GARZIGLIA ON 'RURAL RADIO' — Page 34

NewBay Media

RADIOWORLD

SEPTEMBER 1, 2009 | The News Source for Radio Managers and Engineers | $2.50 | RADIOWORLD.COM

INSIDE

NEWS & ENGINEERING

- Vantrix builds a business around helping companies deliver any multimedia content to any device. — Page 14

- The greatest appeal of Internet radio remains its most fundamental obstacle, Frank McCoy argues. — Page 18

BUYER'S GUIDE

- Case studies in studio furnishings, design and acoustics. — Page 23

OPINION

- MusicFirst says it would work with NAB and 'craft a solution as partners.' — Page 33

Is AM Radio Still Relevant?

Owners Confront Challenges of Bandwidth and Evolving Demographics

BY RANDY J. STINE

WASHINGTON — The golden age of AM radio it's not. From clear-channel powerhouses to small rural stations that still feature a grain report, the news for owners on the U.S. AM radio band is fairly grim.

SPECIAL REPORT

The economic recession has exerted a severe financial toll on many AM licensees, in a few cases forcing owners to take the drastic step of turning their stations off when they can't pay their bills and leading others to trim staff to minimum levels.

The once-dominant method of broadcasting is struggling to remain viable in the 21st century, in the eyes of many observers.

This article is the first in a series exploring whether the AM band is still relevant, its challenges, how its business models are changing and what might happen to it.

Stations on the FM band, certainly, also face obstacles. But commercial FMs generally are seen as the most lucrative broadcast holdings; further, their owners hope to benefit from efforts to put FM in cell phones and other portable media devices.

Meanwhile, experts say, AM stations likely will continue to face severe roadblocks regardless of an economic recovery.

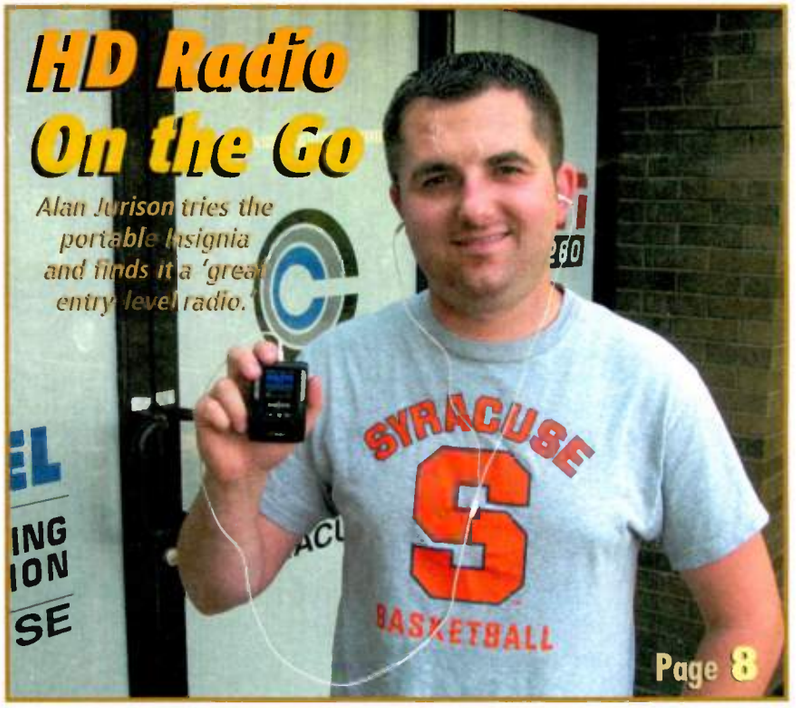
Even the Federal Communications Commission acknowledges that many licensees are in a battle for survival.

When it recently adopted a rulemaking to allow AM broadcasters to use fill-in FM translators, the commission stated in its report that "the combination of higher-fidelity alternatives to AM radio and increased interference to AM radio have caused an erosion of the AM radio audience and loss of young listeners to other programming outlets.

'DISTURBING'

"The story of AM radio over the last 50 years has been a transition from being a dominant form of radio entertainment for all ages to being almost non-existent to the youngest demographic groups," the commission stated.

(continued on page 5)



BOLINGBROOK IL 60490 1520
201 BULI LN
SHARE INCORPORATED
SENIOR ENGINEER
THOMAS BRAXTON 117
#0007189 4# RDMA E0901
#RDMANTO7 ##########AUTO##3-DIGIT 604

HIGH POWER FM & HD SOLUTIONS - SIMPLY THE BEST, FROM CEC

800*i* Importer

800E^x/A Embedded Exporter

802E^x Digital Exciter

HD Radio Licensed Manufacturer

Continental Electronics

www.contelec.com | sales@contelec.com | (214) 381-7161

HD Radio Licensed Manufacturer

World Radio History

"WOW, I COULDA HAD A VP-8!"

VORSIS VP-8 IS THE BEST AUDIO PROCESSOR FOR UNDER $3K. PERIOD.

The Vorsis VP-8 Digital Audio Processor delivers clean detailed sound at a great price. In fact, you can easily spend two to three times more and still not match the VP-8's performance.

Installation and setup takes only minutes. The VP-8 is loaded and ready to go for FM, AM, FM-HD, AM-HD, streaming, and studio processing. It's great sounding presets are carefully tailored for your format and media. No need to spend endless hours tweaking, the VP-8 will make your station sound great, right out of the box.

For FM stations, expect a sound that easily holds its own with your high-power major market competitors. Listeners comment that with the VP-8 they now hear the rest of the music! AM stations often experience a dramatic increase in coverage area along with greatly improved intelligibility and sound quality.

The VP-8 is also ideal for streaming audio, studio processing, as a versatile backup processor or as an STL protection limiter.

Of course, if tweaking is your thing, VP-8 lets you under the hood with a complete toolset – in the VP-8, nothing is hidden. With its 4-band AGC/compressor and 8-band limiter, the VP-8 boasts more bands than any other processor in its price range to give you a very clean, loud, competitive sound that doesn't destroy the music.

It also includes features rarely found even on top-of-the-line processors: a reference-grade stereo encoder for FM, built-in test oscillator, diversity delay, multi-point headphone monitoring, and extensive metering.

The bottom line? The Vorsis VP-8 gives more bang per buck than any other audio processor in its class (and then some). And since Vorsis is designed and built by Wheatstone here in the US, you know it'll hold up and be supported 24/7 for years and years.

Intrigued? Call us or visit us on the web to learn more or set up a demo. You'll be happy you did. Vorsis—more listeners listening more.

WHEATSTONE
VORSIS

Radio has evolved. Your sound should too.™

phone 1.252.638-7000 | www.vorsis.com | sales@wheatstone.com

World Radio History

NEWSWATCH

ENGINEERS SEEK RULING ON CHANNELS 5/6

WASHINGTON — The Broadcast Maximization Committee asked the FCC to announce that during the upcoming filing period for digital low-power television stations and television translators, no applications specifying Channels 5 or 6 would be accepted.

Starting Aug. 25, the FCC planned to begin accepting applications for new digital-only LPTV stations and TV translator stations in rural areas.

The BMC consists mostly of several consulting radio engineers. It reminded the FCC of its proposal to re-farm the spectrum just off the low end of the FM band to benefit the radio industry.

LAWMAKERS URGE RADIO, LABELS TO TALK

WASHINGTON — Radio's feeling increasing pressure from Senate Democrats to bend on the performance rights issue. In an Aug. 4 Judiciary Committee hearing, Chairman Patrick Leahy of Vermont and Dianne Feinstein of California — both Democrats — said several times it's time for all parties to talk about the issue and that they're ready to move legislation.

NAB Joint Board Chairman Steve Newberry, who's also president/CEO of Commonwealth Broadcasting, a 23-station group of small market facilities, and Jim Winston, executive director and general counsel for the National Association of Black Owned Broadcasters, both said levying a new fee on stations in this economy would devastate radio.

The value of the promotion that radio gives to artists is hard to quantify but significant, Newberry said, showing a stack of paper he said represented more than 9,000 e-mails and 755 phone calls that one station in Salt Lake City had received from record labels over the course of one year.

Artist Sheila E., testifying for musicFirst, a group of record labels and artists that supports the bill, said the House version adjusts the fee to $500 per year for small market stations, or about $1.37 a day. "I don't think it's fair that radio uses music I performed on and not pay me."

ZUNE HD: The Microsoft Zune HD portable digital media player is available for preorder (through *www.zune.net/zunehd*) and is set to hit store shelves on Sept. 15. This is the second portable out to include FM HD Radio; the first was the Insignia HD.

WIDEORBIT/GOOGLE: Business management software company WideOrbit acquired the assets of Google's radio automation business, including Google Radio Automation, Maestro and SS32 automation products.

'PULSE 87': Mega Media Group, which operates "Pulse 87" on the aural carrier of LPTV station WNYZ at 87.7 MHz in New York, sought Chapter 11 bankruptcy protection. Mega Media President/CEO Alex Shvarts told Crain's Business he hopes to reorganize the company. According to the bankruptcy filing, the company owes more than $3.5 million against assets totaling 180,000.

27,832 products in stock at press time!

Headsets!

Last Chance on the Lowest Prices EVER on these MVPs!

Visit BSWUSA.com for more details

SENNHEISER

beyerdynamic

HMD280 AT BSW FOR ONLY $239!

HMD25XQ AT BSW FOR ONLY $399!

ANNUAL REMOTE SALE ON NOW! LOWEST PRICES OF THE YEAR!

broadcast gear from people you trust

BSW

Lowest Prices and Largest Inventory on EVERYTHING For Broadcast

BSWUSA.COM 800-426-8434

Tieline

MARL

COMREX

Telos

Codecs!

Free stuff with our top selling gear!

Great Package Deals!

Lowest Prices!

Visit BSWUSA.com for more details

broadcast gear from people you trust

BSW

Broadcast Supply Worldwide

Knowledgeable Sales Staff

BSW's sales professionals have decades of real-world broadcast and recording experience to offer expert help with your purchase.

Selected content from Radio World's "The Leslie Report" by News Editor/Washington Bureau Chief Leslie Stimson. To receive the free, bimonthly e-mail newsletter, subscribe at *www.radioworld.com/subscribe*.

COMPANY USES FM SUBCARRIERS TO CONTROL ELECTRICITY USE

Utilities and government agencies are looking for ways to reduce electricity demand during peak periods and save themselves from having to spend more money on grid infrastructure or new generation capacity — maybe saving customers a few coins in the process.

Two companies — e-Radio and Direct Energy — believe they can combine efforts to accomplish all these things using FM subcarrier transmission.

E-Radio (*www.e-radiousa.com*) partners with manufacturers of smart grid devices such as thermostats in home displays, load controls and appliances, and has established pilot programs with several utility companies.

It says its Utility Message Channel allows utilities, energy retailers or government agencies to send alerts, messages and commands to smart grid-enabled devices and consumer appliances that tells them to lower their energy consumption and operate more efficiently.

Using FM subcarriers leased from radio stations, e-Radio transmits the notifications to the RDS home-based receivers across a municipality or utility service area that results in significantly reduced peak energy demand, according to both companies. The technology can also intervene on the consumer's behalf, cycling off appliances for set periods of time during peak periods.

Direct Energy (*www.directenergy.com*) has signed an agreement with e-Radio, which operates wireless communications networks and makes FM receiver modules for "smart grid" devices, to market and distribute e-Radio's product. e-Radio says its software enables secure one-way delivery of data content to receivers using a network of existing FM radio subcarriers.

Direct Energy and e-Radio have conducted pilots in California, Texas and Ontario. In Texas, Direct Energy's affiliate, CPL Retail Energy, has launched a demand-response and energy efficiency pilot program for residential customers. The pilot uses e-Radio-enabled thermostats to achieve and measure peak period reductions. e-Radio has been looking at using IBOC technology also.

World Radio History

AM Radio Faces Tough Questions

Are These the Sunset Days For Radio's Senior Band?

FROM THE EDITOR

Paul McLane

A small AM station was the setting for my first venture into professional radio. I can still recall taking a break from the dusty little newsroom; walking through the lobby, past the air studio and beyond the transmission equipment; and poking my head out the back door to watch the sun set behind the towers over a field of summer corn.

That corn, those towers and the AM station are all gone, replaced by a housing development — a suitable metaphor for the challenges discussed in Randy Stine's lead article of this issue.

> **Can AM survive** if it isn't part of new portable media devices?

Its headline asks a question that seems to become more pressing every day. The article is the first in a series in which Radio World will explore whether AM radio in the United States remains relevant.

How can AM radio owners profit and thrive, if at all?

What will happen to the AM band?

How do economic and competitive pressures make themselves felt in the product that AMs are putting on the air?

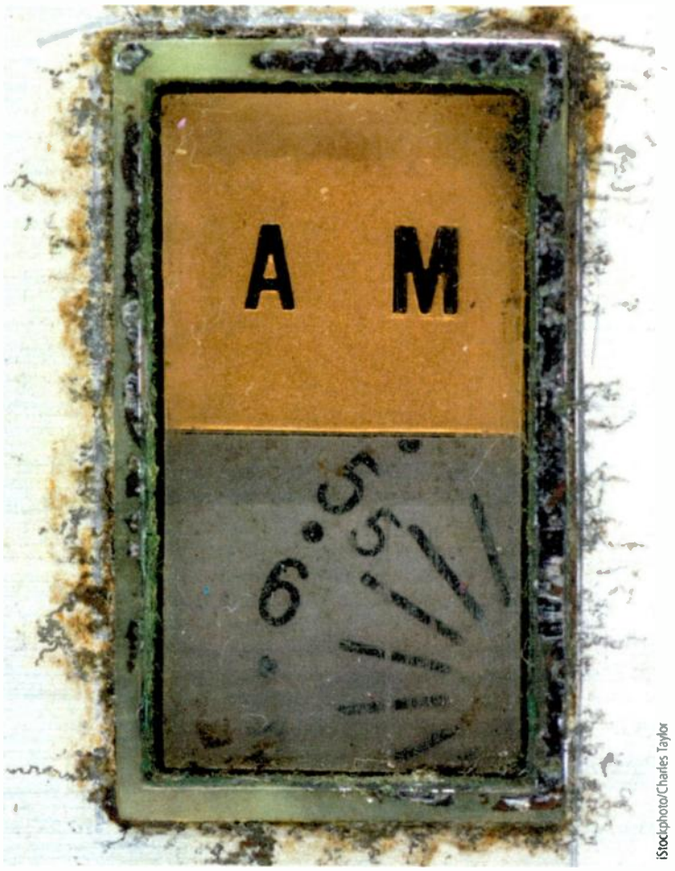
Can AM survive if it isn't part of new portable media devices?

What lessons can we learn from those AMs that are successful?

What is the role, if any, of HD Radio for AM, where only a couple of hundred AM stations have adopted the technology?

I know you have opinions on this too. Tell me what you think, and what questions you think we should be asking. Write to *pmclane@nbmedia.com*.

If I don't get back to you, I'm probably out back looking at the sunset.



iStockphoto/Charles Taylor

Jim Godfrey, a friend and industry colleague who works for Tieline Technology and is based in Texas, shares a story that illustrates the power of radio.

At this spring's NAB Show, four technical staffers from Little Saigon Radio in the Los Angeles area visited the Tieline booth. Little Saigon Radio programming is heard on KVNR (AM) in Santa Ana, Calif., KSJX(AM) in San Jose, Calif., and KYND(AM) in Houston, Texas.

"I asked if all had been born in Vietnam and they had," Jim related. "I told them that I had been an Army helicopter pilot in Vietnam in 1969 and '70. We talked about how they'd escaped and what issues their families had, etc.

"Then I told them that I'd known only one person from Vietnam before I got there in June 1969, Tran Duc Viet, who had been a student in my flight school class and graduated when we did. I actually ran into him again at Da Nang.

"Afterwards I had always wondered what happened to him and if he got out. Unlike us American soldiers who had a date when we would go home, he *was* home and would be in the war until it was over or he was killed.

"I had made many inquiries to Web sites and through the VNAF, the Vietnamese Air Force association, to find him, but to no avail."

At the convention, Joe Duong Dinh, technical director of Little Saigon Radio, told Godfrey about a feature that helps people find others and promised to give it a try.

"Well, Joe called me recently and had just gotten off the phone with my friend's wife. In less than two hours they'd found him.

"Later in the day, I was reunited with my comrade via telephone. He'd escaped via boat from Saigon and was picked up by the Seventh Fleet, and now lives in California. I was amazed and overjoyed to know that he was safe."

Jim says the power of radio was really demonstrated to him that day.

Available Now

Get the listening credit you deserve.

Trust PPM™ Assurance from Burk Technology.

- Identifies true cause of encoding loss and immediately activates backup equipment
- Built-in validation makes sure you broadcast the *right* code
- Integrated silence sensing identifies encoding loss due to silence
- Features onboard web server and email notifications

Take control of your PPM investment.
Contact Burk or your favorite dealer to learn more.

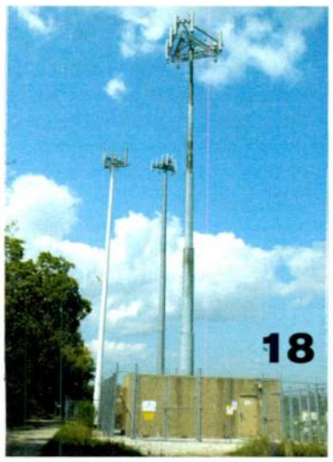
BURK TECHNOLOGY WWW.BURK.COM

Arbitron PPM™ is a trademark of Arbitron, Inc.

World Radio History

THIS ISSUE

SEPTEMBER 1, 2009



NEWS
Is AM Radio Still Relevant? 1
Newswatch 3
AM Radio Faces Tough Questions 4
MMTC and Others Hope to Rescue AM Radio 6

DIGITAL RADIO NEWS
Entry-Level HD Radio FM Portable Debuts 8

FEATURES
Workbench: Bees Help Solve Transmitter Problem 12
Vantrix: Multimedia Content to Any Device 14
The Problem Isn't Demand, It's Bandwidth 18
Tricky Internet Radio Is Worth the Effort 22

BUYER'S GUIDE
Harris Sets the Stage for Steve Harvey 23
Philly Broadcaster Appreciates the Details 24
Clear Channel Cluster Gets Space 26

OPINION
Royalty Is a Simple Issue of Fairness 33
This Is Protectionism at Its Worst 34

AM RADIO

(continued from page 1)

The latest quarterly data available from the FCC showed that there were 4,786 AM stations in the United States at the end of 2008. There were almost exactly the same number a decade ago and the totals have varied little in the interim.

An FCC database that lists stations that have been dark for more than two months shows that the number of silent AM stations has hovered near 80 since the beginning of 2009. A March story in Radio World indicated that the pace of stations powering down had appeared to increase last fall through the beginning of this year (*radioworld.com*, keywords "Are More Stations Going Silent?").

> **This is not** the first time people have claimed AM is dead.
>
> – Stan Salek

Other broad statistics suggest the pressure on AMs.

Until 1978, AM claimed more than half of all hours spent listening to radio, according to FCC data. Recent figures show that AM's share of listening hours has dropped to 17 percent, in part because of fundamental problems of channel congestion, interference and low fidelity.

But perhaps most disturbing is the drop in AM listenership among youth, the FCC said.

Among persons 12–24, AM accounts for only 4 percent of radio listening. Among persons ages 25–34, AM listening rises to only 9 percent.

And these figures only measure decline in listening relative to FM; they do not address the perception of flight from radio to other media among young people.

Data from BIA Financial Network show overall downward pressure on revenue at AM stations. Annual revenue for commercial AMs in rated markets was about $2.9 billion in 2004 but dropped 14.1 percent to approximately $2.4 billion for 2008.

"The majority of that revenue is for your legacy AMs and AM powerhouses," said Mark Fratrik, vice president of BIAfn. "It's harder to determine what is happening at many of the small markets."

FM revenue over that five-year period also fell, though only by 11.1 percent, from approximately $10.5 billion to $9.4 billion.

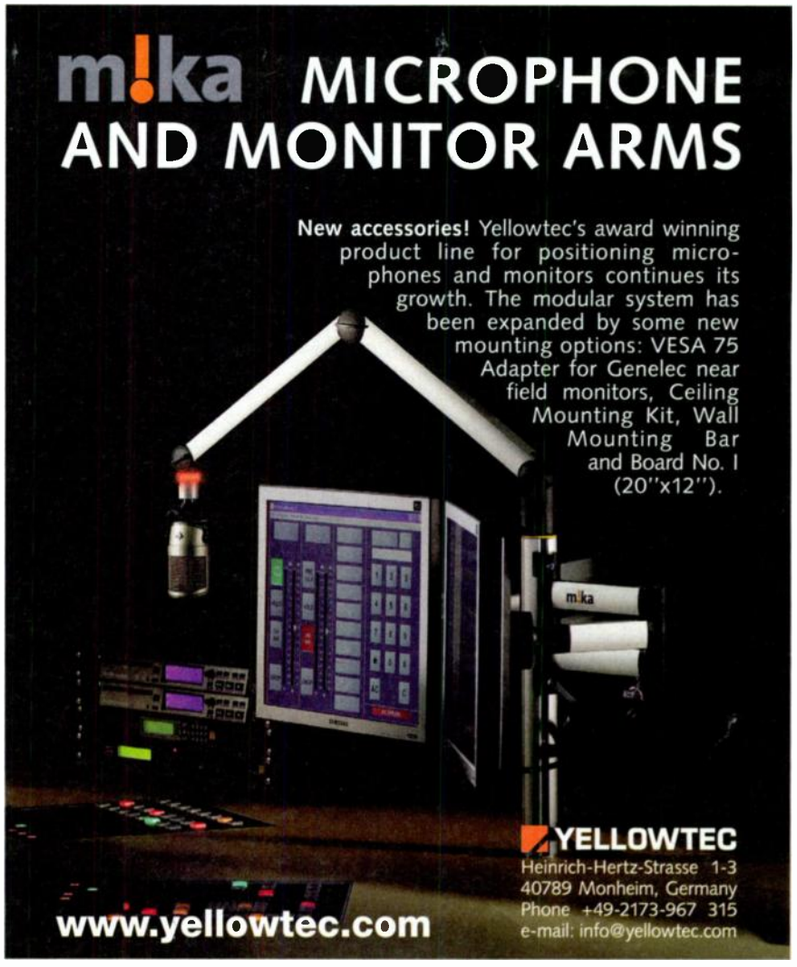
Several AM station owners acknowledged — in public comments filed in the FCC's FM translators proceeding — that their competitive edge has been dulled significantly.

"The economics of our current operation are critical and have been for some time," wrote Roy Henderson, licensee of KNUZ(AM) in Bellville, Texas. "It is essential that relief and a more level playing field competitively be permitted

(continued on page 6)

Photo by Tom Gorton

The challenges facing AM do not mean efforts to improve stations have ceased. Shown are copper radials and ATU cabinet at a new site for KGLB, Glencoe, Minn., west of Minneapolis. Hatfield & Dawson's Tom Gorton tuned up the station on 1310 kHz using 'moment method' computer modeling, as newly allowed under the rules.



World Radio History

AM RADIO

(continued from page 5)

at this crucial time."

John Giannettino, licensee of KCPS(AM) in Burlington, Iowa, wrote, "AM radio needs every advantage to just survive and the small step (of allowing FM translators) is the very least you could afford us."

Opinions vary about the future of AM broadcasting in the United States, but most agree that technical and operating challenges will continue and further station attrition is likely.

Several prominent consulting broadcast engineers say they expect "zero-growth mode" for AM broadcasters for the foreseeable future.

LACK OF CAPITAL

"I do not expect AM to bounce back," said Glen Clark, president of Glen Clark & Associates, who remains active in radio consulting. "It had a great run over more than 80 years, but I think AM is basically done. It's already getting to the point where people are just turning off their stations."

Photos by Glen Clark & Associates

AM investment: Rebuilding the WMVP array in Chicago. The 50 kW station on 1000 kHz is owned by ESPN, part of Disney. It had three 500-foot self-supporting towers in a line; Glen Clark & Associates redesigned the array as a 'dog-leg' of guyed towers to help fill nulls.

Clark said it appears many AM operators are doing their best simply to maintain facilities due to a lack of capital funds.

"The drop in value of some of these AM stations is stunning. If the market continues to drop, more people will take their towers down and sell the real estate to developers. AM arrays take up a lot of acreage."

Station broker Glenn Serafin, president of Serafin Bros. Inc., told Radio World that the very limited availability of credit combined with a reduction in ad revenues has combined to cause a severe reduction in AM radio station values.

"The deal market for all stations is the worst we have ever seen it," Serafin said. "There is some activity on the AM side only because prices are cheap, but borrowing remains difficult to near impossible."

Fratrik of BIA said there's so little activity in the AM transactions market that it's hard to quantify a drop in values. AMs that are sold are usually parts of clusters, making it hard to determine if values for the AMs are up or down, he said.

Ben Dawson, managing partner of Hatfield & Dawson Consulting Engineers, said he would not be surprised to see "quite a bit AM attrition" over the next decade.

"However, I think there will still be some successful stations if they have substantial coverage and reasonable signals," he said.

AM broadcasters tell Dawson they are in survival mode and are spending money only on necessary projects.

"In fact, we only have one project in the active status for a substantial facility improvement simply to improve coverage. All of the other projects we are doing involve some motivating factor."

Dawson said he expects to see the FCC explore more cross-service options for struggling AMs similar to what is going on in Canada, where many AM stations have been moving to the FM band.

AM EXCLUSION

The exclusion of AM from discussions about adding broadcast radio reception to cellular phones has been obvious, said Stan Salek, senior engineer at Hammett & Edison Inc. He said this reflects the technical challenge of incorporating a practical AM receiving antenna into such devices.

"The headphone cord itself works well as an FM antenna (for those applications). I've also noticed new armband portable IBOC receivers in stores that lack AM reception," Salek said.

At least one consulting broadcast engineer thinks the FCC or Congress should step in and mandate that AM be included in small devices.

"There should be a requirement that any radio device made today for distribution in the U.S. must include both an AM and FM receiver," said Jack Mullaney, president of Mullaney Engineering Inc.

But despite the equipment snubs, AM broadcasting will remain a viable industry in some form, according to believers.

"This is not the first time people have claimed AM is dead or dying," Salek said.

The National Association of Broadcasters doesn't buy the argument that AM radio is being left behind, said Dennis Wharton, NAB executive vice president of communications.

"These are difficult times, no doubt. But let's not forget the tens of millions of Americans listening to AM radio everyday," Wharton said.

Though AM is almost non-existent to the youngest demographic groups, NAB believes AM-FM cross-service translating as well as HD Radio, which will provide broadcasters a chance to improve their sound quality, will help the band, Wharton said.

He blamed most of AM's difficulties on the slumping ad market, calling it "the worst advertising recession since the Great Depression."

Coming up in this series: What successful owners say and the future of AM HD Radio.

To comment on this or any other story, drop a note to: radioworld@nbmedia.com.

MMTC AND OTHERS HOPE TO RESCUE AM RADIO

Several groups are pitching the Federal Communications Commission with ideas for repurposing TV Channels 5 and 6 following the DTV conversion.

The Minority Media & Telecommunications Council proposes the establishment of an AM transition Federal Advisory Committee to make recommendations for the use of those channels. The group wants the FCC to expand the FM band downward and give current AM licensees the opportunity to move to the FM band.

The MMTC also seeks the elimination of the nighttime coverage rule for AM licensees.

Its plan contains elements similar to ones proposed a year ago by a group of prominent consulting broadcast engineers. The Broadcast Maximization Committee proposed a long-term migration plan for most AM broadcasters to move to an expanded FM band, which would include frequencies 76.1 to 87.7 MHz in the FM Expanded Band, dubbed "EXB."

In addition, the BMC proposed that the commission relocate LPFMs to the EXB while allowing clear-channel AMs to remain on the AM band.

"We believe with a new chairman in place at the FCC we will see significant movement on this issue," said Jack Mullaney, president of Mullaney Engineering Inc. and a founding member of the Broadcast Maximization Committee.

The FCC amended its rules to allow AM-FM cross-service translating in hopes of helping financially strapped AM broadcasters. And since late 2008 the commission has allowed AM broadcasters to verify the performance of their AM directional antennas by modern computerized methods known as method of moments computer modeling.

The commission in 1997 expanded the AM dial from 1610 kHz to 1700 kHz in hopes of easing band congestion.

— *Randy J. Stine*

World Radio History

Your Story Is Out There

Grab It LIVE with ACCESS!

In Fargo, ND there was more than enough news this past winter as floods ravaged the area. Armed with nothing more than an ACCESS and a mic, talk show host Scott Hennen was on the scene and on the air immediately.

Wherever there's breaking news, there's your story. And you don't need a full crew to grab it. As fast as you can get there, you can be live on the air, creating pinpoint, relevant programming that keeps an ever-growing number of listeners glued to their radios. ACCESS PORTABLE lets you send studio-quality live audio, real time over POTS, DSL, Cable, Wi-Fi, 3G cellular (EVDO/UMTS), 4G WiMax, satellite and more to make any remote broadcast really stand out.

There's nothing more vital than local— connect with your audience from anywhere with the easy to use, handheld ACCESS PORTABLE!

Put Comrex On The Line.

COMREX

ACCESS

19 Pine Road, Devens, MA 01434 USA Tel: 978-784-1776 • Fax: 978-784-1717 • Toll Free: 800-237-1776 • www.comrex.com • e-mail: info@comrex.com

World Radio History

Entry-Level HD Radio FM Portable Debuts

Insignia NS-HD01 Armband Unit Supports Multicast Channels at a Low Price Point

PRODUCT EVALUATION

BY ALAN JURISON

The industry has been waiting patiently for a portable HD Radio receiver; Best Buy has delivered with the new Insignia NS-HD01. At $49.99, this is an attractive product that should be a great entry-level radio for consumers to start experiencing HD Radio.

I was on the Best Buy Web site on July 12 when the company quietly launched the product, and I bought one for the "In Store" pickup. Insignia is an in-house Best Buy brand and the units are exclusive to Best Buy.

The player has a built-in rechargeable Lithium-ion battery that can be charged through a computer USB, wall or car charger. The radio features a 1.5-inch color LCD screen, 10 presets and 3.5 mm jack output. An armband, computer USB cable and earbuds are included.

The unit is small and lightweight at 3.07 x 2.06 x 0.63 inches. The user interface, display and controls are user-friendly and intuitive. Battery life between charges is great, coming in just over the stated 10 hours. They did a great job, in my opinion. Those looking for an AM radio will be disappointed, though; it doesn't do AM.

The radio does not come charged, so you'll need to leave it on the charger at first. I went to my car, and immediately plugged the power cable to start charging my new radio to get started. I hooked it up to my car's Auxiliary input and started driving around.

If you read Radio World, you know that many in the industry are concerned about the performance of HD Radio receivers. Many of the tabletop models, even those with longer dipole antennas, have had performance issues. How will a portable receiver work?

This radio has the best reception of any HD non-automotive radio I've used. It also has better reception than many analog radios. In my car, I was easily able to tune into every HD signal that I would expect to receive in Syracuse.

PRODUCT CAPSULE

INSIGNIA NS-HD01
HD Radio Portable Player

Thumbs Up
+ Excellent performance
+ Great price
+ Supports RDS
+ Supports multicast channels

Thumbs Down
- No AM tuner
- No album information on HD broadcasts
- No iTunes Tagging or RT+ tagging
- Needs more than 10 presets
- No "force analog" feature

PRICE: $49.99 MSRP
sold only by Best Buy

Info: *www.bestbuy.com*

PERFORMANCE

I also heard things I did not expect to hear. In the parking lot of the Best Buy in Liverpool, N.Y., a Syracuse suburb, I was able to receive the analog signal with RDS of WPXY(FM), a Class B station in Rochester, N.Y., over 70 miles away, as well as other stations in adjacent markets. I was not expecting the ability to do that on a portable radio that uses the headphone cable as its antenna!

I drove 20 minutes home, listening to various HD Radio broadcasts in the market, and the radio performed perfectly.

When I got home, I went down to the basement and throughout the house. I had flawless HD Radio reception. The next day, I went into the work and decided to give my HD Radio more of a challenge.

Our office building is a standard, one-story brick and steel constructed building located in Syracuse. We often have problems with the various tabletop HD Radios in our building. At my desk, I have two tabletop HD Radios that sometimes go in and out of HD.

I listened to an HD2 stream on my NS-HD01 for an entire workday at my desk with no problems. During this time my other HD Radios sitting at my desk, with wire antennas stretched up to the ceiling tiles, occasionally lose HD lock.

Walking around the interior of the building yielded great results for the "in-town" HD stations. We're all aware of the HD penetration issue, and unfortunately, this receiver cannot perform miracles. If the station doesn't have a predicted 70 dBu FCC contour over your area, you're likely going to have indoor HD reception issues.

(continued on page 10)

World Radio History

ONE

EVERYBODY WANTS ONE!

The ONE processor that can adapt to any application, the Omnia ONE is designed as a "universal hardware platform." Using the latest and most powerful DSP hardware architecture, the Omnia ONE platform can handle and adapt to the demands of both traditional and digital broadcasting through simple software downloads. No wonder it's the most successful product introduction in Omnia history! Available in AM, FM, Multicast, and Studio Pro versions.

6EXi

FIRST CHOICE OF MAJOR-MARKET BROADCASTERS WORLDWIDE.

When we first introduced Omnia-6, it set the industry pundits back on their heels. 96kHz sampling/24-bit resolution? Very cool! Five bands of AGC? Six bands of limiting? Unheard of! So much power it was amazing. As it turns out, the powerful, musical, natural sound of Omnia-6 was just what broadcasters were waiting for. Omnia-6EX and 6EXi became, and remain, the in-demand processors at major-market stations around the globe.

OMNIA PROCESSING

5EX HD+FM

No matter what your transmission method, Omnia 5EX HD+FM provides what no other can: The competition-crushing, market-dominating, accept-no-substitutes Omnia sound – sound so pure, clean and compelling that it's almost an unfair advantage.

5EX HD+AM

Here is the reason why more of the world's powerhouse AM radio stations have turned to Omnia processing. More clarity, more presence, more power, more flexibility. AM radio never sounded so good.

8x

The power of eight discrete, three-band stereo Omnia processors in a single, networked box.

A/X

Dramatically improve the sound of your streams with the power, punch and purity of Omnia A/X processing for your audio workstation.

Omnia
A Telos Company

www.OmniaAudio.com

© 2009 TLS Corp. Omnia, 8x, A/X, 5AM, 5FM, ONE, 6EXi TM TLS Corp. All rights reserved.

Radio Never Sleeps. Neither do we. We're here for you, anytime, with free round-the-clock, 24/7 technical support. Call +1-216-622-0247.

World Radio History

INSIGNIA HD

(continued from page 8)

In my tests, the stations in the market that have a predicted 60–70 dBu at this location work fine outdoors or at my nearby home, but do not perform well in an indoor office environment. The radio does a great job at receiving the analog portion of these signals indoors, but the HD is not to be found.

I went on a trip to Carousel Center, a large multi-story regional mall in Syracuse. I found the receiver did well on the "in town" signals as I walked the common corridors of the mall. However, if I went into a store, particularly on the lower levels, I often lost HD lock, and by the time I got to the middle of these stores, I often had no analog reception either. I think this is more of a function of the massive attenuation that the building has at FM frequencies. The more distant HD signals were okay in analog, but never really went into HD in the mall.

The text display for WNTQ(FM), Syracuse.

MOBILE COVERAGE

I had a quick business trip to New York City right after getting the unit. Most of my trip was in midtown Manhattan, where the digital portion of the radio performed far better than analog. Most of the signals in New York are transmitted from the Empire State Building, and I wasn't more than a mile away, so one might expect the performance to be great, and it was.

Most striking to me was how well the Insignia performed receiving digital signals in interior office buildings as compared to analog.

The analog signal really gets battered by multipath distortion in midtown Manhattan, and is scratchy on the NS-HD01.

However, as soon as it goes into HD, the station becomes clear, and HD reception was surprisingly good in my limited tests of the interior of some tough office buildings.

One of the toughest tests I did was take an elevator in the center of the General Motors Building from the 45th floor to the lobby, listening to the HD2 channel of WPLJ(FM). Amazingly, the HD2 signal stayed intact for about 75 percent of the ride.

Outside of Manhattan, I was less impressed with HD coverage. My testing was limited to the car rides between JFK Airport and Manhattan on the Long Island Expressway and the Van Wyck Expressway. HD reception was spotty at best on all of the major stations in New York while in the car, especially when I got on the Van Wyck.

Also, HD reception at JFK inside the terminal wasn't that great. But the analog was scratchy in these cases. More testing will need to be done, but my initial theory is that the lower-power HD carriers from the FM stations transmitting from Empire aren't penetrating well outside of Manhattan.

As far as HD performance goes, a properly installed HD mobile receiver will perform better than the NS-HD01, and I simply think this is because the mobile receiver has a dedicated, fixed, solid antenna. If only the NS-HD01 had an antenna jack! However, in my testing I found the NS-HD01 better than most, if not all, HD tabletop radios.

The designers included RDS for analog-only broadcasts in the Insignia. This is an exciting feature to have, as most manufacturers of HD Radios have surprisingly ignored RDS. Most HD Radio receivers have beautiful LCD displays for PAD data that would also lend themselves to RDS, so I'm happy this radio has it.

Selected data in Radio World is from BIAfn's MEDIA Access Pro™.
BIA Financial network MEDIA ACCESS PRO
www.bia.com

The radio features a 1.5-inch color LCD screen, 10 presets and 3.5 mm jack output. An armband, computer USB cable and earbuds are included.

DRAWBACKS

While the unit supports the Program Service name, it has a bug in it. If the station's PS has a space in the first character of the PS, the radio will not display a PS value. Many broadcasters use software to center the PS, so if it's not eight characters, they add spaces to the left and the right to make it look better on most receivers. The NS-HD01 will not display it.

Also, the radio displays the Radio Text and Program Service RDS data as it receives it, sometimes replacing text from right to left slowly. This can be confusing because the radio displays half of the old string and half of the new string for a few seconds while it receives more RDS data. Most receivers don't display the new RDS string until it has been fully received and been checked for errors.

I also found that when the unit loses HD lock, the "HD" light doesn't blink to show you that it lost its link. On HD1, it will blend to analog. For HD2, you hear nothing, and eventually the display changes to "Channel not available." Also, after several minutes of no lock, it goes back to the analog frequency, which I found annoying in a long tunnel while driving.

I wish it had more presets. Ten is too limiting, given all the multicast channels you can hear. A "force analog" feature would also be helpful for users on the fringe areas that might get frustrated if the radio constantly goes back and forth between analog and digital.

I also wish it supported iTunes Tagging for HD broadcasts and RT+ tagging for analog RDS broadcasts. With the USB cord for charging, add another button and you're almost there.

It also doesn't display the album information on HD broadcasts as part of the program-associated-data. To accomplish that, I'd recommend including an additional display mode on an HD broadcast when you press the "Enter" button. Right now there are two displays, a large font one displaying data for the current channel and another smaller font display for the multicast channel information. I'd want to see a third display, for title, artist and album.

Hopefully Best Buy will be getting more inventory soon. I would recommend buying this radio and experiencing HD. [When RW checked in mid-August, the unit was backordered and due to ship again in early to mid-September.]

For those in radio, it's a great portable unit to monitor PAD and RDS data and your HD stations. But for listeners, it gives them a great way to experience HD Radio. Radio stations should be buying these in bulk and giving them away as prizes to promote HD. We're at a price point where that's possible.

If you decide to buy one, I would recommend buying it using the Best Buy Web site for in-store pickup. This will assure you that they have it on hand, and that you don't go to a store and leave empty-handed.

The only thing left to do? Make sure you're offering compelling programming on your HD2 stations, your PAD data is correct and your audio levels set properly and time-aligned. I think the industry should continue to pursue increasing the HD power level to help building penetration. That's something that's beyond the NS-HD01's ability to overcome. However, if you're in an area with strong FM signals, you'll love the NS-HD01, and you might be surprised at what it can do.

Alan Jurison is a regional IT manager/broadcast engineer for Citadel Broadcasting in Syracuse, N.Y. He holds several SBE certifications, including CSRE, AMD, DRB and CBNT.

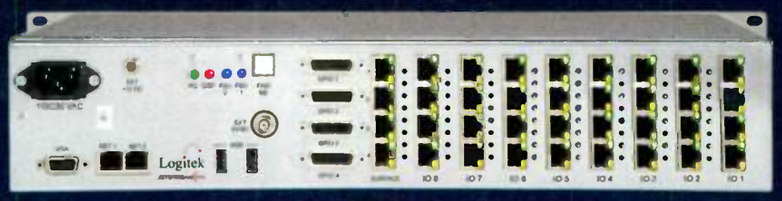
World Radio History

Don't let the **hole** in your budget hold you back...

Reduced equipment budgets don't have to mean the end of your IP Audio projects this year. Logitek's JetStream Mini gives you the flexibility you need for audio routing, distribution and mixing – for about a third of the price you've come to expect. Everything you need is provided in one user-configurable 64-channel node, and we offer the latest networking protocols to make your implementation fast and easy

COOL STUFF AWARD
Radio World
2009

JETSTREAM MINI



Call us at 800.231.5870 or check out JetStream IP Audio routing solutions at logitekaudio.com today!

Logitek
Console Router Systems

©2009 Logitek Electronic Systems, Inc.

World Radio History

Bees Help Solve Transmitter Problem

Also, Learning From the Expensive Mistakes Already Made by Others

Tom Ray is a vice president and the corporate director of engineering for Buckley Radio, based at WOR in New York City. Recently, Tom traveled to the Buckley Hartford stations, where he and Chief Engineer Scott Baron discovered some interesting helpers: Bees.

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

The station in Torrington, Conn., WSNG, seemed to be having problems whenever it got hot outside. Parameters for Tower 1 of the three-tower DA would go nuts and the transmitter would refuse to run at 1 kW. After a while, things would return to normal.

At the site, the duo inspected the tower feed point and looked up at the guy wires, part of which form a capacitive top hat. All looked good.

Inside the ATU doghouse, Tom studied the tuning network, looking for anything — an overheated coil clip, a carbon trace on a coil from a lightning strike, a mica capacitor just starting to ooze — but found nothing obvious.

It was then that Scott discovered the bees' nest right at the top of the door, seen in Fig. 1, as well as a couple of rather annoyed-looking bees studying them both.

Scott and Tom had brought sticks to poke at the tuning network components; Scott used his to take a swing at the nest. This caused to door to fly open further.

As you can see from Fig. 2, the transmission line runs into the building right on the side of the door hinges. As the door moved, it hit the transmission line, and the transmitter popped off the air.

Fig. 1: This bees' nest on a doghouse door helped two engineers diagnose a DA problem.

After Scott turned the transmitter back on, Tom started trying to flex the transmission line to get the problem to recur. Nothing, until he gave the line a kick. The transmitter popped off the air again.

Scott noted that the transmission line moved near the connection point when Tom kicked the line outside the doghouse. Scott put his ear near the line, being cautious of the tuning network components. Tom kicked the transmission line again. Scott heard a faint "pop" and the transmitter dropped off. (There is only about 150 Watts in this tower, not much to listen for.)

Now, inspecting the connection to the J plug, they didn't like what they saw, so it was off to Home Depot. When they returned, they signed the station off and disconnected the transmission line from the J plug.

The transmission line is Times cable from the early 1960s. The jacket says RG-213U, but the cable is easily 5/8 inch in diameter. As he removed the cable, Tom noticed there was no center insulator showing. As a matter of fact, he had to trim back almost 4 inches of jacket before he could feel the insulator between the braided shield and center conductor.

Basically, the center conductor was passing through 4 inches of nothing between it and the braid. When the cable moved, the center conductor would contact the braid and — "pop!" — off the transmitter would go.

Tom and Scott deduced that it was wind, not the heat, that was moving the cable, causing the momentary short. The

(continued on page 14)

Fig. 2: When the door swung open, it shook the transmission line.

NEW! REV 2 FIRMWARE

A Box for all Seasons!

An all-digital Stereo "Utility Processor" for leveling and peak control

Inovonics' 261 is a low-cost option to fill your everyday processing needs. It features gated, gain-riding AGC, platform-based average level compression, tight 'look-ahead' peak control and independent pre-emphasis-protection limiting. Processing functions may be called up independently or combined into a comprehensive leveling system.

The 261 can tame a mic channel, normalize levels between music and voice tracks, protect an STL, and give yeoman's service as a standalone LPFM processor. Basic processing parameters are adjustable through quick and easy menu-driven setup, yet not to an extent that will ever get you into trouble. The 261 just can't be made to sound bad.

The 261 accepts analog or digital inputs, and both analog and digital outputs are available simultaneously. Its straightforward DSP design uses processing algorithms that are sonically colorless. Front-panel alarms and rear-panel tallies give warnings of dead-air and out-of-limits operation, and firmware updates are easily installed in the field.

www.inovon.com

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

World Radio History

EASY

So easy to set up, anyone can do it in just a few minutes

AGILE

Built to withstand the rigors of onsite obstacles with unmatched stability

ANYWHERE

Broadcast anywhere with the intuitively designed Zephyr/IP Mixer

Locks In Your IP Connection Where Others Fail

Engineered to use public IP networks and mobile phone data services, the Z/IP Mixer combines the excellent performance of the original Zephyr/IP with the convenience of a digital four-channel stereo mixer. Designed to deliver high-quality audio transmission with low delay, even over less than perfect networks. Enclosed in a road-ready portable chassis, built to go wherever the action is.

Z/IPMIXER: Lock it in.

Telos

AUDIO | NETWORKS

Telos-Systems.com

Telos and Zephyr are registered trademarks of TLS Corp. ©2009. All Rights Reserved.

Radio Never Sleeps. Neither do we. We're here for you, anytime, with free round-the-clock, 24/7 technical support. Call +1-216-622-0247.

World Radio History

Vantrix: Multimedia Content to Any Device

Supply Side is a series of interviews with suppliers of products and services.

Privately owned Vantrix is headquartered in Montreal with offices in London, Beijing and Dubai. This e-mail interview is with Patrick Lopez, chief marketing officer of the company.

SUPPLYSIDE

***RW:** What is Vantrix?*

Lopez: Vantrix is an industry-leading provider of content adaptation and optimization solutions for converged wireless, broadband and cable networks. Vantrix offers a comprehensive suite of solutions that deliver any multimedia content to any device, focusing on the best possible user experience to drive consumer adoption of premium services like MMS, mobile TV, user-generated content and video on demand.

***RW:** What is the company's business model?*

Lopez: Seventy-five percent of our sales are conducted through our worldwide channel partners, including Ericsson, NSN and Huawei. Our direct sales force makes up the remaining 25 percent of annual sales. We are increasingly deploying our solutions in converged networks, bridging the gap between cable, Internet, broadband and wireless, providing a cohesive user experience on rich multimedia content and services.

Our expertise is in media processing. We can ingest media from any source (Internet, wireless user-generated content, analog and digital TV), in any format (richest codec portfolio on the market) for any destination (TV/set-top box, PC, wireless devices) on any channel (TV, radio, browsing, download, messaging, streaming).

Our business model is an infrastructure sale with one-time setup fee and traffic-based licensing.

Patrick Lopez

***RW:** What radio broadcast clients do you have?*

Lopez: We do have radio broadcast clients, among them some very recognizable names. Some other customers include Thumbplay, Motricity, SendMe and EMT-Estonia, along with some of the world's top-tier telecom companies.

***RW:** Why is what you do important for a U.S. radio station manager?*

Lopez: Radio play, advertising and mobile TV as standalone business models are not ready for profitability. Being able to create an ecosystem for the ingestion, optimization, management and delivery of multimedia content is key to service success.

Our solutions offer the listener, or end user, the ability to have the best user and listening experience possible on any device anywhere. Radio station managers should be aware that even though they might create great programming, the experience of the listener is not only about the programming, but about the delivery method and the technology behind it.

***RW:** How well has radio responded to the challenges of streaming across multiple screens and wireless devices?*

Lopez: Steps are being taken to move forward in the radio industry, but as with mobile TV or video on demand, radio programs and streaming radio need to go the next level.

User experience is crucial, so it is mandatory to deliver the most consistent stream of sound and video for each

(continued on page 18)

WORKBENCH

(continued from page 12)

fix was straightforward and can be seen in Fig. 3. They trimmed things back and reconnected, and all has been well.

Not imagining how that insulation could have been trimmed back so far without damaging the braid, which was undisturbed, Tom figures it just shrunk after 40+ years.

And if it weren't for the bees, who knows how long it would have taken to diagnose the problem?

Tom Ray, W2TRR, can be reached at *tomray@hvc.rr.com*.

Fig. 3: The repair to the transmission line ensured no more shorting.

Have you bookmarked *www.fcc.gov/eb*? The information on the Enforcement Bureau's home page is interesting, useful and sometimes entertaining.

Under "Broadcast Complaints" selected from the index at the left, you'll find Public File Requirements as well as information on EAS and Antenna Structure Registration. Further down the selection column is Field Issued Citations, NALs (Notices of Apparent Liability) and NOVs (Notices of Violation).

In addition to providing interesting reading, this part of the site can give you a good idea of possible sources of liability and fines around your own station.

The site is replete with notices to pirates (unlicensed broadcasters), land mobile violations and issues with other non-broadcast services. Looking at the quantity of notices, one sees how busy the FCC field offices are.

Among the broadcast actions — keep in mind you have to dig for these — was a station that was using a 3-foot-high plastic "snow" fence as security around the base of its hot AM tower!

You'll read about other broadcast problems such as inoperable EAS equipment (no power supply connected); no designated chief operator; failure to post the antenna registration number; failure to review, sign and date station logs; and leaving tower fence gates unlocked.

All simple stuff; but the notices are a stark reminder that you must keep your site maintained properly.

An idea: Print one of these every week or so and drop it on the manager's desk. It will help your manager know you are aware of what's going on and reinforce to the manager that you have legitimate work to do at the transmitter site. Especially in this economy, reminding your employer of your value — and what could happen if you aren't around — makes sense.

Thanks to Bruce Blanchard, chief engineer at WSCL/Salisbury University, Salisbury, Md., for sharing the site information. Bruce can be reached at *bdblanchard@salisbury.edu*.

Mark Hoenecke handles engineering for Wisconsin Public Radio stations WHRM (FM) and WLBL(AM-FM) in Wausau, Wis. Mark read the July 15 *Workbench* item about using the footage indications printed on wire to measure how much wire is left in a box or on a spool.

Mark remembered what he used to do some 20 years ago when he needed to keep track of partially used reels and boxes of wire. Back then the wire did not have foot markings on the jacket so they weighed each new box or reel of wire and wrote the weight on it.

By using the proportion of new product weight to the packaged footage (they used mostly 500- or 1,000-foot spools), any remaining quantity could be weighed and the footage calculated. He found this trick to be accurate enough for figuring whether the spool contained enough wire to do a job. The weight of the box or reel was negligible.

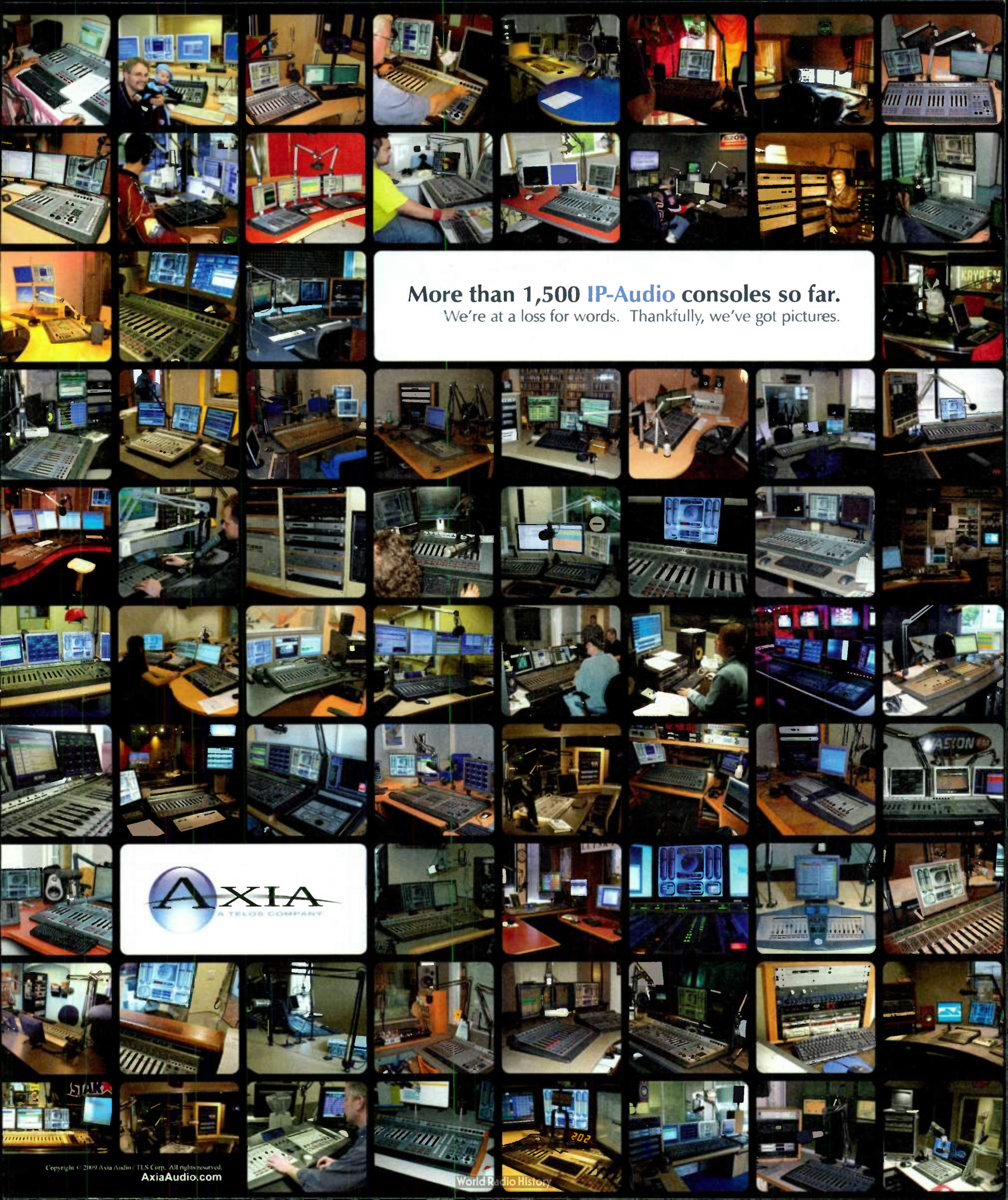
Of course, nowadays just about every kind of wire and cable has footage markings on the jacket, and that makes life a lot easier.

Thanks, Mark, for reminding readers how it used to be done, and giving a suggestion if a jacket isn't marked in feet. Mark Hoenecke can be reached at *mark.hoenecke@ecb.org*.

John Bisset has worked as a chief engineer and contract engineer for 39 years. He is international sales manager for Europe and Southern Africa for Nautel and a past recipient of SBE's Educator of the Year Award. Reach him at johnbisset@myfairpoint.net. *Faxed submissions can be sent to (603) 472-4944.*

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

World Radio History


More than 1,500 IP-Audio consoles so far.
We're at a loss for words. Thankfully, we've got pictures.
AXIA
A TELOS COMPANY
Copyright © 2009 Axia Audio / TLS Corp. All rights reserved.
AxiaAudio.com
World Radio History

PowerStation: the new console system from Axia.

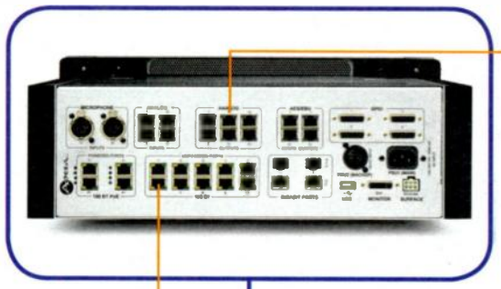
Because there's no such thing as too much uptime.

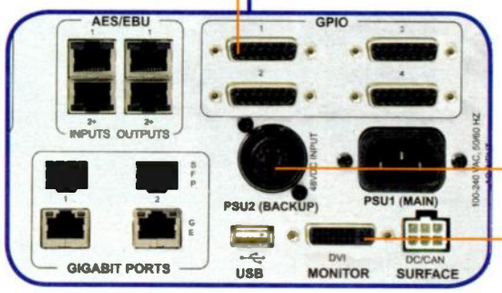
All stops removed • Twenty years from now, you'll have forgotten this ad. But you'll still have your PowerStation, the full-featured one-box IP-Audio console/router system hardened with **industrial-grade components** and redundant power capabilities. Tough enough to take a football to the groin and keep on going. PowerStation **minimizes setup** and **maximizes "bang for the buck."** Engineered without compromise for broadcasting without interruption.

Easy as π • PowerStation combines a console DSP engine with audio and logic and a network switch, **all in one box.** As its name implies, there's a whole lot o' muscle inside that burly frame, but that doesn't mean it's complicated. In fact, setting up PowerStation **couldn't be easier:** connect your studio gear with standard CAT-5 cables, connect your console with just one cable, name your sources and set preferences with a browser, and you're ready to rock. PowerStation makes building studios about 3.14 times easier than ever.

GPI Oh! • **GPIO ports are built in** to PowerStation — no breakout boxes or add-on converters needed. One day, you might not even *need* logic ports: more and more products from companies like 25-Seven Systems, Audio Science, ENCO, Google Radio Automation, International Datacasting, Omnia Audio, Radio Systems and Telos (to name just a few) use the Livewire™ standard to send their audio and logic control directly to Axia networks over a **single CAT-5 connection.**

Everything's included • Yeah, we said *everything*: PowerStation combines half-a-dozen essential tools into one compact unit. No hidden extras to buy, no "gotchas" after purchase. Inside that muscular chassis you'll find a **bulletproof mixing engine** capable of handling consoles up to 40 faders, a beefy power supply (with optional **redundant power**), machine control ports, and **audio I/O**, all in one box. And of course, since it's from Axia, the IP-Audio experts, a studio built with PowerStation can stand alone — or it can become a part of a large network quite easily. Thanks to **PowerStation Simple Networking,** you can daisy-chain up to 4 PowerStations directly for easy multi-studio installation without the need for a separate core switch. Just another way Axia makes IP-Audio easy.





You're covered • Axia has the most comprehensive warranty in the industry — **5 years parts and service.** And (not that you'll need it), **free 24/7 technical support,** 365-days-a-year. We've got your back, my friend.

E-I-E I/O • Finding space in the equipment racks is like living in a barnyard: too many chickens, never enough coops. So our team of obsessive designers fit **an entire studio's worth of inputs, outputs, logic and network connections** – plus an advanced DSP mixing engine and a massive console power supply – into just 4 RU. There's inputs for 2 mics, 4 analog inputs and 2 AES/EBU inputs, with 6 analog and 2 AES outputs. 4 GPI/O logic ports round things out. Want even more? Just connect the PowerStation Aux to instantly *double* the I/O — or plug some Axia Audio Nodes into its **built-in Ethernet switch.**

Fan free • PowerStation is **silent and fanless.** Because studios today are already full of PCs, laptops and playout servers clicking, whirring and generating heat — who needs more of that? Not only is there no in-studio noise with PowerStation, those **big extruded heat sinks** are just plain cool. No pun intended (or maybe it was. We're like that, you know).

Built like a tank • Remember when consoles were built to last? We do. At Axia, we're all about the long haul. **There are no compromises:** PowerStation uses only best-of-the-best components. Like studio-grade Mic preamps and A/D converters. A rigid, steel-framed, EM-tight chassis that shrugs off RF like Walter Payton brushing off tackles. An industrial CPU designed for high reliability in harsh environments. Beefy extruded heat sinks. Big, brawny handles to make rack-mounting easy. (And it looks cool, too.)

Redundant power redundancy • The power supply is the heart of any broadcast equipment, right? That's why PowerStation is **hardened against failure** with a **super-duty power supply** that sports enough amps to power an arc welder. And for those of you who like to wear a belt *and* suspenders, there's even a connection for **redundant auxiliary backup power** – with automatic switchover, naturally – that kicks in if it's ever needed.

Screen play • Yep, that's a DVI connector. **Your favorite monitor** – standard or widescreen – plugs in to present the console operator with Axia's "so easy an overnight jock could do it" **info-center display.** Meters, timers, fader assignments, mix-minus settings and more, all on-screen, on-demand.

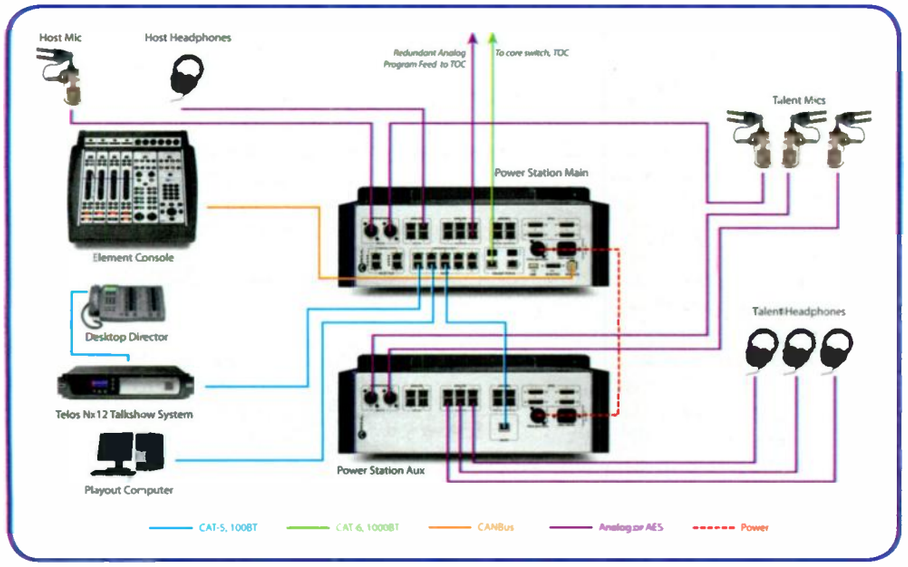
World Radio History

Element shown in Silver/Charcoal color scheme. Also available: Bronze/Charcoal and Warm Gray

Element 2.0 • With more than 1,000 consoles already on the air, Element is a huge hit. And now, thanks to suggestions from our clients, it's better than ever. Element 2.0 has cool features like Omnia™ **headphone processing** presets to give talent that "air sound", **super-accurate metering** with both peak and average displays, **one-touch phone recording** with automatic split-channel feed, **automatic mix-minus** for every fader, an eight-channel **Virtual Mixer** that lets you combine multiple audio streams and control them with a single fader, and metallic bronze or silver module overlays. And we haven't even begun to tell you about Element's **Show Profiles** that instantly recall talent's favorite settings, its **built-in Telco controls**, fully-integrated **talkback/IFB** and **Mic processing** by Omnia. And durable? Element is nearly indestructible, ready to take whatever pounding ham-fisted jocks dish out and keep going. You want examples? Element's **avionics-grade switches** are rated for more than two million operations. What look like ordinary rotary controls are, in reality, **bullet-proof optical encoders** — no wipers to wear out or get noisy. The silky-smooth **conductive-plastic faders** actuate from the side, not the top, so dirt and grunge stay out. The **high-impact Lexan** module overlays have their color and printing applied on the back, where it **can't wear or chip off**. The frame is made from **thick aluminum extrusions** that are stronger than truck-stop coffee. To find out even more about Element, visit **AxiaAudio.com/Element/**. Grab some coffee and prep for a good, long read — remember, our marketers get paid by the word.

Come together, right now • Now that you know what you can do with PowerStation, let's build a studio. The diagram below shows how a typical Talk Studio might look. Mics and headphone feeds plug into the built-in Mic inputs and Analog outputs... your playout PC, using the **Axia IP-Audio Driver** for Windows®, connects to a built-in Ethernet port... and so does the Telos Nx12 Talkshow System (which sends 12 lines of caller audio, mix-minus and take/drop/next commands over **one skinny CAT-5 cable**). Send a **backup audio feed** to your TOC for extra peace of mind. And after all that, there's still plenty of I/O left to plug in the turntables for the Saturday night Oldies show.

The standalone network • You want your console to be more than just reliable — you want it **built like a battleship.** You want the absolute peace of mind that comes from knowing your gear will **never let you down.** And if you take one studio down for maintenance, you want the rest to be completely unaffected. So we designed PowerStation to be the world's **first networked broadcast console that doesn't *need* a network.** It's completely self-contained: sure, it plays nice with others, but unplug its network cable and it keeps right on truckin'. Build just one studio, or a dozen, at any pace you choose — your PowerStation network is ready to expand when you are.



AXIA
A TELOS COMPANY

AxiaAudio.com

© 2009 TLS Corp. Axia, Element, PowerStation, Telos, Omnia TM TLS Corp.

World Radio History

The Problem Isn't Demand, It's Bandwidth

The Greatest Appeal of Internet Radio Remains Its Most Fundamental Obstacle

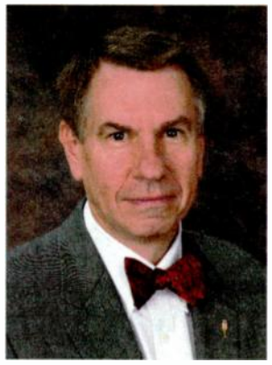
BY FRANK MCCOY

In the 1970s, as cable television took root in metropolitan areas, I was working for ABC-TV. It had just dropped a significant chunk of change to build a new transmitter facility on the Sears Tower in Chicago, replacing the old Marina Towers site.

TALKINGTECH

Even then, there was talk of the time when cable would make over-the-air TV obsolete. We speculated as to how many remaining viewers it took to justify the rent, upkeep, electricity and salaries for the site we were working to complete. Meanwhile, my friends in radio engineering simply said, "I'll worry when they wire the beach for cable."

To many who report on media and analyze the stocks of media companies, wireless Internet in all its forms is looking a lot like they've finally wired the beach — and this beach has video, audio, games, text, phone calls and more.



Frank McCoy

There are dire predictions that radio's best days have come and gone. Who can blame the pundit who sees only a simple consumer choice between listening to what some radio program director predicts that I (and 20,000 other people) want to hear, and choosing for myself exactly what I want when I want it?

As if to underscore this inescapable radio-is-obsolete reality, the radio sector's digital revenues are actually growing while overall sales results shrink.

Should we all be concerned that the days of the 1,000-foot tower are gone and that anyone with a computer and an Internet connection is a possible new competitor? Will radio as we know it become just another feature of cell phones? Will in-car Internet give commuters millions of station choices?

The answer is no.

HIGHWAY NARROWS AHEAD

The problem for such platforms isn't consumer demand. It's bandwidth.

Radio works efficiently by delivering the same content to all listeners at the same time. For each additional listener, there is no incremental additional overhead on the transmission side.

If I turn on my radio, the station I'm listening to doesn't have to add even one extra watt to accommodate me. Not so with our current scheme of Internet protocol (IP) delivery. On the Internet, every consumer of content requires a separate connection to the provider. It's a bit like a freeway where no two cars can occupy the same lane. Fifty morning commuters on their way to work require a 50-lane highway to get there.

It turns out that our information superhighway — the one that is going to eat radio's lunch — is really a very narrow road.

To see what I mean, let's look at the technologies that now define streaming audio across the Internet.

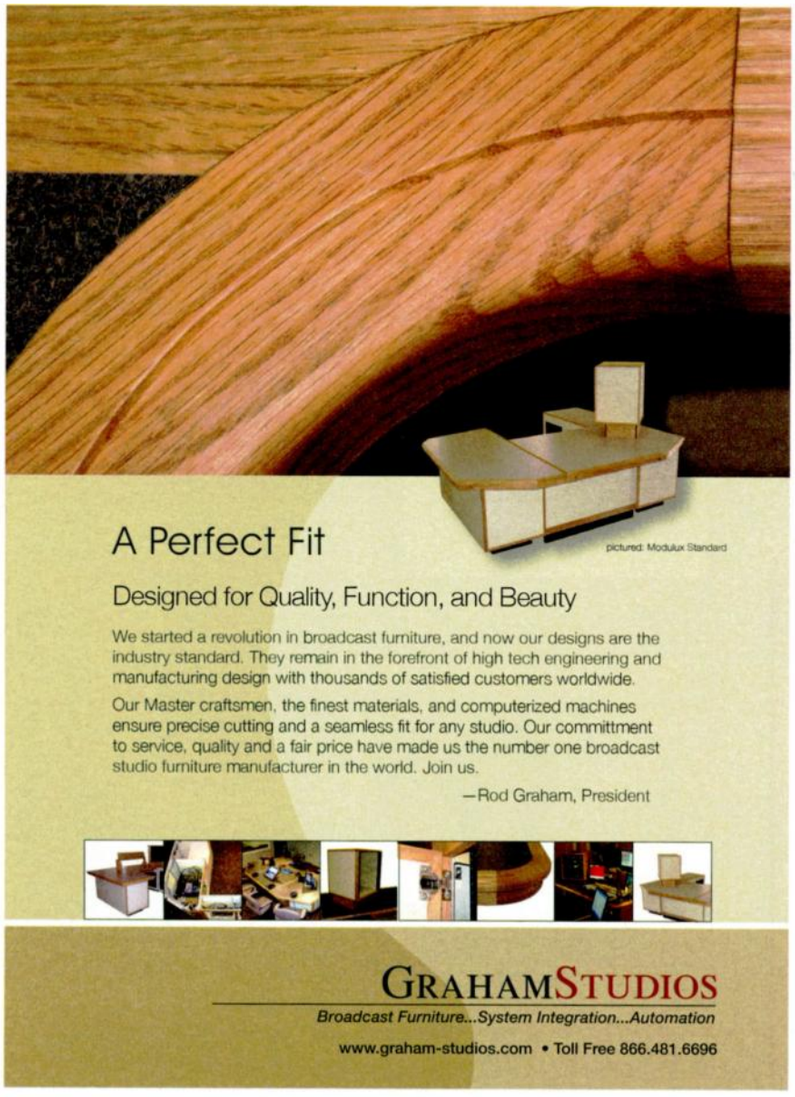
Perceptual coding data reduction has advanced remarkably in the past two decades but the rate of progress has flattened considerably. There's not much more magic smoke in that pipe.

Right now a 48 kilobit per second stream (Fraunhofer AAC+, for example) can deliver acceptable fidelity stereo audio. Further dramatic improvements, even a reduction to 24 kbps, seem unlikely without sacrificing audio quality to a degree that would inhibit listener adoption. We'll use 48 kbps as our benchmark.

Now, let's say you run the IT department for a company that employs 2,000 people at 60 separate sites around the country.

Presuming everyone is listening to Internet radio at 48 kbps, that's an aggregate bandwidth of 96 Mbps, equivalent to more than a T-1 at each site — just for employee entertainment.

This has already come up on the corporate radar, with Cisco, Juniper and others offering products to analyze data use by employees. A neighbor of mine is responsible for the agent services network for a major insurance company.



VANTRIX

(continued from page 14)

device and network variation. It is possible for radio and radio programming to stream across the three screens just like any other multimedia, such as video and user-generated content. But the only way to profitably introduce these new services is on a modular platform that is able to help with management of the bandwidth necessary for the rollout of the radio stream. Plus, partnering with network providers can ensure delivery of a seamless experience.

RW: *Why is streaming radio to mobile devices and across PC and cable "harder than it sounds," as one of your spokespeople told us?*

Lopez: Streaming radio faces similar challenges as video. There is a lot of fragmentation in the industry, including access network technology, network variations, device type, native codecs, media formats, operating system and network speeds. The only challenge that may not affect radio as much as video is the device screen resolution, but regardless there is fragmentation in audio output due to handset diversity.

RW: *What is Vantrix's value-add to users over a straight iPhone's (or other platform's) radio app? Is it a broader menu of content — with UGC, TV, etc. — than, say, Radiolicious or iheartradio? Or is there a technical improvement?*

Lopez: Vantrix value-add is Vantrix Media Streamer, which is a high-performance streaming engine with packet replication for unicast (one feed in, one feed out) and broadcast scenarios (one feed in, many feeds out). It can ingest 3GPP-compliant multi-rate files and dynamically switch between statically provisioned stream rates in the media file.

RW: *How and what do you deliver as radio services? Are these "pushed" services in which a user selects from a list? If so, are these your own or exclusive "radio" streams; or are they set up by deals with specific stations/providers (pay to play)? Or can any station opt in*

World Radio History

His biggest bandwidth headache right now is YouTube. He's about to switch it off across all his networks. Distractions from work that cost the firm money? They're not long for this world. Businesses don't pay employees to watch funny video clips. Bring a radio to work if you want music.

io as we know it become just another feature
hones? Will in-car Internet give commuters
of station choices?

IN-CAR

But what about the holy grail of radio, the automobile?

We've all seen Bluetooth handsets that pair with car audio systems. These provide reliable audio streaming to car audiences. Ford and Microsoft teamed up to create Sync — essentially a PC in your dashboard. It streams nicely, too. Chrysler and others are offering a Wi-Fi (802.11x) access point that covers your car interior. All these require data connectivity from a cellular provider, offered as a flat-rate data plan (though these are rapidly disappearing) and available wherever the cellular provider has data coverage. In metropolitan areas this usually means everywhere.

From our earlier office example, we know 2,000 listeners will consume 96 Mbps of data. What about 25,000, which is about the AQH for a successful Chicago FM station? Or for the top 10 Chicago stations? The arithmetic is pretty simple: 250,000 listeners will consume 12 Gbps.

Shannon's Law sets an upper bound on how many bits can be stuffed into a given RF bandwidth. Technologically we're up against the practical limit, with peak performance of 3.7 bits per second per Hertz. But this is a "gross" number. Doppler errors, noise and all manner of other perils drive the reliable throughput down sharply for real-world mobile data delivery. Various solutions to improve reliability are required.

As an example, HD Radio uses a set of OFDM subcarriers in about 200 kHz of total sideband space. According to the Shannon rule this should yield almost 750 kbps but in reality it doesn't.

(continued on page 20)

for free?

Lopez: Our services are neither pushed to the end user nor pulled. We ingest content for network operators and optimize the content for viewing and listening. The end user benefits from our technology from a listening and viewing standpoint.

Vantrix Media Broadcaster enables rich multimedia services such as video on demand, mobile and Web TV and radio, advanced video telephony, user-generated content, video share and many other services in mobile, broadband and cable networks.

Video and audio are delivered optimally regardless of the access network technology, device type, screen size and resolution, native codecs, media formats, operating system and network speeds. Operators can now roll out premium and advertising-supported mobile video and audio services that take full advantage of high-speed networks, accelerating return on investment on their infrastructure cap-ex and diversifying their revenue streams.

Information about the company can be found at www.vantrix.com.

World Radio History

THROUGHPUT

(continued from page 19)

First, the OFDM carriers are duplicated in the upper and lower sidebands. This forfeits half the throughput but adds significantly to mobile reliability by largely overcoming multipath. After data duplication, framing and other overhead have taken their bites, we're down to a net capacity of less than 200 kbps. These same basic ratios apply to WiMax, 3G, 4G, NG, OhG, GWhiz (OK, I made up those last three) and all the rest where streaming is involved.

It's worth noting that the Internet also requires duplex communication, something that HD Radio doesn't have to waste spectrum on. Duplex allows for re-sends, though, so maybe the statistical advantage swings that way slightly. Some forward delivery robustness can be sacrificed if you can try again as needed. But those re-sends consume bandwidth, too. And the tall-tower world of FM requires no intercell handoffs.

CASE STUDY

A geography example will help to illustrate the dilemma.

In Chicago, the Kennedy Expressway is 17.8 miles long, running northwest and southeast from the city center to O'Hare Airport. From eight to 20 lanes wide, the Kennedy sees peak daily commuter traffic of 387,000 vehicles.

Let's also assume that half that traffic occurs during morning and evening rush and average transit times during rush hour are 40 minutes. Let's assume three-quarters of the cars are streaming during their commute. We need to serve 16,125 cars, spread over a 17.8 mile linear distance. The throughput must be 774 Mbps net of all transmission and connection management overhead. This means we'll need a Gigabit-per-second gross.

Let's also assume that we have access to the entire spectrum in the former UHF TV Channels 51–73 that the feds have recently auctioned off, a total of 138 MHz.

Using Shannon's Law and the approximate bandwidth-to-data-throughput ratio we see for HDFM, we can deliver about 136 Mbps. Logically, we'd reuse frequencies along the cellular model, and our delivery capacity into any given cell is 1/4 that amount or about 34 Mbps. To cover the 17.8 miles and deliver 9.3 Gbps from cells with 34 Mbps capacity apiece requires 30 cell sites or one about every half mile. This doesn't seem so daunting an infrastructure challenge.

But this model assumes our cars are uniformly distributed on the expressway. Anyone who has ever been stuck in a gaper's block jam-up knows that isn't a realistic assumption. Inbound and outbound traffic concentrates at the ends of the expressway.

Most probably the capacity would need to be doubled, at minimum, for reliable throughput. For the cellular model that means twice as many cell sites. That's a cell site every 1,500 feet or so. Otherwise our commuters will experience buffering, dropouts, etc. and they'll just turn on the radio. Back-of-the-envelope, this probably represents about a fivefold or more increase in the number of cell sites in most metropolitan areas.

And the earlier assumption that we'd have access to the entire Channel 51–73 vacated spectrum is unrealistic, too. With multiple carriers all controlling discrete segments of spectrum, the uniformity of customer penetration across multiple cellular carriers will play into the reliability issue, too. If an outdoor ad on the Kennedy causes a thousand commuters to buy an iPhone, those subscribers may discover that AT&T's cell infrastructure is suddenly insufficient. Google Maps and YouTube already are taxing the capabilities of existing data plans and delivery infrastructure. Unlimited data plans are disappearing quickly from the market in response to the stresses.

In short, the greatest appeal of Internet radio remains its most fundamental problem: the requirement that every user have a separate, custom-per-user data stream.

As long as this requirement remains, over-the-air radio need not be concerned about meaningful encroachment from the Internet. The only practical solution is for our data consumers to share content — essentially a multicast broadcast where many users capture the same transmitted packets at the same time. But this means they'll listen to the same thing at the same time, which is what radio already does with much greater reliability and at far lower cost to the user.

Eventually the press-release-driven media may figure this out. So far they've been spoon-fed demos using one smartphone streaming one source. Hey, why not hold our own demonstration at the next NAB Show? Everybody should start streaming your own station during lunch, then invite the press to check out the results. I predict a wireless data train wreck.

The author is former president of engineering for American Media Services, a radio brokerage and developmental engineering firm. His e-mail is fmc@ieee.org.

Comment on this or any story. Write to radioworld@nbmedia.com.

MARKETPLACE

THIS ICE*MEISTER CAN DEFROST ITSELF

Here's an industrial ice sensor that defrosts itself. That's likely to appeal to owners and users of broadcast structures as well as other critical facilities.

New Avionics Corp. said the Ice*Meister Model 9734-HTR Self Defrosting Industrial Ice Detecting Sensor System also can be used on Webcams and walkways, weather stations, blimps and other remote, inaccessible facilities.

The system allows a controlling host to respond to the earliest formation of ice and take remedial action in real time. Ice sensitivity is adjustable to <0.001 inch. Pulsing 1.2 A at 24 VDC, the radiant heater heats the sensor probe and melts ice. Gravity removes the ice melt.

A resistance heater and thermal switch are affixed to each heater panel inside the solid sensor head. Insulating epoxy potting compound assures radiant heat for the optical sensor probe. Temperatures of the aluminum heater panels are limited to 50 degrees C for personnel safety.

Heater control can be set for the least ice threshold or least energy consumption. While operating, the system allows the host ice-control system to cycle back and forth across the threshold of ice formation.

The system consists of an optical sensor head with radiant heater option; two shielded cables that connect the sensor head to a companion Model 9733 Universal User Interface; and the interface itself, housed in a DIN rail box with screw terminals.

Retail price is $2,995.

For information contact the company in Florida at (954) 568-1991 or visit www.newavionics.com.

AM/FM EMERGENCY RADIO INCLUDES HAM BAND

C. Crane Co. is offering an AM/FM radio that also provides access to the 2-meter ham band.

"During an emergency, 2-meter ham works when other communication is out, but not everyone can access that information," the company states.

"With the CCRadio-2, anyone can now tune in vital updates from first responders and local authorities, and get critical news that can save their lives. It is a great resource that is missing in other emergency radios."

Retail price is $159.95. The unit is sold by the company and its authorized resellers.

A twin-coil ferrite AM antenna in the radio helps receive the strongest AM reception possible on a portable AM/FM radio, the company says.

President Bob Crane says ham operations "typically provide 90 percent of the emergency coordination after a disaster like Katrina or 9/11. That's why we designed the CCRadio-2 to work like a simple radio scanner on the 2-meter ham band." In an emergency the user can scan the five memories for ham operator communications.

For information contact the company in California at (800) 522-8863 or visit www.ccrane.com.

World Radio History

The Dial and Beyond

Profit from what's now — and what's next.

NAB Radio Show® Engineering Program

This year's three-day Engineering Program focuses on:

- planning, building and maintaining an IP-based radio facility
- operating under emergency conditions
- computerized antenna modeling
- preventing tower failures
- datacasting opportunities and much more!

Sessions are presented in workshop format with time for Q&A and interaction with experts and peers. The relaxed atmosphere of the NAB Radio Show means you always have plenty of time to network. Enjoy lunch and refreshments on the show floor while learning about exhibitor's latest products.

Attending the NAB Radio Show is an excellent way for busy radio engineers like you to advance your technical expertise, enabling you to maintain your edge in an increasingly competitive business.

Join the revolution. Register at www.nabradioshow.com

NAB RADIO SHOW®

September 23–25, 2009
Pennsylvania Convention Center, Philadelphia
www.nabradioshow.com

Add to the conversation on Twitter at #radiorevolution!

World Radio History

Tricky Internet Radio Is Worth the Effort

Logitech's Squeezebox Boom Is an 'All-in-One Network Music Player'

BY JAMES CARELESS

If Internet radios were cars, Logitech's Squeezebox Boom would be a Mercedes-Benz sedan. It's black, long and discreetly powerful-looking, with a

INTERNETRADIO

glossy plastic case, metal-grilled stereo speakers, a large vacuum fluorescent display that's easy to read, and centrally-located tuning wheel that controls scrolling through menus, track lists, genres and playlists.

As for sound quality? Thanks to the Squeezebox Boom's 30 watt digital amplifier, 3/4-inch soft-dome tweeters and 3-inch long-throw woofers, this Internet radio sounds superb.

In fact, the only unit that outdoes it, audio-wise, is Tivoli Audio's Networks Internet radio. However, the Networks (with outboard stereo speaker) costs $699.99. In comparison, the Logitech Squeezebox Boom costs $299.99 with both speakers built in. You do the math.

NITTY-GRITTY

The Squeezebox Boom is an Internet-only receiver; no FM radio included. However, with its ability to surf to Web sites operated by XM Sirius (pay), plus access thousands of broadcast and Web stations through services such as Pandora (free), Last.fm (free), Slacker (free) and Rhapsody (pay), users might not miss FM.

The Boom comes with a sophisticated remote control that sits nicely in a magnetized pocket on top of the radio when not in use. Such is its functionality that you'll soon find yourself relying on this remote entirely for surfing through stations. To date, this radio has the best remote system I've tried. The Squeezebox Boom also can access music files from a LAN-connected PC/server. Interestingly, the Boom does this not directly but by going through two separate applications: Squeezebox Network and SqueezeCenter.

SqueezeNetwork (*www.squeezenetwork.com*) is Logitech's own Internet radio site, through which the radio accesses Web-based stations via a connected Ethernet cable or its WiFi connection. The site is useful, allowing you to select your own preferred Internet stations via computer for easy tuning on the Boom later on.

SqueezeCenter is a software application for PC or Mac. That allows the Boom to access your music collection via its LAN connection. Note: Logitech has designed its system to support numerous Squeezeboxes running on the same LAN, playing either different audio streams/MP3 or the same one simultaneously.

Some important details: The Boom comes with a line-in port on the back for inputting MP3 players (I fed in audio from an old amplified LP turntable), and an output jack that can be connected to a headset

or outboard subwoofer. Its remote not only accesses streaming audio, but lets you control playback for MP3s using functions such as play, pause, rewind and fast forward. The Boom has clock radio controls as well, allowing you to wake up to KING(FM) Seattle's audio stream (which I do) via the Web if you wish.

THE USER EXPERIENCE

The Squeezebox Boom is quick to set up and enroll on a secured WiFi network, thanks to the intelligent design of its user interface. In plain English, you don't have to scroll through the entire alphabet to get from one password character to another; the Boom offers shortcuts that save time and aggravation.

Like other Internet radios, the Boom uses the "drill-down" method of selection, where you start at the top in a very general category and click your way down to the genre and station you want. The process is made easier to bear thanks to the radio's inclusion of staff-recommended stations in many genres, eliminating the need to click through a hundred stations before you find one you like.

In terms of actual surfing, the Boom's remote control makes zipping back and forth through menus very fast; in fact, sometimes too fast.

If you're not paying close attention to what you are doing — like me — you can drill down too far by pushing a selection button too many times. If you then try to back out too quickly, you can get confused by menus flashing by on the VFD. At least I can. And I did, many times: In terms of user friendly-tuning, I found the Boom one of the most tricky units I've tested to date.

I also wish that the big knob in the center of the radio controlled the volume, which it doesn't. This deficiency is nothing new to Internet radios as a whole; others such as the Sangean WR-1 also give you a big central knob that controls menus, while the sought-after volume controls are located elsewhere. I appreciate the effort by Logitech and others to make Internet radios resemble more familiar AM/FM models. However, this effort is counterproductive if the familiar knobs don't do what the user expects them to do.

ASSESSMENT

As a person whose VCR flashed "12:00" for long periods of times, I cannot fault the Squeezebox Boom on its complex (to me) tuning system. I suspect that if I used it all the time, its user interface would become second nature to me. (Currently, I do find myself getting lost in cyberspace as I tune from station to station.) Still, if you are looking for an Internet radio for your grey-haired old father who thinks digital watches are still cutting-edge, avoid this model.

That said, this is the only serious fault I can find with the Boom, other than the fact that its glossy case shows fingerprints far too easily. The audio on this unit is rich and full, and its overall performance is exemplary, especially for its $299.99 price tag. Overall, I consider the Logitech Squeezebox Boom to be an excellent Internet radio, even without its affordable cost factored in. If you are looking to try Internet radio — and you are somewhat savvy with remote controls — this unit is a recommended option.

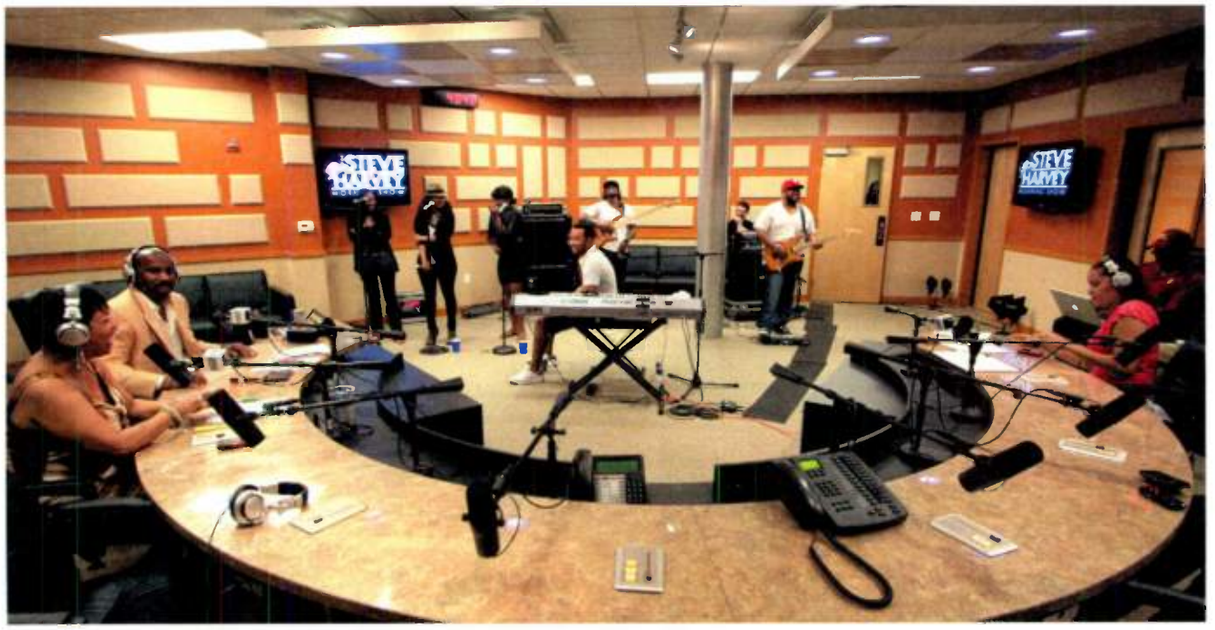
For information visit www.logitech.com.

James Careless has reviewed various Internet radios for RW including the Tivoli Networks, Sangean WFR-1 and C. Crane CC WiFi models.

World Radio History

Harris Sets the Stage for Steve Harvey

New Radio Digs for the Popular Entertainer Have Live Sound Space



The talent have plenty of room and great sight lines in this performance space. Steve Harvey is facing the camera at left. At keyboard is recording artist John Legend.

USERREPORT

BY RUSHION MCDONALD
Executive Producer
"The Steve Harvey Morning Show"

ATLANTA — When we built our new studio facility in the trendy Buckhead section of Atlanta, we wanted our guests and visitors to be impressed by the size, décor and atmosphere of our program, "The Steve Harvey Morning Show." While this is live radio, our studio space — which includes a performance stage — is beautiful enough to serve as a TV set.

Hosted by comedian/actor/author Steve Harvey, the program airs from 6 to 10 a.m. weekdays on radio stations in 63 markets east of the Mississippi, with its home base at WBLS(FM) in New York. The show, syndicated via satellite by Premiere Radio Networks and Inner City Broadcasting Corp., will expand to West Coast radio stations this fall.

ERGONOMIC THOUGHTS

In our design plans, we considered appearance to be as important as ergonomics and comfort. To achieve these goals, we hired **Harris** to build the custom PR&E cabinets for our 1,200-square-foot studio facility, in a space prepared by architectural firm Luckett & Farley of Louisville, Ky.

Since going on-air from this studio in May 2008, these cabinets have met all of our technical specifications and exceeded our expectations of craftsmanship. Based on the appearance, durability, comfort and quality of the cabinets, we placed an additional order for two more matching cabinets to furnish a new Webcasting center.

While the studio/stage area accounts for the lion's share of the space, the room also devotes space to the small control room (with a 28-channel Harris RMX*digital* mainframe mixing console) screener booth (with Harris VistaMax intercom gear) and Webcasting station positioned around its perimeter.

Each area features custom cabinets built by Harris, finished with matching black, laminate countertops. There is also an adjacent facility rack room that is unfurnished and used solely to house audio management systems.

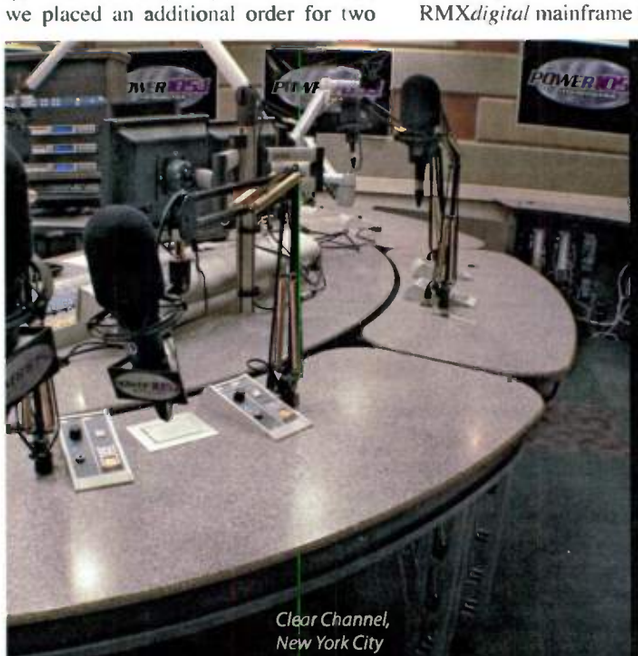
The focal point of the facility is undoubtedly the eight-seat, U-shaped, sit-down cabinet that accommodates Steve and his three co-hosts Shirley Strawberry, Carla Ferrell and Thomas "Nephew Tommy" Miles, who sit on the left side, as well as up to four guests on the right.

At each seating position, the Harris/PR&E cabinet includes a custom, low-profile mic boom, in-counter mic arm, D3F wired mic jack, headphone fader and mic control panel. The open area in the center of the cabinet serves as a live performance stage for guest performances by notable entertainers like John Legend, Jennifer Hudson and Raphael Saadiq, with sufficient space for full bands and back-up singers.

Our Harris cabinets give the space a clean, contemporary, attractive atmosphere, with rich earth tones and plenty of legroom and work surface for our hosts, guests, and production personnel.

Along with William Hickey and Mitch Guererro, chief engineers with Premiere Radio Networks, we worked closely with the technical team at Harris. The Harris team was attentive to every detail, down to the type of screws used to fasten the cabinets. Harris

(continued on page 25)


Clear Channel, New York City

OMNIRAX
The Engineer's Choice

"The Omnirax design makes these studios incredible for talent and operators on both sides of the console."

We make your "furniture headache" go away.

Choose Omnirax for your next project, and we guarantee you'll become a customer for life!

Call for our free CD Presentation

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

World Radio History

Philly Broadcaster Appreciates the Details

WBEB Goes Custom With Studio Technology for Furniture Design and Build

USERREPORT

BY CHRIS SARRIS
Chief Engineer
WBEB(FM)

PHILADELPHIA — In the spring of 2008, in the midst of negotiating for a new lease, WBEB was told by the landlord that the building had been sold and the space we occupied was to become an eye surgery center. We were given one year to complete a move of offices studios and two equipment/server rooms.

Once you get past the basic stuff like finding a building to move into, hiring an architect and choosing a general contractor, the defining thing that will make or break the presentation of any broadcast facility is the look of the studios. Especially when the air studio is a feature of the lobby, as it is in our new facility.

IMPORTANT CONSIDERATIONS

We gave careful consideration to what kind of furniture we wanted in the studios so we could show our facility with pride and make the staff feel proud of the company they worked for.

We looked at all the prefab furniture, the semi-custom furniture where you can pick from stock items and add custom elements, etc. But no matter what we looked at the cost was essentially the same.

Top: Production Studio

Right: WBEB On-Air Studio with Studio Technology Furniture

So after all the looking around was over I contacted Vince Fiola from **Studio Technology**, a custom furniture builder focusing on radio broadcast facilities. I've worked with Studio Technology in the past on several projects and they have always delivered great furniture at a great price with all the special features broadcasters love.

Such features include things like wireways that are actually in the right places, doors that don't need three hands to open and close, and visual features that make the studio someplace special instead of a room that looks like your first college radio station.

Vince was great in helping design the actual furniture, by advising us on dimensions, seating, working angles and sight lines. He collaborated with the architect and design people and our staff to coordinate colors and visual features. After some back and forth, he came to us with a furniture design and AutoCAD files that could be integrated into the construction drawings being completed by our architect.

During the construction phase of the space, he made on-site measurements on several occasions to address cabling transitions from premises walls to the furniture and the fit and "people" spacing that affects the feel of the room.

When it came time for installation, we were committed to using union trade labor. Vince was instrumental in working with union carpenters to get the installation done on time with no issues whatsoever. The union guys even commented how well the furniture fit and went together. You just don't hear that very often.

After all the dust settles you have time to reflect on your decisions. Here are some of my thoughts.

When it comes to studio furniture, you want something a little nicer than the plastic-edged modular "cookie cutter"-type furniture that seems to be everywhere these days.

You want a company where the owner is the design guy and oversees every aspect of your furniture construction and installation. And Vince was great at listening to what we were trying to achieve, and injecting the ergonomic and artistic aspect of the design. Vince truly "gets" the whole studio experience and how it should be laid out.

Having the ability to directly collaborate with a furniture designer and architect is a must. And being able to have CAD drawings to incorporate into the main design drawings saves a lot of time and eliminates mistakes.

Luckily, Studio Technology is local to us in Philadelphia. Realistically, though, we probably would have used them to provide our studio furniture no matter where they were located in the country.

You get one shot at building the facility you have to live with for a long time. It's most important to choose contractors and vendors that can deliver services and products that will make you proud to be a part of the project. I feel that I did just that with Studio Technology.

For information, contact Studio Technology at (610) 925-2785 or visit www.studiotechnology.com.

STATION SERVICES

ATTENTION PROVIDERS: Promote your services to Radio World's readers. For information on affordable advertising call **David** at **615-776-1359** or email **dcarson@nbmedia.com.**

World Radio History

HARRIS

(continued from page 23)

advised us through a few modifications to our original plans, and kept to our budget and delivery dates.

The cabinets were prefabricated and shipped to our location, without any hole cutouts (normally put in for equipment and wiring), as requested by the Premiere engineers involved with the installation. We especially like that equipment and accessories are accessible yet hidden from view for a sleek, clutter-free appearance. For example, the microphone positions can be easily changed or removed and mic stands can slide up and down and retract all together from view.

My key design criterion was that the studio and cabinets always allow for a direct line of sight between the hosts, co-hosts and guests, as well as

The author at the Harris RMX*digital* control surface.

the audio board operator and screener. Also, everyone can see our time zone clocks and two 42-inch plasma HDTV screens that we use to display things like movies, video clips and caller information.

With our Harris custom furniture, our studio space promotes a relaxed, creative environment for Steve Harvey to share his clever sense of humor, interviews with top celebrities, artists and sports figures, and a brisk discussion of the day's issues with his loyal listeners.

For information, contact the Harris Pacific Design Center at (760) 936-4000 or visit www.harris.com.

TECHUPDATES

AURALEX SONICPRINTS GO GREEN

Auralex Acoustics is offering its custom-printed SonicPrint ProPanels manufactured with its first "green" acoustical panel called EcoTech.

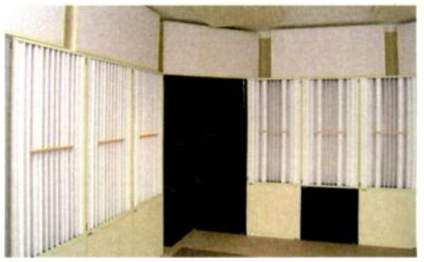
SonicPrint ProPanels are fabric-covered acoustic absorptive panels designed as artwork. The company says this approach opens the door to numerous décor options because the acoustical panels are under the design of the customer's choice. Users are not limited to single color fabric choices and can outfit a space with paintings and drawings of any kind. EcoTech acoustic panels are made with a formulation of 65 percent recycled polyester fibers. EcoTech panels are Class A fire retardant, easy to handle and moisture-resistant.

The EcoTech panels will begin to replace the substrates of many of Auralex's panel products, including ProPanels, T-Coustic ceiling tiles and the ELiTE Custom Fabric System. The panels will be available both unfaced (white) and with a black scrim face. There is no increase in cost to the dealer or consumer.

A new dedicated sub-site, www.auralex.com/sonicprint, is an online portal for dealers to place orders for the SonicPrint ProPanels. Users can upload personal photography or station or corporate logos or other custom images to be printed on the panels. The site offers Auralex's library of images and design options available for SonicPrint.

For more information, contact Auralex Acoustics (800) 959-3343 or visit www.auralex.com.

NEW ACOUSTIC TREATMENT LINE FROM REALTRAPS



RealTraps has announced a line of acoustic treatment products that are modular and require no permanent mounting. The modules are six inches thick and can be stacked freestanding up to a height of eight feet. A special soft non-slip material is provided to hold the traps securely and protect them from scratching.

Although this system is intended for high-end mixing and mastering engineers working in smaller spaces, it is also ideal for broadcast studios, two-channel hi-fi listening and even home theaters.

RealTraps has also created a new demo video, "Hearing Is Believing," to describe the new modular system in depth and let prospective listeners hear what it sounds like as if they were right there in the room.

Presented by RealTraps partner Doug Ferrara, graphs show the noticeable improvement in frequency response and decay times at all frequencies. Of particular interest is how uniform the reverb decay times (RT60) at mid and high frequencies become with large amounts of diffusion.

Most audio engineers and hi-fi fans understand the importance of a flat frequency response but many are not aware of the role of reverb decay time, the company says. Even if the steady state response is perfectly flat, frequencies that take longer to decay will sound louder in the room simply because they linger longer and thus have more total energy than frequencies that decay more quickly. Long decay times also harm clarity and imaging. Adding RealTraps diffusors even out the RT60 times in each band, making them nearly identical over most of the audible range.

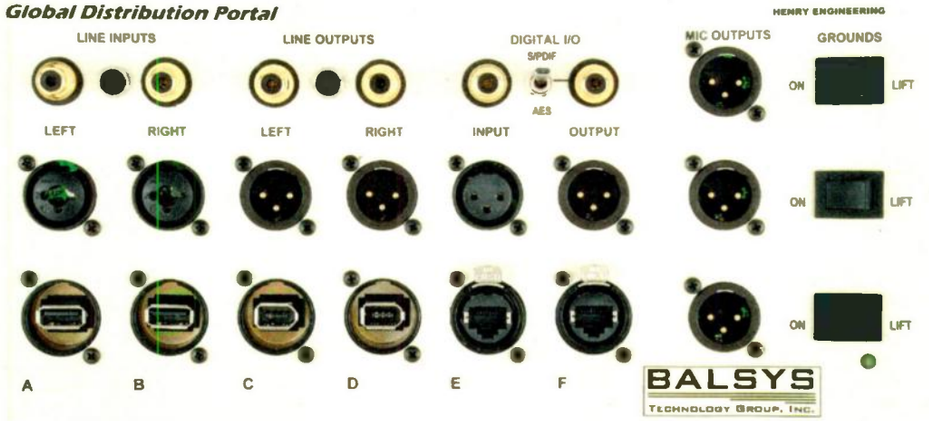
For information, contact RealTraps at (866) 732-5872 or visit www.realtraps.com.

Universal Studio Connectivity

Don't Build A Studio Without One!

The **Global Distribution Portal** provides convenient two way interface between any Studio / Central Audio System and external equipment. Active circuitry supports both Analog & Digital Stereo I/O in both Professional & Consumer formats, utilizing the most commonly encountered audio connectors.

3 Mono Summed Output Feeds at Mic Level.
Independent Ground Lifts.
Spaced to permit use of Wireless "Butt Plug" Transmitters.



6 Utility Feedthrough Connectors.
Standard configuration is 2 each USB, Fire Wire, and RJ-45, but all are interchangeable and can easily be field configured as desired.
3RU High - Rackmount Adapters optionally available.

SYSTEMS STORE .com

SystemsStore
890 Carter Road #150
Winter Garden, FL 34787
Tel: 407-656-3719 Fax: 407-656-5474
www.SystemsStore.com
Sales@SystemsStore.com

World Radio History

Clear Channel Cluster Gets Space

P.C. Richard Theater Allows for Station and Cluster-Sponsored Events, Concerts, Streaming

SPECIALREPORT

BY ADAM SHULMAN
Consultant
SIA Acoustics

NEW YORK — **SIA Acoustics LLC** recently completed the design and commissioning of audio and video systems at the P.C. Richard & Son Theater in the TriBeCa neighborhood of Manhattan. The 5,500-square-foot theater will serve as a live performance, recording and broadcast space for Clear Channel Radio, which includes New York FM stations Q104.3 (WAXQ), Z100 (WHTZ), KTU 103.5 (WKTU), Power 105.1 (WWPR) and 106.7 Lite-fm (WLTW).

The design mandate from the Clear Channel project team was clear: The venue would be a multipurpose space. In addition to hosting a 200+-person live audience, the P.C. Richard & Son Theater would be a primary source of audio and video content for a variety of Clear Channel programs, including the highly-acclaimed "Stripped" series. The intimate space was to serve as both a no-compromise live performance venue and a full-service recording facility — a substantial technical challenge.

To meet the theater's demanding live performance requirements, two four-element arrays of Outline "Butterfly" C.D.H. 483 loudspeakers were specified, with low-frequency reinforcement provided by six Outline LAB 15 SP subwoofers, arranged as three cardioid pairs under the stage.

The P.C. Richard & Son Theater represents a trend that we've seen growing in recent years. More and more, we are being approached by clients wanting to do no-compromise full-scale production in increasingly intimate spaces. In these types of venues, the importance of careful coordination between the trades is even more critical; there is no physical room for oversight or error.

Control Room for the P.C. Richard & Son Theater

Throughout the sound reinforcement equipment selection and design process, SIA paid close attention to loudspeaker directivity, positioning, and off-axis response to create a system that would maintain as quiet a stage as possible for recording and broadcast, while providing the greatest impact for the live audience.

The recording and broadcast side of the facility is built around a Digidesign ICON D-Control ES-based Pro Tools HD recording system in the control room, provided by Dale Pro Audio.

To allow complete electronic independence from the sound reinforcement systems, a four-way Jensen transformer-isolated splitter is employed on every input channel. Eight Digidesign PRE preamplifiers (with gain operable from the ICON control surface) and six 192 I/O interfaces (two with A/D expansion cards) provide a full 64 inputs to Pro Tools via six HD Accel cards.

Monitoring is provided via Genelec 8050A loudspeakers, a Dolby LM100 broadcast loudness meter and a DK Technologies MSD600M digital scope. From there, finished media is distributed via Clear Channel's SAN system to the building's third-floor radio production spaces. With the Pro Tools system outfitted with a full complement of recording, mixing and mastering plug-ins, Clear Channel staff can produce a final product for distribution entirely within the P.C. Richard & Son Theater space.

The theater also sports a comprehensive microphone package (also supplied by Dale Pro Audio) that is intended to support all of the space's functions while minimizing the need for guest artists (be it bands, presenters, DJs, etc.) to supply equipment.

To this end, a variety of input devices was specified: Shure SM57s, SM58s and SM89s (for boom-miking), Beta 52s and 58s, KSM44s and KSM141s, Sennheiser e 602s and e 604s, MKH 60s, and AKG D 112 and C 535 EBs. For flexibility, a Shure UHF-R wireless microphone system with Sennheiser MKE 104 capsules, Shure UR1M miniature beltpacks and Shure KSM9 handheld transmitters was provided as well.

QUESTIONS OF SCALE

In addition to the substantial produc-

PRODUCTS & SERVICES SHOWCASE

World Radio History

TECHUPDATE

HIPER PANEL HAS MANY TALENTS

The HiPer Panel from **Acoustics First** offers absorption and diffusion in one single panel.

While it resembles a typical fabric-covered acoustical panel, internal construction allows for the panel's dual identity. Under the fabric, two perforated substrates are designed to be 180 degrees out of phase with each other. A separating membrane adds to their diffusion and absorption factors.

Guilford of Maine fabrics are used for the exterior, making dozens of colors available. Custom panel sizes are available but standard measurements include 1-inch and 2-inch thicknesses with panel widths at 2 feet x 2 feet and 2 feet x 4 feet. All panels meet Class A fire ratings.

For information, contact Acoustics First at (804) 342-2900 or visit www.acousticsfirst.com.

Supergroup Tinted Windows opened the P.C. Richard & Son Theater in May.

tion equipment, the successful technical design of the space is largely due to the extensive infrastructure.

The programming planned for the space is diverse: live music performance and broadcast, cinema, dance (club), corporate seminar, etc. To accommodate this without technical compromise in any "mode" of operation, a flexible system of panels, tie-lines and patch bays was designed.

Throughout the theater, numerous wall and ceiling panels provide easy access to analog audio, multi-format video (via BNC and SMPTE hybrid fiber) and data (via Cat-6 and BNC). Every field connection terminates at over 20 analog, AES, Cat-6, fiber, and coaxial patch bays in the control room and is organized via an intuitive numbering system. In this way, theater staff and guest artist personnel are able to adapt the system to any performance or media type.

About the design, Steve Sockey, partner at SIA Acoustics, commented: "This system provides very sophisticated capabilities in an extremely compact footprint. Because of significant advances in technology, the difference between arenas and small theaters, or between dedicated studios and multipurpose spaces, has really become one of scale and not quality — this space has the same preamps, converters, consoles, loudspeakers, amplifiers, etc. as a larger venue — and though it may have fewer of them, the level of production is the same."

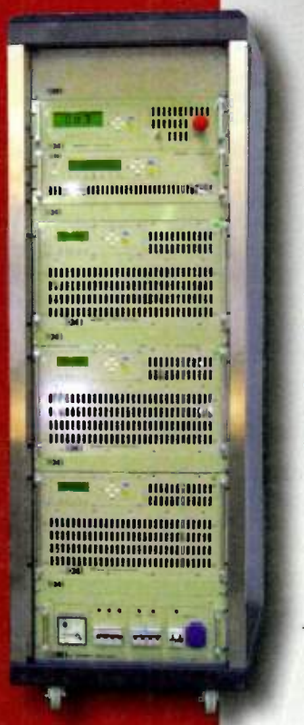
Since the theater's opening in May, it has hosted top artists such as Green Day for Q104.3, Maxwell for Power 105.1 and the Jonas Brothers and David Archuleta for Z100; Kelly Clarkson and Katy Perry were shared among several stations. Live audio and video recordings of nearly every performance are made available online at *www.strippedmusic.com* and *www.pcrichardtheater.com*.

For information, contact SIA Acoustics at (212) 387-9105 or visit www.siaacoustics.com.

OMB BROADCAST

FM TRANSMITTERS

All transmitter powers with the best quality price ratio



NEW EM 5000 S

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

OMB, the Future of Communication

www.omb.com

MT/MR PLATINUM

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

- Audio inputs: mono balanced, stereo (MPX), and 3 SCA.
- Fold back SWR protection.

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

OMB EUROPA

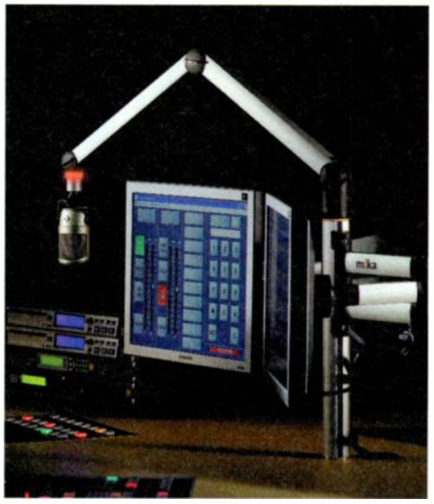
sales and costumer service
telephone 976-504 696
fax 976-463 170
Avda. San Antonio, 41
CUARTE DE HUERVA
50410 Zaragoza, ESPAÑA
http://www.omb.es

factory
telephone 976-503 580
fax 976-503 855
Camino de los Albares, 14
CUARTE DE HUERVA
50410 Zaragoza, ESPAÑA
europa@omb.com

World Radio History

TECHUPDATES

YELLOWTEC M!KA BRANCHES OUT



Yellowtec has added new mounts and accessories to its modular m!ka mounting system for microphones and monitors. The latest include a short version of the streamlined microphone arm of about half the length. It comes without upper aluminum profile and joint and will be available in anodized aluminum with "On-Air" signalling.

Also new is an extended version of the standard Monitor Arm. It is extended by approximately 8 inches and matches the VESA 75/100 standard attachment rating. The maximum load is limited to 14 pounds.

Two mounting options for Genelec speakers have been added: an adapter plate to be mounted on the rear of Genelec's 8020, 8030 or 6010 monitors. Meeting VESA 75 standards it enables the use of any m!ka Monitor Arm to hold the speakers.

Alternatively, Genelec speakers, when mounted on the corresponding stand plate (e.g. 8040-408), can be attached to the m!ka system by utilizing a rod with 3/8-inch thread that can be plugged into the top of any m!ka MSS Pole.

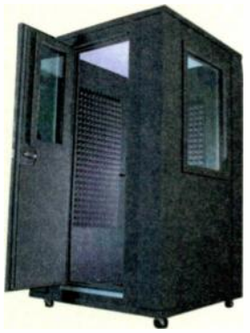
"Restore order to your desktop" is a m!ka motto. The m!ka Board No.1 underlines that. With a footprint of 20 x 12 inches and a maximum load of 11 pounds it is a suitable support for controllers, laptops, etc. in a modern studio.

Fleximount, with a VESA 100 and 200 standard rating, is for big and heavy (plasma) screens. The ball-and-socket-joint of the standard Fleximount has been replaced by an articulated joint for an increased load of up to 44 pounds.

A new make of the mic arm adapter offers improved design and look. It allows for attaching multiple microphone arms to a single MSS Pole as for guest tables.

For information, contact Yellowtec at 011-49-2173-967-315 or visit www.yellowtec.com.

WHISPERROOM IMPROVES INSTALLATION OPTIONS



MDL 4848

WhisperRoom Inc. manufactures sound isolation enclosures for the recording/broadcasting industry.

The company offers 20 sizes and two levels of sound isolation, "Standard" (single wall) and "Enhanced" (double wall). Models are upgradeable from Standard to Enhanced at any time in order to accommodate client needs. Sizes range from a modest 3.5-by-2.5 feet one-person unit to a room-size 8.5-by-15.5 feet unit. Most models are expandable in length in various increments depending on the model.

The most recent improvement is a design change that allows clients to assemble the WhisperRoom completely from the interior. Older models were equipped with straps and required space around the WhisperRoom for assembly. With the new design, assembly can be accomplished from inside with hinged brackets connecting the ceiling and floor to the walls and eliminating the need for straps and additional space.

Another recent addition is the five-sided MDL 127 LP (Low-Profile model). Its unique shape presents a low profile when positioned into the corner of a room and it has non-parallel walls that prevent standing waves within the room.

Included with all WhisperRooms are basic ventilation systems with a remote switch, a door window, Auralex acoustic foam sheets and an interior light. WhisperRoom also offers optional features such as a caster plate, four sizes of wall windows, wide-access doors, ventilation silencing system, exterior fan silencer, 10-inch height extension, exterior accent package, sound wave deflection system, isolation enhancement floor and additional Auralex acoustic foam.

WhisperRoom offers a five-year manufacturer's warranty.

For information, contact WhisperRoom at (800) 200-8168 or visit www.whisperroom.com.

MIDDLE ATLANTIC OFFERS CONTROL ROOM DESK SYSTEMS

Post/Control Room Desk Systems from **Middle Atlantic Products** are customizable, scalable and designed to adapt to the changing needs of broadcast and post-production environments while providing enhanced comfort and usability for system operators.

Adjustable optional monitor supports for up to six screens per desk allow placement of monitors at varying heights to suit individual operators or line of sight beyond the desk.

New Desk System design enhancements include ergonomically contoured edges for desktops and keyboard shelves to allow greater operator comfort and efficiency. Desk surface heights have been raised to 30 inches to accommodate all sizes of users.

Surfaces are made of high-pressure thermolaminate and available in a variety of colors including recent additions such as honey maple, dark cherry and pepperstone.

These Desk Systems are part of Middle Atlantic Products' integrated mounting system solution including space-efficient cabinet/rack enclosures with thermal management to remove heat from equipment and intelligent cable management for proper data transmission and serviceability.

For information, contact Middle Atlantic Products at (973) 839-1011 visit www.middleatlantic.com.

World Radio History

TECHUPDATES

SONIFEX LOOKS TO SIGNAGE

Proper studio signage often is overlooked or even considered a luxury. But nothing says "This is a professional radio broadcast studio" than a distinctive "On Air" sign.

England's Sonifex couldn't agree more. **Sonifex**'s new SignalLED line is a line of RGB LED signs that contain the control electronics, making them easy to install and configure for color and operation. The signs earned a Radio World "Cool Stuff" Award this spring.

They are flush-mounted standard, but an optional kit allows installers to end-mount them to the wall. Sonifex also offers a double-sided, end-mounted version that can be used in corridors, with different wording on each side, or the same wording in different orientations.

Signs are about 8 or 16 long; the longer model can be split into two shorter sides that can be separately or jointly controlled, for instance one long "On Air" sign, or twin signs that say "On Air" and "Mic Live." A range of lettering is available. Colors of the signs can be white, green, red, blue, yellow, orange, cyan and magenta. Signs can be configured after installation with accessible DIP switches.

It can be set to be "on" at all times; or to flash, pulse or switch off using two control pull-low inputs that can control the whole sign or either side.

Each sign is supplied with 6V DC power supply. Customization with logo or studio name is available.

For information, contact Sonifex/Independent Audio at (207) 773-2424 or visit www.sonifex.co.uk or www.independentaudio.com.

O.C. WHITE'S ELITE CHANNELS CABLE

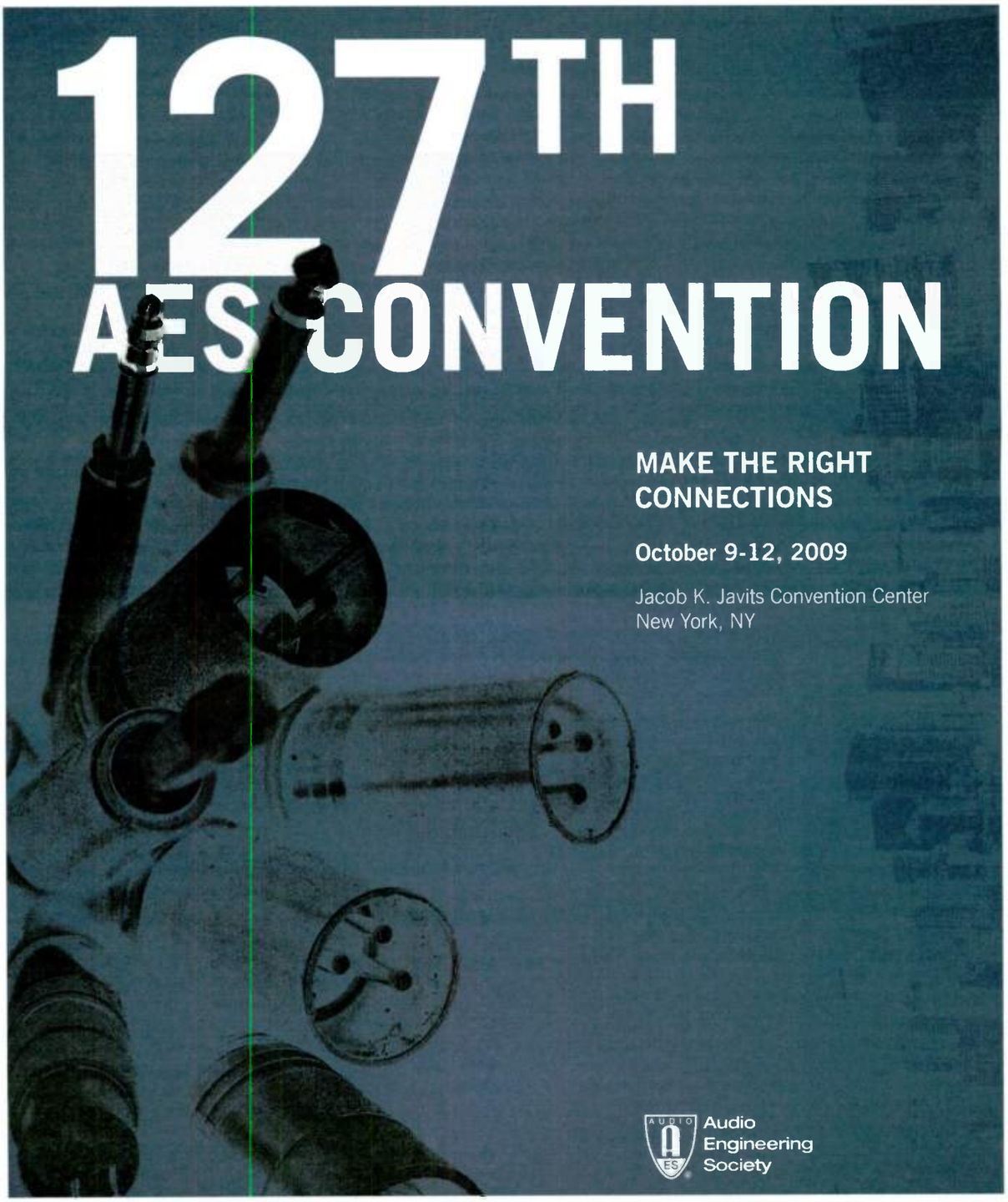
O.C. White's newly patented Elite microphone arms now have an exclusive wire channel and full-length top cap for quick and easy mic wire installation. This enclosed connector allows the concealed wire to exit out the bottom end or straight down through furniture providing thorough wire management and giving each installation a clean professional appearance with a minimum of effort.

The Elite microphone arms hold microphones that weigh from 1 pound to 8 pounds. Heavy construction consists of quality arms in concert with wire springs giving the end user a smooth and silent motion. O.C. White backs this design with an unconditional 10-year mechanical warranty. Sold in many colors and configurations, the new 61900BG, which is black and gold, adds a stylish look to a broadcast or television studio.

Also, the newly designed 15-inch riser (#14250) is now modular and includes a built-in XLR-F connector and wire. Again the enclosed connector allows the concealed wire to exit out the bottom end or straight down through furniture.

O.C. White products are American made.

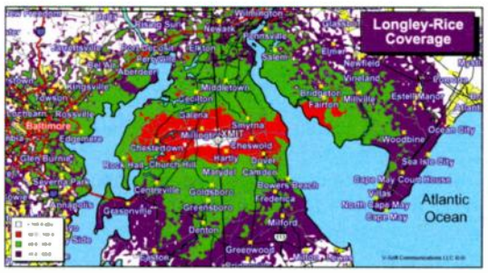
For information, contact O.C. White at (413) 289-1751 or visit www.ocwhite.com.



World Radio History

BROADCAST EQUIPMENT EXCHANGE

V Soft COMMUNICATIONS — The Leader in Broadcast Engineering Software



Professional Software packages for FCC applications and predicting coverage.

- Create stunning "real-world" coverage maps and interference studies using Longley-Rice, PTP, FCC, ITU-R P.1546-1, and Okamura/Hata with Probe 4™
- Search for FM channels under spacings and contour to contour protection using FMCommander™
- Prepare AM skywave and groundwave allocation studies and map FCC contours with AM-Pro 2™
- Plot STL paths over 3D terrain with Terrain-3D™

Quality custom mapping and FCC engineering consulting available.
www.v-soft.com (800)743-3684

ACOUSTICS

AcousticsFirst™ Toll-Free Number: 888-765-2900
Full product line for sound control & noise elimination.
www.acousticsfirst.com

ANTENNAS/TOWERS

WANT TO SELL

FCC COMPLIANCE
TOWER SIGNS
AM & FM Tower Signs
ASR-Tower Registration
Standard & Custom signs
Guy Wire Protectors - Ant. Tags
ANTENNA ID PRODUCTS
antennaID@msn.com
Free Catalog
610-458-8418
www.antennaID.com

AM Ground Systems Co.
Ground System Construction, Evaluation & Repair
1-877-766-2999
Complete AM Radio Ground System Services
www.amgroundsystems.com

Run your employment ad on our web site for only $2 per word!
radioworld.com
Call David for all the details at 615-776-1359

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO SELL

Yamaha EMP 700 multi-effect processor, BO + shpg. Steve, 719-955-4625 or stuzeneu@wayfm.com.

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 - 214 738-7873 or sixtiesradio@yahoo.com.

AUTOMATION EQUIPMENT

WANT TO SELL

It's free and it has been expanded. The only cost is to keep us informed as to how the system is performing and let us know how you are using it. DIY-DJ, is a Linux based radio automation system and now sports a record scheduler (DIY-DJ-RECORDER) which allows you to schedule the recording of a network or any other program for replay later as well as a basic logging system. Beside these additions the system schedules music, does voice tracking (ALWAYS hit the vocal), create a shell, live assist, exact time events, join satellite feeds, automated temperature announce, do unattended remote events and more. Call (406) 679-0527 or email krws@digitaldevelopment.net for a copy today.

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"

COMPUTERS

WANT TO SELL

(2) Antex SX-23e computer sound cards, (4) Antex SX-9 computer sound cards, BO + shpg. Steve, 719-955-4625 or stuzeneu@wayfm.com.

CONSOLES/MIXERS/ ROUTERS

WANT TO SELL

BE mono 8-chnl Spot-master console, $200; Gate/Harris 5-chnl stereo console, $250. C Haynes, 601-636-7944.

WANT TO BUY

Want to buy Wheatstone audio consoles. B Lacy, 786-888-8310.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

MISCELLANEOUS

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402-493-1886 Email: CGoodrich@tconl.com

SPACE IS AVAILABLE!
To advertise, call 615-776-1359

WANT TO BUY

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

Looking for highlights or games of the San Francisco Giants taped off of KSFO radio from 1958-1959 and 1976-1978. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for radio shows prior to World War II on radio transcription disc or 78 RPM records. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Equipment Wanted: obsolete, or out of service broadcast recording gear, amplifiers, preamps, outboard, radio or mixing consoles, microphones, etc. Large lots acceptable. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

REMOTE & MICROWAVE

WE RENT FOR LESS

Blueboxes	FM Exciters
Zephyrs	FM Power Amps
POTS Codecs	STL's
RF/Audio Gear	Test Equipment

If we don't have it, we will get it!
SCMS, INC. (800) 438-6040
"You Know We Know Radio"

RECORDING & PLAYBACK HARDWARE

WANT TO SELL

Tascam DA 88 8-trk DAT rcdr/plyr, Tascam DA-38 8-trk DAT rcdr/plyr, Sony DTC-690 DAT rcdr/plyr, Tascam 112 MKII cassette rcdr/plyr, Tascam 122 cassette rcdr/plyr, Tascam 32 R-R, BO plus shpg. Steve, 719-955-4625 or stuzeneu@wayfm.com.

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

Schnader telescriptions 16 mm musical films produced in the early 50s. Bill Cook, 719-687-6357.

WANT TO BUY

Standard Short-tune series. Bill Cook, 719-687-6357.

SATELLITE EQUIPMENT

WANT TO SELL

(3) Wegener Unity 4000 rcvrs, one unit has 4 audio output ports and two units have two audio output ports, BO + shpg. Steve, 719-955-4625 or stuzeneu@wayfm.com.

SOFTWARE

WANT TO BUY

High School Radio Station looking for a donation or willing to purchase Prophet System MusicGen Music Scheduling software to work with our NextGen Systems. Please contact Coach John S. Ashley, Cypress Creek High School, Orlando, FL. 407-852-3400 x.2236 or ashleyj@ocps.net.

STATIONS

WANT TO SELL

For Sale: AM in Rome, NY, xlators in Enid, OK, Jacksonville, NC, Temple, TX. Email mraley@bbnradio.org.

Oregon CP, 161191. 775.317.7887 vernongsnyder@hotmail.com.

TAX DEDUCTIBLE EQUIPMENT

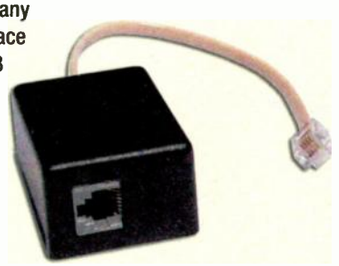
Donations Needed: All Volunteer, Non-profit Low Power community radios stations need Equipment. Will offer tax deduction letter, You determine donation value, We will pay shipping. Equipment shared between three Wisconsin stations. Looking for Mics, Mixers, field equipment, etc. You name it. Email: Dan@WIECradio.org.

TELEPHONE EQUIPMENT/HYBRIDS

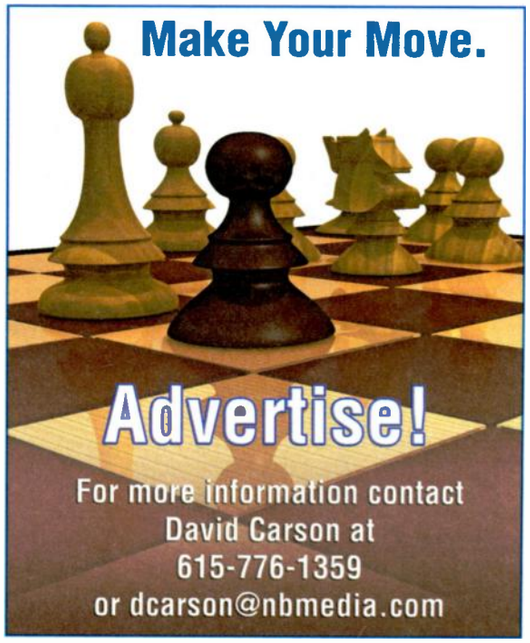
WANT TO SELL

JK Audio Desktop, new JK Aduio Broadcast Host desktop digital hybrid, $350. M Taylor, 417-451-5636.

STOP
AM RADIO INTERFERENCE
with a plug-in modem/telephone RF filter from:
K-Y Filter Company
3010 Grinnel Place
Davis, CA 95618
(530) 757-6873



www.ky-filters.com
Model AM-1 is for AM Broadcast Band radio interference.
Model RF-1 is for Short Wave, Ham Radio, CB etc.



World Radio History

CONSULTANTS

OWL ENGINEERING, INC.
Consulting Communications Engineers
5844 Hamline Ave. N., Shoreview, MN 55126
651-784-7445
- AM/FM/NCE Applications
- Allocation and Upgrade Studies
- Pre-Purchase Inspections
- ANSI and NRSC Measurements
- Tower Detuning
- Intermodulation Studies
- Radiation Hazard Evaluation and Measurements
- AM Directional Array, Design, Tuning and Proof using Method of Moments

Fax (651) 784-7541 E-mail: info@owleng.com "Member AFCCE"

M. Celenza
Communications Consultant
AM-FM-LPFM-TV
$250.00 FM Frequency Studies
Applications, Amendments, Allocations
PHONE: (631)965-0816
FAX: (631)403-4617
EMAIL:
mcelenzacommunicationsconsultant@yahoo.com

Broadcast Equipment Exchange
For more information, ask David at 615-776-1359
dcarson@nbmedia.com
RADIOWORLD

Mullaney Engineering, Inc.
Serving Broadcasters Since 1948
9049 Shady Grove Court
Gaithersburg, MD 20877
(301) 921-0115
Fax (301) 590-9757
mullaney@mullaneyl.com
Member AFCCE

FASTER... MORE ACCURATE RADIO COVERAGE
Real Time 3-D Displays
- Interference calculations
- Cost effective mapping
- Fully integrated databases
- Used by the FCC
- Latest standards built-in

RADIO SOFT

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

cmbe processing

TRANSMITTERS/EXCITERS/TRANSLATORS

TRANSCOM CORPORATION
Serving the Broadcast Industry Since 1978
Transmitters and Broadcast Equipment for Radio & Television

Used FM Transmitters

1	KW	2009	Crown FM1000E (demo), solid state
2	KW	2004	Crown FM2000E, solid state
5	KW	1991	Harris HT5
14+5	KW HD	2005	BE Fmi1405 (IBOC), solid state
20	KW	2005	BE FM20S, solid state
20	KW	1985	Harris FM20K
21.5	KW	1989	Continental 816R-2B
27.5	KW	1984	Continental 816R-4B
30	KW	1994	Harris HT30CD
30	KW	2003	Harris HT30CD
50	KW	1982	Harris Combiner w/auto exciter-transmitter switcher

Used AM Transmitters

5	KW	1982	Harris MW5A
5	KW	1987	Harris MW5B
5	KW	1987	Harris SX5A, solid state
10	KW	1985	Continental 316F

Exciters
"New" 30W Synthesized exciters
Used Harris Digit 2nd Generation exciter
Used Nautel NE-50 exciter

Please visit our website, www.fmamtv.com, for additional listings.

BE
Continental Electronics
CROWN BROADCAST
HARRIS
nautel

New TV Transmitters- Analog and Digital
OMB, Pineapple and Technalogix
VHF and UHF (10 W to 10 KW)
TV Antennas
TV STL

800-441-8454 • 215-938-7304 • FAX: +1-215-938-7361
www.fmamtv.com • E-mail: transcom@fmamtv.com
RETUNING & TESTING AVAILABLE • CALL US FOR A QUOTE!

SPACE IS AVAILABLE
Call David at 615-776-1359
or email dcarson@nbmedia.com

WANT TO SELL

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"

EnergyOnix 4kW FM, brand new, still in crate, includes exciter & spare parts kit, $15000. A Harris, 307-871-1173.

RCA BTF-20 E1 20kW FM xmtr for parts, call for needs. P Russell, 321-773-2746.

CCA AM 10,000 D – Call John KQSS **928-595-0263** between 10 & 6 PM Pacific Time.

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

WANT TO BUY

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

Got Services?
Spotlight them here!
For more details, call David Carson at 615-776-1359

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
HIGH ENERGY CERAMIC CAPACITORS
SURCOM ASSOCIATES
5674 D Camino Real, Suite K
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4759
e-mail: link@surcom.com web: www.surcom.com

TUNWALL RADIO
SWITCH AND TRANSMITTER CONTROLLERS

The TRC-1P: featuring plate on/plate off function for both transmitters

AM/FM/MULTI-SWITCH AND CUSTOM DESIGNS
330.995.9642 www.tunwallradio.com

INGENIERÍA EN RADIODIFUSIÓN Y TELECOMUNICACIONES
www.radiodifusion.com.mx
- Diseño de Estaciones de AM,FM,TV.
- Auditorías Técnicas en Radio y Telecomunicaciones
- Recomendación y Venta de Equipo
- Asesoría y Gestoría Legal - Técnica
- Peritajes Técnicos, Planos de Ubicación
- Estudios de Propagación, Frecuencia

Libertad 1822 2do Piso Col. Roma Monterrey N.L. C.P 64700 México. Tel y Fax +52 81 83 58 30 27
etamezescamilla@yahoo.com.mx
etamez@att.net.mx

Buying Or Selling Used Equipment?
You're in the right place!
RADIOWORLD
Broadcast Equipment Exchange

World Radio History

ECONCO NEW TUBE

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

ECONCO NEW TUBE

TUBES

D And C Electronics
An International Distributor of RF Components
Tubes
NEW & REBUILT
TRANSMITTERS, STUDIO EQUIPMENT, STLS, ANTENNAS, RADIO DATA SYSTEM (FOR CAR RADIO DISPLAY)
EXCITERS-TRANSMITTERS, TRANSLATORS, MIXERS-CONSOLES, RADIO LINK RPU, MOSFETS, VACUUM CAPACITORS, SOCKETS
Eimac CPI Communication & Power Industries Pro-Tek® EEV
SVETLANA
BROADCASTING USA DISTRIBUTOR
BEST PRICES To Order: FROM OUR STOCK
1-800-881-2374
Outside U.S. (352) 592-7800
Se Habla Español
P.O. Box 6409
Spring Hill, FL 34611
BEST SERVICE
352-592-7800
Fax 352-596-4884
Website: www.dandcelectronics.com

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

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

SPACE IS AVAILABLE!
To advertise, call
615-776-1359

RW Online
Advertise your employment ad on our web site for only $2 per word!
radioworld.com
Call David for all the details at 615-776-1359

EMPLOYMENT

POSITIONS WANTED

Radio/TV Experience! Extremely creative copy, show prep, plus great ideas and character voice abilities. Dedicated, and takes direction well. Musically inclined. Jack, 512-671-0240. finneymusic@gmail.com.

Comical, innovative announcer seeking the opportunity to demonstrate my natural abilities. Digital production (Adobe Audition 2.0), Streaming Broadcasting, Copywriting experience. Determined, multifaceted performer. Janean, 706-627-5354; janean_williams@yahoo.com.

Proficient creative writing/copy skills. Strong on-air abilities. Passionate, lots of energy. Dedicated and diligent worker. Extremely loyal. Boisterous, outgoing and fun! Amanda Villa, 817-420-3497; amandavilla82@yahoo.com.

Radio personality proficient in copywriting, newscasting, and commercial production. Ready and willing to relocate to bring your company the best. DeMarlo "The Radio Hustla" 214-636-3375 or Deboll75@yahoo.com.

Very good digital/computer skills. Creative copywriting plus good on air talent and delivery. Loves a challenge. Friendly/team-player. Enjoys theater, singing, and performing. Mandy, 504-390-3360 or djmandiek@gmail.com.

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 917-324-8466 mitchellrakoff@yahoo.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com for samples. Call 214-384-5812 or email: adam@rubbinsracing-show.com.

Visit www.radioworld.com

RADIOWORLD
The News Source for Radio Managers and Engineers

Our readers have something to say

Shown: Heil PR 40 dynamic microphone

"I look forward to getting each issue. RW is a great source of new information as well as a wealth of tips from fellow engineers in the field."

Scott Schmeling
Chief Engineer
Radio Mankato
Mankato, Minn.

HEIL SOUND
www.heilsound.com

Broadcast Equipment Exchange

"BEE" in the habit of selling your used equipment here!

Contact David for details at
615-776-1359 • dcarson@nbmedia.com

World Radio History

Royalty Is a Simple Issue of Fairness

MusicFirst: 'We Are Ready to Work With NAB And Craft the Solution as Partners'

BY JENNIFER BENDALL

MusicFirst and its member organizations care deeply about music. We are amazed by the lack of respect the National Association of Broadcasters pays to the artists, musicians and rights holders who bring music to life and listeners' ears to the radio dial.

We are also amazed by how dismissive they are of Radio World's suggestion that music and radio work together to create a fair performance right on radio.

We could easily object to Radio World's June 3 editorial ("Time for a Cease-Fire") as the NAB did, but we saw it as an invitation to a new, open dialog on the issue.

LET'S TALK

Like the NAB, we share a passion for music and we care deeply about its future.

The musicFirst coalition is a genuine coalition with equal leadership representing artists, musicians and rights holders. We are and have always been willing to wipe the slate clean, just as Radio World suggests. We have also been willing to come to the table and negotiate. Always have.

But the NAB refuses to do any such thing. They have constantly refused our overtures to sit down and talk. They have said *no* to members of Congress, Democrats and Republicans, who have encouraged them to negotiate with us. Instead, the NAB continues to run a disingenuous campaign against the Performance Rights Act, spreading lies and misinformation to the general public and challenging the character and integrity of members of Congress who support it.

What the NAB must acknowledge is that the Performance Rights Act is not about fixing a failed business model — nor does it come down too heavily on radio.

Artists and musicians have been fighting for a fair performance right on radio for more than 70 years, since it was denied them by a 1939 federal court decision. The Performance Rights Act is about fairness to artists, musicians and rights holders, fairness to other radio platforms and fairness to AM and FM music radio.

This is not a "new" fight brought on by the record labels, as NAB would like to claim. This is a simple issue of fairness. Everyone deserves to be paid for their work, especially when others use it to make billions.

The NAB claims "not the time, not the issue." But when will the time be right? Artists, musicians and rights holders have been waiting decades to get paid for their musical creations — creations that allow radio to sell billions of dollars in advertising revenue each year.

And let's not forget that our leaders in Congress have worked diligently to make sure that the Performance Rights Act includes special accommodations for nearly 75 percent of music radio stations in the country. Small stations will pay $5,000 a year or less to clear the rights for all the music they use. Some will pay as little as $500. Noncommercial and NPR stations will pay $1,000 or less. And most stations will not have to pay anything until three years after the bill is signed into law.

We have always been prepared to roll up our sleeves and get to work for a fair solution. The NAB has acknowledged that they are not. We will continue to work with our champions in Congress to pass the Performance Rights Act; we will not unilaterally disarm. But we are ready to work with NAB and craft the solution as partners, partners that respect each other's important contribution to music radio.

The author is executive director of the musicFirst Coalition.

COMMENTARY

RURAL

(continued from page 34)

Then, rather than denying all other applicants except for the applicant or applicants who were lucky enough, fortunate enough or cunning enough to choose the favored community, all of the mutually-exclusive AM applicants should be allowed to amend their proposals without regard to the minor amendment rules to specify the preferred community and go to auction.

The favored community gets service, and no longer does the inherent unfairness remain in which a radio station is awarded to the applicant who is best able to "game" the system.

As in FM, once the most deserving community is identified by the commission, all applicants are given the opportunity for the resulting station.

The nine broadcasters who filed consolidated comments generally advocate that the assignment and allotment of both AM and FM stations should be made to whatever community will allow the most efficient use of available spectrum as determined by which proposal covers the greatest number of people.

For modifications of a licensed community to another community within areas that are abundantly served, the sole criterion should be a technical evaluation whether the modification more efficiently uses the available spectrum.

Only in those situations where new service is proposed to an area that is not already abundantly served, having reception from fewer than five full-time radio stations, should assignments and allotments continue to be determined based upon the FCC's present priorities in which a first radio station for a community is given one of the highest priorities.

John F. Garziglia, Esq., is with the law firm of Womble Carlyle Sandridge & Rice PLLC.

HOW TO

Send a letter to the editor:
E-mail *radioworld@nbmedia.com* with "Letter to the Editor" in the subject field. Please include issue date.

Change your mailing address:
Visit *radioworld.com*, click on the subscription button and follow instructions to change a subscription address.

Contribute freelance articles:
E-mail *radioworld@nbmedia.com* and request our Writer's Guidelines.

Get information about advertising:
Download a media kit including editorial calendar at *radioworld.com/advertise.shtml.*

Purchase reprints of articles:
E-mail Caroline Freeland at *cfreeland@nbmedia.com.*

ADVERTISER INDEX

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

PAGE	ADVERTISER	WEB SITE/URL
28	AcousticsFirst Corp	www.acousticsfirst.com
15-17	Axia - A Telos Company	www.axiaaudio.com
26	Bext, Inc	www.bext.com
3	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
7, 35	Comrex Corporation	www.comrex.com
1	Continental Electronics Corp.	www.contelec.com
8	DaySequerra	www.daysequerra.com
26	Digital Radio Engineering	www.digitalradioengineering.com
24	Grace Broadcast Sales	www.gracebroadcast.com
18	Graham Studios	www.graham-studios.com
32	Heil Sound, Ltd.	www.heilsound.com
19	Henry Engineering	www.henryeng.com
12	Inovonics Inc	www.inovon.com
11	Logitek	www.logitekaudio.com
27	OMB America	www.omb.com
9	Omnia - A Telos Company	www.omniaaudio.com
23	Omnirax	www.omnirax.com
25	Systems Store	www.systemsstore.com
13	Telos Systems - TLS Corp.	www.telos-systems.com
5, 22	Thum & Mahr Gmbh	www.yellowtec.com
2, 36	Wheatstone Corporation	www.wheatstone.com

World Radio History

OPINION

This Is Protectionism at Its Worst

Rural Radio Proceeding Perpetuates an Error in Thinking at the FCC

BY JOHN F. GARZIGLIA

For decades now, the Federal Communications Commission has awarded new radio station licenses by tying each license to a specific, singular community.

COMMENTARY

Recently, in response to concerns expressed by Commissioner Copps and former Commissioner Adelstein that broadcasters were changing their licensed communities as a "gaming" of the commission's rules, the commission initiated a proceeding with the title of "Policies to Promote Rural Radio Service and Streamline Allotment Assignment Procedures" to dramatically change the FCC's policies for awarding new station licenses and moving existing stations.

Nine broadcasters from small and medium-sized markets joined together to tell the commission that, with respect its radio allotment policies, "the emperor has no clothes."

These nine broadcasters, with the lead broadcaster being Miller Communications Inc. of Taylorville, Ill., observed that, except in extremely rural areas, there are few radio stations in the United States that serve just one community. Rather, almost every radio station serves at least several communities.

NO EVIDENCE

A singular city of license for a radio station is a concept that has taken on an out-of-proportion importance at the FCC. It is a fiction perpetuated by an FCC licensing scheme begun years ago that the commission has steadfastly refused to alter.

Under the FCC's allocation scheme as it now exists, the goal is that just about any size community should have at least one radio station. The commission has allotted radio stations to communities with a population of fewer than 100 persons, depriving communities of far greater population with additional, possibly needed, radio stations.

Common sense suggests that areas that have more population should have a greater number of radio stations. Areas with denser populations generally have a greater number of grocery stores, shopping centers, television stations, newspapers, movie theaters and the like.

Randy Miller of Miller Communications Inc. observes that "the bottom line of our comments is that radio service should follow population."

The commission launched its Rural Radio Proceeding with the bald unsupported statement that there is "needed [radio] service at smaller communities and in rural areas." The majority of the commission's proposals flow from this one unsupported premise. There are no statistics, data, evidence or reasoning for the foundational premise that additional radio service is needed in smaller communities and rural areas.

Citizens in areas with greater population are more likely as a whole to have more diverse tastes, opinions and preferences that may be served by a greater number of radio stations. Yet the commission's quest to provide each community with its own radio station, no matter how small the community, is directly contrary to a more efficient use of our available spectrum.

One of the nine commenters, Larry Fuss, the owner of radio stations in Mississippi, Las Vegas and Pago Pago, states that "the commission is ignoring the impact of urban sprawl" and laments that "stations located in a small town on the edge of the metro simply cannot compete with stations located closer to the center of population." Larry argues that "in situations where stations can move closer to the center of population and thus serve more people, they should be allowed to do so."

UNINTENDED CONSEQUENCES

The FCC's proposed rule changes will have significant ramifications to the public and should be based upon more than the wholly unsupported premise that rural areas need more radio stations.

The unintended consequences of the proposed FCC's policies are restricting competition, creating spectrum inefficiencies and protecting radio station owners in larger markets from additional competition. The proposed rule changes would just about assure that no substantially populated area would ever again receive an additional radio station, nor would its listeners enjoy a radio station moving closer to the center of population so that it could be better heard.

The FCC's proposals are protectionism at its worst. The marketplace, rather than the government, should decide where radio stations are most desired and wanted. This protectionism is being foisted upon the public under the rubric of preventing radio stations from migrating to areas with larger population.

"Attempting to change how competition is done is manipulating the marketplace, and that's wrong," says Randy Miller.

The FCC's notion that, without governmental restraint, all radio stations would move to areas with large population, in addition to being fundamentally vapid as an engineering matter, is also beyond common sense even if approached from a non-engineering view.

The history of commission assignments and allotments demonstrates that hundreds of radio stations are being applied for, built and operated in ever more remote and rural areas of the United States. Yet a fear that all radio stations will move to big cities forms the basis of the commission's proposed protectionism.

UNFAIR TO AM HOPEFULS

The FCC's proposals also perpetuate the unfairness of the AM radio station selection process for new entrants.

Now, an AM applicant for a new radio station is at the mercy of the luck of the draw. If an applicant for a new AM radio station is crafty enough, or lucky enough, to propose new AM service as a "first local transmission service" to the larger community with no radio station, that applicant, even though it may be a conglomerate with hundreds of stations, is awarded a dispositive preference and thus the radio station.

The commission proposes making the process even more unfair by denying a new entrant if the proposed new radio station might compete with existing broadcasters in a more populated area.

This unfairness should be done away with. With mutually-exclusive AM applicants the commission should first make its determination which community is deserving of the AM assignment.

(continued on page 33)

CORRECTION

A caption in the Aug. 1 issue, page 10, incorrectly identified Terry Cockerill's employer. He is a product engineer in the radio product line at Harris.

RADIOWORLD

Vol. 33, No. 22 September 1, 2009

Next Issue of RADIO WORLD September 9, 2009
Next Issue of ENGINEERING EXTRA October 14, 2009

E-mail: radioworld@nbmedia.com
Web site: www.radioworld.com
Telephone: (703) 852-4600
Business Fax: (703) 852-4582
Editorial Fax: (703) 852-4585

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

EDITORIAL STAFF
EDITOR IN CHIEF, U.S. Paul J. McLane
NEWS EDITOR/WASH. BUREAU CHIEF Leslie Stimson
GEAR & TECHNOLOGY EDITOR Brett Moss
TECHNICAL ADVISER Thomas R. McGinley
TECHNICAL EDITOR, RWEE Michael LeClair
PRODUCTION EDITOR, RWEE Karen Lee
CONTRIBUTING EDITOR John Bisset
CONTRIBUTING EDITOR Skip Pizzi
INTERNATIONAL EDITOR IN CHIEF T. Carter Ross
LATIN AMERICA EDITOR IN CHIEF Rogelio Ocampo
LATIN AMERICA EDITOR Karina Gerardi
MANAGING EDITOR, WEB Brian Smith
EDITORIAL ASSISTANT, MILAN Peter Finch

EDITORIAL CONTRIBUTORS
W.C. Alexander, Steve Callahan, James Careless, Harry Cole, Mark Durenberger, Charles Fitch, Ty Ford, Harold Hallikainen, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Daniel Mansergh, Sharon Rae Pettigrew, Carl Lindemann, Ted Nahil, James O'Neal, Tom Osenkowsky, Ken Deutsch, Rich Rarey, Tom Ray, Randy Stine, Richard Strickland, James G. Withers, Tom Vernon.

ADMINISTRATION & PRODUCTION
PUBLISHER John Casey
EDITORIAL DIRECTOR T. Carter Ross
PRODUCTION DIRECTOR Davis White
PRODUCTION PUBLICATION COORDINATOR Karen Lee
ADVERTISING COORDINATOR Caroline Freeland

CIRCULATION
ASSOCIATE CIRCULATION DIRECTOR, AUDIENCE DEVELOPMENT Anne Drobish
CIRCULATION MANAGER Kwentin Keenan
CIRCULATION COORDINATOR Michele Fonville

SUBSCRIPTIONS
Radio World, P.O. Box 282, Lowell, MA 01853
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)
978-667-0352 (Outside the US) FAX: 978-671-0460
WEB SITE: www.myRWNews.com
E-MAIL: newbay@computerfulfillment.com

CORPORATE
NewBay Media LLC
PRESIDENT AND CEO Steve Palm
CHIEF FINANCIAL OFFICER Paul Mastronardi
CONTROLLER Jack Liedke
GROUP CIRCULATION DIRECTOR Denise Robbins
VICE PRESIDENT OF WEB DEVELOPMENT Joe Ferrick

VIDEO/BROADCAST GROUP
EXECUTIVE VICE PRESIDENT Carmel King
VICE PRESIDENT / SALES DIRECTOR Eric Trabb

ADVERTISING SALES REPRESENTATIVES
US EAST & LATIN AMERICA: John Casey, jcasey@nbmedia.com
T: 330-342-8361 | F: 330-247-1288
US WEST & CANADA: David Carson, dcarson@nbmedia.com
T: 615-776-1359 | F: 866-572-6156
EUROPE, AFRICA, MIDDLE EAST: Raffaella Calabrese, rcalabrese@broadcast.it
T: +39-02-7030-0310 | F: +39-02-7030-0211
JAPAN: Eiji Yoshikawa, callems@world.odn.ne.jp
T: +81-3-3327-5759 | F: +81-3-3322-7933
ASIA-PACIFIC: Wengong Wang, wwg@imaschina.com
T: +86-755-5785161 | F: +86-755-5785160
CLASSIFIEDS: David Carson, dcarson@nbmedia.com
T: 615-776-1359 | F: 866-572-6156

Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 810 Seventh Avenue, 27th Floor, New York, NY 10019. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

REPRINTS: Call or write Caroline Freeland, 5285 Shawnee Rd., Ste. 100, Alexandria, VA 22312-2334; (703) 852-4600; Fax: (703) 852-4583

Globe graphic ©iStockphoto.com / Edward Grajeda

Copyright 2009 by NewBay Media, LLC.
All rights reserved.
Printed in the USA

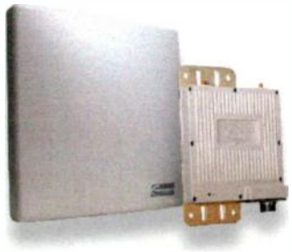
NewBay Media

World Radio History

Comrex BRIC-Link

provides reliable, high quality, cost-effective IP audio transmission over dedicated links.

plus



ISM Band 5.x GHz IP Radios

from Trango Systems, Tranzeo, Motorola, Tsunami and others available at BGS provide a low-cost, unlicensed, line of sight data link.

equals

Perfect, low cost STL solution

Use with BRIC-Link's linear and FLAC modes for full bandwidth audio with minimal delay. Easy to set up. Low operating cost.

Available from:

Broadcasters General Store

www.bgs.cc • 352-622-7700

BRIC-Link

Put Comrex on the Line

COMREX

www.comrex.com

World Radio History

THE MARK OF WHEATNET-IP

WHEATNET-IP BLADES.
NETWORK BEYOND THE CUTTING EDGE.

When it comes to Audio-over-IP networking, simple, powerful and modular is what cuts it. Making its mark in its first year, our WheatNet-IP system is installed in facitiies worldwide, with many more being added every month. Boldly sporting a new name, WheatNet-IP, along with its hardware and software BLADEs, reflects its proven Wheatstone heritage and ability to cut straight to the point.

WheatNet-IP makes it easy to connect and configure full multi-studio/control room complexes with consoles and mixing, large router-only systems, and point-to-point digital snakes. Hardware BLADEs, the WheatNet-PC software driver for your automation and Internet computers (no expensive sound card required!), and Wheatstone consoles all quickly interconnect with standard Ethernet cables and a standard Ethernet Gigabit switch. There's even a new MIC BLADE to accommodate up to eight studio mics. Configuration is seamless too, each BLADE self-addresses and knows what to do just by being plugged in and quickly set with the front-panel wizard. Fine tune your system by plugging a PC into your network and, using the Navigator software, do a little bit of naming and customization. Once set up, unplug your PC and put it away.

While other systems get more and more complicated, cramming unrelated functions into a single overweight and over-vulnerable box, WheatNet-IP leads with powerful simplicity. Now that's sharp thinking!

Don't lose your edge. Stay sharp AND slash your budget with the power, simplicity, and cost-effectiveness of WheatNet-IP. It makes your life less complicated, and we wouldn't have it any other way.

Wheatstone

Audio Networking—Simply Evolved

phone 1.252.638-7000 | www.wheatstone.com | sales@wheatstone.com

World Radio History