buy a commercial station, not to make my pirate station legal.

in the community again. We stream the oldies station (www.kmin980.com), which has helped tourism here.

I see small-market stations, usually AMs, for sale under \$100,000 all the time. I realize a pirate station can be built these days for around \$2,000; but if you really want to make a difference and not have to worry about getting busted every time your transmitter is on, small-market radio is a fun way to make a living.

Derek Underhill
President
KD Radio Inc.
Grants, N.M.



KUSC goes digital

I was an engineer at KUSC for 17 years, holding the position of chief engineer for the past 10 years until I left the station in October of last year. The story "KUSC Makes Digital Comeback" in the July 3 issue made some factual errors and left out some information that should have been included. I am proud of the work I did during my 17 years at KUSC. I feel it was worth at least a mention in the article.

If the issue of pirate radio is serving a community, why not buy a small-market station?
— Derek Underhill

I lived in a suburb of Los Angeles, where there are no more allocations. How does one compete against 80 other radio stations with only a 100-watt LPFM, anyway? No matter how good your programming is, it would be very difficult to make a living in radio that way.

I worked in the broadcast industry in the L.A. area and saved my money. Eventually, a colleague showed me a 1,000-watt AM in Grants, N.M., listed on eBay for \$49,000. When I called the owner, I was told there was an FM for sale, too.

I ended up buying both stations for \$145,000. I own two of the five stations that can be received in Grants. That seems like a much better ratio than one of 80 stations in Southern California. Big-fish, small-pond theory.

I packed up and moved to New Mexico. Both stations are back at the top of Arbitron and making money again. They needed a lot of work when I got them, but what can one expect for that price?

If the issue of pirate radio is serving a community, why not buy a small-market station, dump the satellite feed and provide a full-power local community radio service? I have had people come up and thank me for getting the stations involved

IBOC Is Now 'HD Radio'

HD Radio, it's up to you. What's that, dear reader? You haven't heard of HD Radio? You will.

HD Radio is the new trademarked brand name for Ibiqity Digital's AM/FM in-band digital radio technology. Forget about "IBOC." Throw away those preliminary "iDAB" brochures. "IBOC" fans, you never had a chance.

When Americans learn that their favorite stations can be heard in digital quality using new digital radios, and that interactive services will make radio far more useful, they will hear it described as HD Radio. Remember last year, when your non-radio friends asked you, "What's this XM thing all about, anyway?" Those folks will be asking you about HD Radio soon.

Stations and equipment makers can use the name to promote the digital radio concept and their products. Watch for "HD Radio" to show up on products that use the data capabilities of the technology.

A seed planted by something called Project Acorn a decade ago has grown, through many permutations, into HD Radio. Will it blossom? We hope so.

Ibiqity cites a recent Yankee Group study that found that half of all consumers shopping for a car or home receiver in the next year are interested in buying a digital AM/FM radio. And the company scored a win when Kenwood said 17 of its 23 car receivers next year will be "HD-Ready."

A name alone won't make DAB succeed or fail; but it's an important decision. HD Radio. Not bad. We'll need to roll it around in our mouths for a while.

We knew all along that "IBOC" was just a phrase for insiders. The more recent "iDAB" was redolent of the whole Internet thing. (Good thing we didn't call it "DAB-dot-com.") Ibiqity believes in the appeal of "HD Radio," and focus groups liked what they heard.

We do wish radio could come up with a name more unique to itself, something that plays up our strengths rather than piggybacking on those of digital TV. "HD Radio" has a whiff of "us, too" — as though radio has to trail along behind, after years of being first in broadcast innovation.

But the HD reference should resonate with early-adopting consumers already exposed to the concept of high-definition television; and maybe consumers will be reminded of computer hard drives. We also like the branding campaign's tag line: "Pure Digital. Clear Radio."

More broadly, we're happy to see Ibiqity taking any visible steps to put IBOC — er, HD Radio — in front of consumers. The company seems to be learning to accept its role as proponent of this technology, not simply counting on receiver makers and radio stations to carry the marketing burden out beyond the industry.

Digital radio boosters have a long way to go to catch up with the recent marketing dazzle shown by the satellite companies, with their hip-hop TV commercials and savvy rollout campaigns. But "HD Radio" is a good start.

— RW

down the hallway! In this new environment, the studios all function much more independently and it makes sense to wire most of the studio audio sources directly to the console. The major exception was the centrally located ENCO workstations, the inputs and outputs of which were through the SAS with the touch screen, mouse and keyboard being extended back to the studios.

Second, the omissions. While Pablo did the planning, budgeting and procuring for all three projects, most of the actual work was done by Nisie Teeter, me and the contractors Pablo brought in. After the digital upgrade project, I presented a paper at the 2001 NAB Engineering conference about my work and the decisions that were made. Because I was the station's Novell expert

and I was involved with it since its first installation (KUSC was ENCO's 18th customer), I, rather than our computer specialist, had all the maintenance and programming responsibilities for that system, at Pablo's insistence.

Jim Sensenbach
Staff Engineer
Hispanic Broadcasting
Corp./Los Angeles
Glendale, Calif.

—EDITORIAL STAFF—

Table listing editorial staff members including Paul J. McLane, Sharon Rae Pettigrew, Leslie Stimson, Michele Kramer Peterson, Michael Hedrick, Thomas R. McGinley, Alan Peterson, John Bisset, Skip Pizzi, T. Carter Ross, Marguerite Clark, Rogelio Ocampo, Karina Gerardi, Terry Hanley, and Peter Finch.

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, Frank Beacham, Naina N. Chernoff, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Ty Ford, Scott Fybus, Harold Hallikainen, Paul Kaminski, Peter King, Mel Lambert, Mark Lapidus, Carl Lindemann, Frank R. Montero, Ted Nahil, Tom Osenkowsky, Ken R., Rich Rarey, Bruce Rogow, Randy Stine, Travis the V/O Guy, Barry Umansky, Tom Vernon.

Radio World logo and contact information: Vol. 26, No. 18, September 1, 2002. Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245. E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

—ADVERTISING SALES REPRESENTATIVES—

Table listing advertising sales representatives for various regions: US East, US West, Germany, France, Europe, Japan, Asia/Pacific, and Latin America.

NEXT ISSUE OF RADIO WORLD SEPTEMBER 11, 2002

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcomed for review; send to the attention of the appropriate editor.

—ADMINISTRATION & PRODUCTION—

Table listing administration and production staff including Stevan B. Dana, Carmel King, Marlene Lane, Chuck Inderrieden, Eric Trabb, John Casey, Lisa McIntosh, Annette Linn, Anissa DeLuca, Kathy Jackson, Amy Gutowski, Sheryl Unangst, and Robert Green.

Radio World logo and publication information: Radio World (ISSN: 0274-8541) is published bi-weekly by MAS Publishing (USA), Inc. P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Joanne Munroe, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 2002 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

It's a Good Thing!

Introducing our **NEW** flagship radio console: the **D-8000 Digital On-Air Board**

It's NOT just Zeros and Ones...



*When it comes to digital, **EXPERIENCE COUNTS***

***WHEATSTONE'S TRADITIONAL CONTROL INTERFACE** gets your operators up and running in minutes — not days.*

THE D-8000 HAS IT ALL:

- **UNIVERSAL INPUT MODULES** accept analog or digital signals — no upgrades required
- **WHEATSTONE'S EXCLUSIVE BUS-MINUS®** gives you an individual MXM feed (w/talkback interrupt) from every Bus-Minus® input module
- **ALL INPUT CHANNELS** have alphanumeric source displays above each fader
- **BUILT-IN SERIAL COMMUNICATION** interfaces with WHEATSTONE BRIDGE network router and many automation systems
- **CHOICE OF MASTER CLOCK RATES:** 32, 44.1, 48KHz or external reference

PRODUCTION VERSION ADDS:

- **PROGRAMMABLE SENDS:** every input generates two aux sends; each selectable pre/post-fader and pre/post-on/off
- **INDIVIDUAL CHANNEL DSP:** each input has its own four-band EQ, HPF, compressor-limiter, ducking and digital level trim
- **EVENT RECALL:** up to 99 preset snapshots of all channel settings



THE WHEATSTONE D-8000
Digital that WORKS!

 **Wheatstone**

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

See us at the NAB Radio Show Booth #1025

World Radio History

copyright © 2002 by Wheatstone Corporation

THINK INSIDE THE BOX



ONE INTERCONNECT DOES IT ALL!

THAT'S RIGHT— ONE DUPLEX FIBEROPTIC LINK OR A SINGLE CAT-5 WIRE = 64 channels of simultaneous bi-directional digital audio, intercage communication, logic signals, X-Y controller commands, plus auxiliary RS-232 data streams. *This single interconnect between your studio and central rackroom can save you thousands—if not TENS of thousands—of feet of wire in a typical installation!*

THE WHEATSTONE BRIDGE DIGITAL AUDIO NETWORK ROUTER can start small with a single cage and only a few cards, or fully populated units can be stacked to form larger systems. Wheatstone's STAR TOPOLOGY ARCHITECTURE lets you connect multiple locations to your central rack room, providing shared resources for all yet still permitting independently functioning studios, each with its own combination of plug-in modules specifically suited for a select set of gear.

SIGNALS ARE ROUTED entirely in the digital domain. sample rate converters on each input, freeing you from sample rates throughout your facility. A family of plug-in makes installation easy, letting you mix varied signal standards all within the same cage. WHEATSTONE'S intuitive setup software handles system configuration, matrix selection sets. All systems interface directly with Wheatstone consoles source selection and display.

All AES cards have worry about varying connector modules technologies and graphic based and salvo pre- for seamless



THE BRIDGE
DIGITAL AUDIO
NETWORK ROUTER

 **Wheatstone**

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

copyright © 2002 by Wheatstone Corporation (mini-technician not included)

See us at the NAB Radio Show Booth #1025

World Radio History

