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Avoid the Payola Police
 David Solomon and RW help you avoid getting whacked.
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Flying the HD Radio Flag
 Digital branding hits listeners in on-air promos.
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Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

February 1, 2006

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Young Engineers, Please Stand Up

Contrary to Common Wisdom, Radio Does Have Youthful Engineering Talent



by Ken R.

"Boneless ribs." "Hot chili." "Original copy."

To that list of oxymorons one might be tempted to add "young engineer."

We so often hear the lament: "Where will the next generation of radio engineers come from?" The stereotype — justified or not — is of the engineer as a grizzled 60-year-old who grouches that the new-fan-

gled computer gear isn't as reliable as his old Ampex machines and who will leave no replacement behind when he retires.

No doubt radio engineering has its gray elders. But where is the bright young talent? Radio World asked around; and we found to our pleasure no shortage of promising younger engineers active in the industry. We thought we'd tell you about some of them.

See YOUNG, page 7 ▶

Photo: Aaron Ishmael, 23, is chief engineer of KPO(AM/FM).

IBOC: More Radios for Less Money In 2006

by Leslie Stimson

LAS VEGAS HD Radio was more visible at this year's Consumer Electronics Show compared to last year. Meanwhile, the alliance of major broadcast groups formed to promote the rollout has begun its work with CE manufacturers and retailers.

Some 18 manufacturers showed and demonstrated HD Radio products that are due to reach consumers later this year.

Broadcast engineers who spoke with Radio World during the convention were encouraged by the scope of IBOC product offerings.

Ibiquity Digital President/CEO Robert Struble said the technology developer plans a more intense rollout in 2006 and believes the number of stations converted will more than double that of the 600 or so on the air at the end of 2005. Hundreds of multicast channels will be launched, he said.

Here's a roundup of HD Radio-related news at the CES show.

See CES, page 5 ▶

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NEWS WATCH

DTV Sales up, Radios Down

LAS VEGAS Factory sales of consumer electronics will reach \$135.4 billion this year, according to the Consumer Electronics Association. President/CEO Gary Shapiro said sales exceeded his expectations in 2005, totaling \$125.9 billion; the group forecasts 8 percent growth in 2006.

While growth is projected overall, that's not true for radio sales.

Aftermarket autosound factory sales are projected to drop to \$2.18 billion this year, after an estimated \$2.23 billion for 2005. Factory sales of home radios, at \$9.2 billion in 2004, were projected to be \$8.7 bil-

lion in 2005 and \$8 billion this year.

CEA said 2005 sales totals overall exceeded its initial projection of \$122 billion, increasing by 11 percent over 2004, and attributes much of that growth to "next-generation" products and innovations in wireless devices, flat-panel displays, MP3 devices and gaming consoles and software.

CBS Radio Now Re-Branded

NEW YORK Viacom and CBS now trade separately on the New York Stock Exchange.

What had been two divisions of Viacom are now two publicly traded entities: CBS Corp. and the "new" Viacom

Inc. The newly re-branded CBS Radio is part of CBS Corp.

Shares of Viacom and CBS began trading on the NYSE on Jan. 3 under the symbols "CBS.A" for CBS Corp. Class A Common Stock and "CBS" for CBS Corp. Class B Common Stock. Viacom stock trades as "VIA" for Viacom Inc. Class A Common Stock and "VIA.B" for Viacom Inc. Class B Common Stock.

CBS Corp. comprises CBS Television Network, UPN, CBS Radio, Viacom Outdoor, Viacom Television Stations Group, Paramount Television, King World, Simon & Schuster, Showtime and Paramount Parks. It will also include the operations of CSTV: Networks Inc., a sports television network and digital media company devoted to college athletics, an acquisition expected to close early this year.

Viacom Inc. is made up of MTV Networks (MTV, VH1, Nickelodeon, Nick at Nite, Comedy Central, CMT, Country Music Television, Spike TV, TV Land and other networks), BET, Paramount Pictures, Paramount Home Entertainment and Famous Music. Viacom Inc. has also entered into an agreement to acquire the DreamWorks movie and television production studio, and a distribution agreement with DreamWorks Animation. Viacom expected the deal to close in the first quarter.

Alisa Miller Heads PRI

MINNEAPOLIS Public Radio International promoted Alisa Miller to become president and CEO. Miller had been senior vice president of the PRI Content Group.

She replaces Steve Salyer, who left last fall to become president and CEO of the Salzburg Seminar, based in Middlebury, Vt., and in Salzburg, Austria. Salyer headed the public radio program distributor for 17 years.

PRI Board Chairman Douglas Carlston said Miller "combines an entrepreneurial approach, technological savvy and partnership skills with a strong commitment to public broadcasting."

Miller became senior vice president and head of PRI Content in 2004, overseeing development, acquisition and production of PRI content and creating partnerships. She helped create American Public Radio LLC, a partnership of PRI, Chicago Public Radio, WGBH Radio Boston and New York Public Radio, which manages the operation of three content streams for satellite broadcast.

She joined PRI in 2001 as senior vice president and director of PRI Channels, developing distribution and business opportunities and working with PRI subsidiary and Web services provider Public Interactive.

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KinStar Antenna Set for U.S. Sale

by Randy J. Stine

WASHINGTON Broadcasters facing tower height restrictions for new AM antenna projects have a new option when facing local zoning and FAA constraints.

The FCC has simplified application procedures for the low-profile KinStar antenna, no longer requiring proof of performance, current distribution measurements or a formula for the vertical plane radiation characteristic for non-directional AM facilities. Observers say the change opens up the U.S. market for developers of the vertically short antenna.

STAR-H Corp. and Kintronic Laboratories developed the KinStar, which has a reported radiating efficiency approximately 98 percent that of a quarter-wave tower at approximately one-third the height of a standard monopole. The antenna meets minimum efficiency for Class B, C and D stations, is scalable to frequency and measures just 45 feet high at 1680 kHz, according to the makers.

The FCC, based on field tests and reports evaluated by Ron Rackley of du Treil, Lundin and Rackley Consulting Engineers, announced in the fall it has simplified procedures for broadcasters to use the antenna. The KinStar requires use of a standard 120-radial, one-quarter wave, buried ground system. It will afford AM licensees the flexibility to place antennas where tall towers may be unacceptable, according to the commission.

Waiting for applications

The antenna consists of four electrically short, vertical closely spaced elements, each of which is terminated in a horizontal top load element. The developers claim the KinStar has the same volume of a standard quarter-wave tower "with the legs peeled down" and run horizontally, resulting in good radiation.

"I believe this has some historic proportions in that this is the first AM antenna that is a variant to the standard quarter-wave monopole antenna which will not require proof of performance," said Tom King, president of Kintronic.

"This was a very major step. We are now ready to move ahead and look forward to having licensees apply for the KinStar just as they would a standard quarter-wave antenna."

The need for broadcasters to lower the visual impact of their towers comes at a time when many face increasingly stringent local tower ordinances, King said.

"We have spoken with broadcasters who have expressed a great need for this type of antenna. We think we can fill the niche at this time, but feel the need for low-profile antennas will continue to increase."

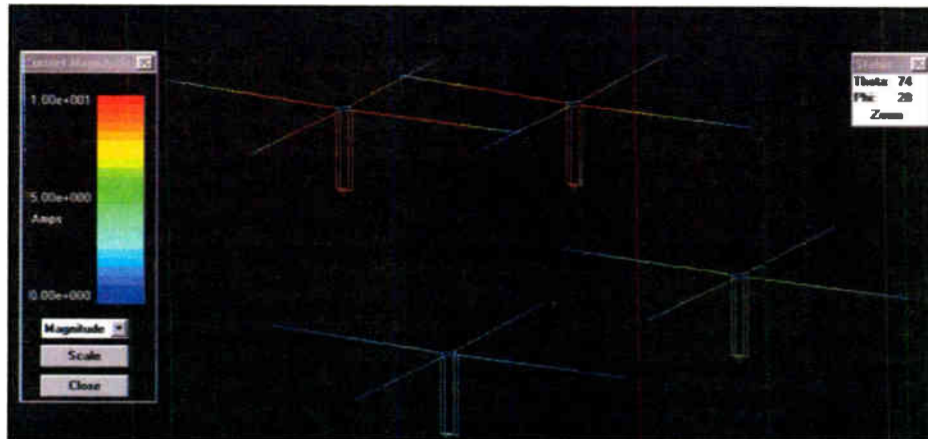
As of the end of 2005, King said he was unaware of any licensee applying to use the KinStar.

STAR-H Corp. will continue to provide design and engineering support to Kintronic as needed, said Mike Jacobs, director of research and development for STAR-H.

"We will provide design and engineering support to Kintronic. This will include computer modeling of antennas to provide engineering data for licensing and RF safety considerations," Jacobs said.

He said the KinStar, because of its low profile, can be installed in a more advantageous central location and improve signal coverage for a given market.

"They can achieve improved signal levels rather than installing a quarter-wave in an outlying area because it is neighbor-friendly ... resembling overhead utility lines, which are present in every neighborhood," Jacobs said.



KinStar Four-Element Directional Array Configuration for WKCW Radio on 1420 KHz, 50/1 KW DA-2

In addition to aesthetic factors, the KinStar can be constructed more rapidly than a traditional tower, and it can be built in a way as to make it more resistant to hurricanes and other extreme weather events, Jacobs said.

Cost of the KinStar depends on tower height and frequency because it's scalable to frequency, King said. For example, wooden utility poles could be used for supports on an antenna design of up to 60 feet, which equates to approximately 1300 kHz.

"Typically, in the low end of the AM band, it would be 120 to 130 feet high. That means a broadcaster would have to go with some other kind of support, a lattice tower maybe," King said. "The new antennas will not require FAA lighting or marking in most cases."

That's because FAA standards require lighting on all towers 200 feet or more above ground level.

King said he has been quoting customers "in the \$20,000 range" for the KinStar antenna materials kit, which includes "the design, antenna-tuning unit, ground system materials and feeder line" for the KinStar. The cost of supports and construction would add to the final price tag, he said.

Land requirements for the KinStar are approximately the same as for a standard quarter-wave antenna, King said, because of the ground system requirements.

KinStar developers say the antenna is IBOC-configurable and yields a broadband impedance that is compatible with all of the HD Radio AM transmitters on the market.

To come

While Kintronic officials put together marketing plans to promote the KinStar, developers of other low-profile AM antennas continue with their efforts to gain FCC approval.

The commission is accepting non-directional daytime and nighttime applications for Valcom Manufacturing's free-standing AM fiberglass antennas, which measure 75 and 94 feet and are intended for use between 900 kHz and 1700 kHz. Stations must provide full non-directional proof of performance to establish the antenna minimum efficiency and non-directional characteristics, a source in the FCC's Audio Services Division said.

Paul MacPherson, president of Valcom, said his company plans to approach the FCC later this year with new engineering

data to gain approval for use of its AM antenna without the proof of performance requirement.

"We have seen what Kintronic has done and will seek similar approval for our free-standing AM antennas. We've been very

pleased with the FCC response to our antenna," MacPherson said.

He estimated there are "a dozen or so" AM broadcasters in the states using the Valcom AM fiberglass antenna.

Predictable

The FCC source said KinStar developers

provided complete and detailed documentation describing operations of the antenna, including field tests and NEC modeling. The developers "showed that the antenna would perform in a predictable way across the AM band and that its operation could be described within the framework of our present rules."

The FCC used field-strength measurements collected from a KinStar test site constructed near Bristol, Tenn., in late 2002 in its evaluations, as reported by Radio World. The KinStar test antenna was 45 feet high and 105 feet in diameter over a full 120-radial ground screen and braced with wooden poles.

The FCC source would not speculate on the number of requests it may receive from broadcasters for the KinStar. However, the official did confirm the agency recently had an application proposing use of a short, non-standard antenna; that applicant subsequently withdrew the application after failing to provide adequate documentation.

Proponents of low-profile antennas say the broadcast industry is battling the "not-in-my-back-yard," or NIMBY, mindset, which is the impetus for many neighborhoods to exclude new tower projects. The need to find alternatives to tall towers will likely persist, experts say.

Dr. James Breakall, a professor in the Department of Electrical Engineering at Pennsylvania State University, holds the patent for the KinStar but is no longer involved in the antenna's development, Jacobs said.

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De La Hunt Troubled by HD Radio

Ed De La Hunt, 68, founded a broadcast company with his wife in 1962. It is based in Park Rapids, Minn., and now includes three AMs — including his first, KPRM at 870 kHz — plus three FM's and three pending AM CP's; and his son owns another FM that is run out of the same facility.

He's been a county commissioner, a member of the National Guard and Air Force Reserves and president of the local county Republican party. Of his eight children, five are engineers.

One thing Ed De La Hunt is not is a fan of digital radio as it is currently being implemented in the United States. He told me by phone that HD Radio on AM "is going to be a disaster." As he talked about it, he became more and more animated.

I asked this small-town, multi-station owner to comment further about his perspectives on digital.

Q: You sound worried about the future of radio.

De La Hunt: More concerned than worried. The whole digital scenario is being based on the big markets. Everybody is forgetting about the small markets, where profit margins, if they exist, are very narrow.

The other day I closed 30 schools because of the weather. I was wondering if I could have done that any better on digital as on analog. I wonder how many people in the next 20 years are going to have these newfangled radios.

We cover a rural area, a farm area. Some of these people have a single light bulb hanging from a wire on the ceiling and an old radio. I wonder how many of these folks would be able to buy a new radio.

Any digital transition, with the economy such as it is for small broadcasters, would mean the laying out of additional money. With most small AM stations, money is a nonexistent commodity. You're running the facility and you're serving the community; but to lay out big money and to pay somebody a license fee to use what you already have ...

The only thing we're allegedly going to get is to eliminate some noise. They're talking about only having your current cover-

age with digital. I sit here with a 25,000-watt signal to cover my community. I'm happy with what I have, thank you.

It seems foolish to me to buy any kind of system that obsoletes what we already have.

Q: Proponents say the HD Radio approach gives an owner the choice of whether to do digital.

De La Hunt: I don't want both. There's a lot of other places I can put the money. Doing some extra services for my community. Broadcasting a ballgame even though I only have two sponsors.

I think we need some improvement in the AM spectrum. But the approach we're taking, reducing the frequency response to 5 kHz, is an absolute joke. It's only being done as a way to precondition for IBOC, in order to allow eventually more stations to be shoved into the spectrum than we already have.

I have 20 stations from other markets (received) in my town. I don't need 40 or 50 just because all of a sudden everyone's digital.

Q: Your biggest concerns are ...

De La Hunt: The cost to convert. And the fact they're going to take away from me what I currently have.

I like skywave, I'm sorry. I like it! When I'm coming back from the Twin Cities and drive 250 miles, all I can say is, "Thank God for WHO." It keeps me company. But that's just the cherry on top of the sundae. The sundae is taking care of your local community, just as you are today. If you do that, you'll do OK. You don't need someone to pile some new technology on top of you.

I'm concerned about the cost. I'm sorry, but if I've got a 1 kW radio station, before I spend \$150,000 on Ibiq, I'm going to spend \$10,000 on a new solid-state transmitter and cut my power consumption.



Ed De La Hunt

Q: What do other AM owners say?

De La Hunt: The small ones think it's ridiculous. I'm involved with the Pavek Museum of Broadcasting, and I rub elbows with them there. A lot of them say, "If it gets to that point, the hell with it, we'll just shut it off." They're not going to spend that kind of money on an AM station.

Another thing. There's been an absolute effort on the part of FM stations for 20 years to "sell down the AMs." The young people today are so FM-oriented, you'll never get 'em to go back. You could have it so that you turn an AM station on and a six-pack of beer pops out and they still won't listen. So a lot of AMs are sports- and news-intensive; it's a scenario they won't get on FM. They'll listen to AM for that. But people don't want to listen to radio in CB quality at 5 kc.

Our last proof, four or five months ago, we're flat out to darn near 10 kilocycles. It takes some effort to get it there and control it there, but people say our AM sound is incredible. We have five engineers in our family, five consulting engineers, professional and licensed. Every single one of them is hell-bent to keep our AM station sounding as good as they possibly can.

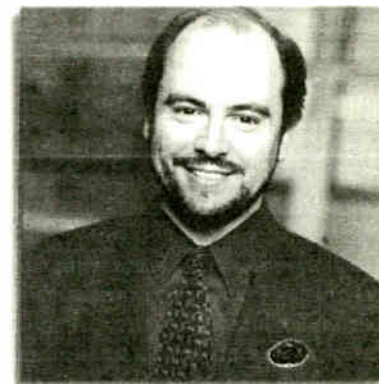
Q: You've been in the business for more than 50 years.

De La Hunt: I started in Twin City radio in 1958. I was a design engineer building color TV sets and went into the radio business as an engineer, moved up to no man's land at Thief River Falls, where I got my taste of small-town broadcasting. My wife and I filed for the Park Rapids frequency at 100 watts — the sheriff had 150 watts more than we had.

We raised eight kids, and five of them are engineers, PEs. One is with Carl T. Jones, my daughter Cynthia Jacobson. David is here and owns KSKK(FM). My son Matthew is the engineering director of SAIC and manages the Armed Forces Network worldwide.

My son Butch just left the FCC; he's back with us. [He was associate chief of the Audio Services Division and, later, deputy chief of engineering]. You say "IBOC" to him and his eyes light up; he thinks it's the

From the Editor



Paul J. McLane

greatest thing since sliced bread. The rest of the family says "No, no, no."

It's an FCC "thing," like AM stereo was. They don't look at the solid technical stuff, they look at who they like and don't like. They don't like Leonard Kahn. They didn't like him before and they don't like him again.

Q: So what's your alternative to HD Radio? What is the best practical path for industry to take?

De La Hunt: Let the broadcasters choose their own technology. Don't try to drive them with a standard. A lot of people say no one listens to AM now. Well, if no one listens, let the AMs do what they want within the current bandwidth standards.

On AM I think the majority of small-town broadcasters will go to Cam-D. We'll not go digital on FM; we'll go with the system [FMExtra from Digital Radio Express] that gives us additional channels for \$9,000.

I bought a Kahn stereo system in the hope that the marketplace decision would be a marketplace decision. Then the FCC mandated that I had to immediately turn it off. I'm scared of the commission once again being run by a bunch of bureaucrats mandating what we have to do, based on what they perceive to be a marketplace decision.

I know government. Government thinks they're right, and when they think they're right, they mandate. The living proof is what they did with the C-QUAM system. They absolutely destroyed the concept of

See DE LA HUNT, page 20 ▶

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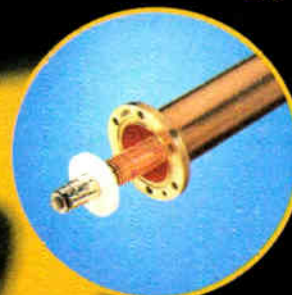
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CES

► Continued from page 1

RAMPING UP THE GEAR

Receiver prices will drop and products in more categories will enter the market, Struble predicts.

JVC, for example, said its \$329 list CD receiver with integrated HD Radio will replace a current offering listed for \$849.

Audio Design Associates, Boston Acoustics, DaySequerra, Philips Consumer Electronics, Polk, Radiosophy, Rotel, Sangean and Yamaha showed HD Radio products for the home.



Photo by Leslie Stinson

Clear Channel Traffic displayed its navigation system, launched with Audiovox last year, in a BMW in Ibiquity's booth. Clear Channel has deals with more receiver makers — Cobra, Garmin and Kenwood — for the traffic service, which serves 100 stations in some 50 markets.

Auto receiver manufacturing partners displaying HD Radio product included Alpine Electronics, Delphi, Dice, Eclipse, JVC, Kenwood, Panasonic, Sanyo and Visteon.

Ibiquity said companies planning to offer IBOC products early this year include ADA, Alpine, Boston Acoustics, DaySequerra, Dice Electronics, Eclipse, JVC, Kenwood, Panasonic, Polk Audio, Radiosophy, Rotel, Sanyo and Yamaha.

HD-R MULTICAST RADIOS FEATURED

Every radio in Ibiquity's booth could decode multicast signals. On display were three vehicles with OEM, aftermarket and advanced data applications of HD Radios with live multicast broadcasts by Beasley station KSTJ(FM), Clear Channel's KWNH(FM) and CBS Radio station KXTE(FM).

Live traffic information was displayed on a navigation system and a preview of the new HD Radio retailer training site was showcased.

SALES TRAINING BEGINS

Ibiquity has launched a retail sales training tool to combat confusion about HD Radio among the public and electronics salespeople.

The free program, dubbed "HD Radio University," requires registration at

www.hdradiouniversity.com and was to start at the end of January.

Ibiquity hired Creative Channel Services' cyberscholar.com to develop the program. CCS will host the site and says its training reaches a potential 90,000 salespeople in approximately 7,000 stores. Retailers such as Best Buy, CompUSA, Staples and Circuit City use the training, according to CCS.

HD Radio University will offer retailers two levels of achievement: an "Associate's Degree" and a "Bachelor's Degree." Each will require salespeople to participate in 20 minutes of training about HD Radio and pass tests at the end of each session. Later in 2006, a third 20-minute unit may be added to create a "Master's Degree" level that incorporates

entertainment system, including HD Radio, without replacing OEM components.

The KOS-A200 can be integrated with OEM radios that include RDS FM tuners, allowing text to be displayed on the radio from devices connected through the USB or 5L input. Other devices that can be integrated with the OEM system include Sirius Satellite Radio tuners, disc changers, MP3 players, iPod players and Kenwood's new Bluetooth adapter for hands-free cell phone integration.

"Seventy percent of the OEM vehicles have RDS tuners," said Kenwood's Mike Bergman.

The KOS-A200 includes a USB input, two stereo auxiliary analog inputs, a 5L disc changer input, IR eye input for the remote control, and is HD Radio-ready and Sirius-Ready when an external tuner is connected via the 5L input.

Kenwood displayed a prototype. The unit is to ship in June and lists for \$200.

HD-DICE SHOWCASES HD-R ADAPTER

Dice Electronics displayed a hard-wired HD Radio integration solution for OEM and aftermarket head units.

With the HD-Dice receiver, consumers can keep their existing car sound system. HD-Dice has inputs for a CD changer, navigation system or other auxiliary device. The product will be available in Q2 and compatible with Audi, GM,

Nissan, BMW, Honda, Toyota, Chrysler, Mazda and Volkswagen vehicles.

Ibiquity Chief Operating Officer Jeff Jury said the launch opens a new category for HD Radio products.

JVC SHOWCASES GEN 2 PRODUCT

JVC's second-generation HD Radio CD Receiver is due on store shelves in March for an expected price of about \$300. The KD-HDR1 includes a multi-cast capable HD Radio tuner, is satellite radio ready, and Ready for iPod, allowing iPod connection, recharging and information display using JVC's KS-PD100 adapter.

Other KD-HDR1 features include JVC's Digital Integrated Alignment System tuner, based on a unified chip rather than the more common hard-wired analog tuner to deliver what the manufacturer says is improved reception with minimum interference and signal fades to maximize the performance of analog broadcasts.

Additionally, with the KD-HDR1's Digital 7-band iEQ, users can boost or cut the level by up to 10dB on each of seven bands (60, 150, 400, 1k, 2.4k, 6k and 15kHz) to customize the overall response according to a car's acoustic environment.

HD-R ALLIANCE ON THE JOB

HD Digital Radio Alliance President/ See CES, page 6 ►

more technical aspects of the HD Radio digital broadcasting system.

Bernie Sapienza, vice president of retail business development for Ibiquity Digital, said as sales staff turns over, the program also helps bring new hires up to speed on HD Radio.

IBIQUITY DEVELOPS CAR ADAPTER

Ibiquity says it developed a reference design for a universal tuner box, a protocol converter and adapter cable that plugs into satellite-ready head units. The equipment allows head units to receive digital AM and FM as well as FM multicast signals. The company said the product would be compatible with a total of more than 200 OEM and aftermarket auto receivers.

The HD Radio tuner will be compatible with factory-installed receivers — including those from Chrysler, Ford and GM — and aftermarket receivers from companies such as Panasonic, Kenwood, Alpine, Pioneer and Sony. No special antennas or other accessories are required.

The converter connects using an adapter cable to the CD changer input of a satellite-ready head unit. Summer availability is projected with a list price of around \$300. The company also plans to develop a similar product with a built-in FM modulator to provide HD Radio tuner control to RDS head units.

KENWOOD DEMOS INTEGRATED OEM SOLUTION

Kenwood USA displayed a car audio product that it says makes it possible to upgrade or add components to a vehicle

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CES

► Continued from page 5

CEO Peter Ferrara met with receiver manufacturers, automakers and CE retailers about HD Radio promotion at the show and said he received an enthusiastic response about the alliance. The majority of those with whom he met were aware of what the alliance is and able to get into more detail about alliance plans and what these organizations can do together to promote terrestrial digital radio.

Shortly after CES, alliance members planned to make decisions about the formats for multicast stations in the first 25 cities, which will include most of the top 25 markets.

TI: HD-R PROMOTION IS CRITICAL

Promotion and education of consumers will persuade U.S. automakers to install terrestrial digital radios, according to Texas Instruments Project Manager for Digital Radio John Gardner.

"Broadcasters have to have a huge amount of pull," he told RW. "You have to have David Bowie dropping out of the sky," referring to a series of national TV ads XM Satellite Radio ran to promote its launch.

TI's investment in HD-R receiver chips represent a significant investment in the technology, he said. TI also manufactures chips for Eureka-147 and Digital Radio Mondiale receivers.

STRUBLE: HD-R IS LIKE A 'SUPER-SIZE' ADVERTISER

Struble said the HD Radio Alliance is a tremendous step forward for the rollout.

"When they spend that \$200 million, HD Radio will be the largest radio advertiser on AM and FM," he said, referring to the value of ad time major broadcast groups have promised to devote to the HD-R promotion effort.

He and alliance head Peter Ferrara talk frequently, he said. A major question for both is how fast the promotion and multicasting format rollout can proceed.

Asked about the timing of the FCC's final authorization of the technology, Struble said he believes the FCC will authorize IBOC permanently in stages rather than in one large proceeding, with

multicasting and AM nighttime authorization to be handled next.

NRSC VOTES DOWN COX DISPLAY IDEA

The National Radio Systems Committee voted down a resolution offered by Cox Radio, which wanted the NRSC to form a committee with the goal of recommending a standard and implementation plan for identifying multicast channels on HD Radios.

Members of the Digital Radio Broadcasting Subcommittee, formerly called the DAB Subcommittee, felt such a decision should not be made by a technical committee, said NRSC Chairman Charlie Morgan after the meeting at CES.

Cox funded focus groups to research whether the radio display should read the current "HD2" when identifying multicast channels, or appear as a "new" frequency to position digital as a "new" band. Bob Harper, who conducted the research for Cox, presented his finding to the committee at the show.

Responding to the "no" vote, Gregg Lindahl, vice president of Cox Interactive, said the company will now focus on developing its supplemental channels for HD Radio. "The bigger issue is getting consumer input" into how the channels are displayed, he said.

BOSTON ACOUSTICS SHIPS BACK-ORDERS

Boston Acoustics is shipping "thousands" of its Receptor Radio HD unit to fill back orders, according to Stephen Shenefield, promoted to vice president of engineering for the receiver maker. The unit is one of the first that can decode multicast signals. The Receptor Radio HD includes a second satellite speaker for stereo separation, and a remote.

A stereo input accepts iPods/MP3 players and other external audio sources, and the radio's stereo headphone output doubles as a line output, allowing it to serve any component audio system as an HD Radio source. The radio lists for \$499 although broadcast deals for bulk purchases can still be had, a company source recently told Radio World.

VISTEON DEMOS MULTICASTING

Visteon, which says it's the first automotive supplier to bring HD Radio into North American vehicles, demonstrated a multicasting prototype at its booth.

Visteon and BMW installed factory-installed HD Radios in the 2006 BMW 6- and 7- Series sedans.

PRI GROWS HD-R PORTFOLIO

Public Radio International added BBC Mundo to its lineup of programming for multicast channels. Produced by BBC World Service, it is a Spanish-language service featuring several programs.

KPCC(FM), Los Angeles, KVCR(FM), San Bernardino, Calif. and KNAU(FM), Flagstaff, Ariz. were among several PRI affiliate stations slated to launch BBC Mundo last month on their HD Radio multicast channels.

PRI offers its 732 affiliate stations a range of HD Radio streams. Also, stations can use programming to create custom streams for SACs and provide content not available in their markets.

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World Radio History

Young

► Continued from page 1

Maybe in 2040, these will be the guys grouching about how they miss their iPods and hard-drive automation systems.

Big Apple, young seed

Rob Bertrand, 27, is a full-time technician who came to Infinity station WCBS(AM) in New York in April of 2005.

"I'm more or less self-taught," Bertrand said. "But I have always been electronically inclined, beginning at age 13 when I started my own alarm company, which later helped pay for college. But I fell in love with radio at my college station, now known as RLC-WVPH(FM)."

When Bertrand got to Livingston College at Rutgers University in New Jersey, the AM carrier current station had fallen out of favor with the FM-oriented student body.



Rob Bertrand, right, is a 27-year-old technician for WCBS(AM) in New York. Ken Bieber, WINS/WCBS transmitter supervisor, stands beside the WCBS Continental 317C3 auxiliary transmitter.

"I found that nearby Piscataway High School had an FM frequency they were only using four hours a day. WVPH was in trouble and facing a license challenge from a local religious group, so in the fall of 1997 we formed a partnership to share the frequency and transmitter.

"It was that experience of literally saving a station that forced me to learn about audio and RF."

After four years at Greater Media stations WMGQ(FM) and WCTC(AM) in New Brunswick, Bertrand landed in the nation's biggest market nearby. At WCBS, he is the youngest member of the engineering staff.

"They have a number of great engineers who are not that far from retirement, and I need to learn the entire operation so I can support whatever they need me to do. I'm responsible for anything that spits out audio, and a lot of that now is computers," he said.

WCBS is a digital plant with Klotz consoles, a Burl software package in the newsroom and Prophet Systems automation handling commercials. Bertrand also spends time at the shared WFAN(AM)/WCBS transmitter location at High Island, N.Y., with Ken Bieber, who is transmitter supervisor for sister station WINS(AM) and WCBS, and Dick James from WFAN.

"Here we have a GM, Steve Swenson, who recognizes the need to develop new engineering talent and takes the lead in recruiting," he said. "Steve took an unprecedented step in hiring someone like me who had been working nine years, with only four of those outside college. But that is what it will take to ensure the long-term viability of stations like WCBS.

"I am also thankful to Milford 'Smitty' Smith at Greater Media for his mentoring and guidance over the years. We need more people like these guys to start internships

and part-time positions to get more young people into the industry."

All in the family

Ben Ary is chief engineer for Clear Channel in Columbus, Ohio.

"My father Jim was an engineer for Taft, Great American, CitiCasters, Jacor and Clear Channel. I grew up going to work and to the transmitter site with him on weekends," he said. "I got right into it after I graduated high school and got my two-year associates degree in electronic engineering from Marion Technical College while I was working in radio."

Ary, 29, also attended a couple of Harris transmitter schools for additional training before receiving his SBE certification. He encourages formal education for others in his age group.

"When you go to college, take IT and

networking classes," he said.

Ary's mentors include his father and Greg Savoldi, now regional director of engineering at Clear Channel, Columbus.

"This is a fun field and I never have a boring day," said Ary, who also handles chief engineer duties at four radio stations in nearby Marion, Ohio.

An Ary associate is Clear Channel staff engineer Andy Mika, 26, whom Ary describes as intuitive, smart and driven. Mika was literally "grandfathered" into the business.

"My grandfather introduced me to electronics," Mika said. "He was an electrical engineer and let me fix broken equipment and taught me to solder. This combined with my love for audio led me to a career in radio.

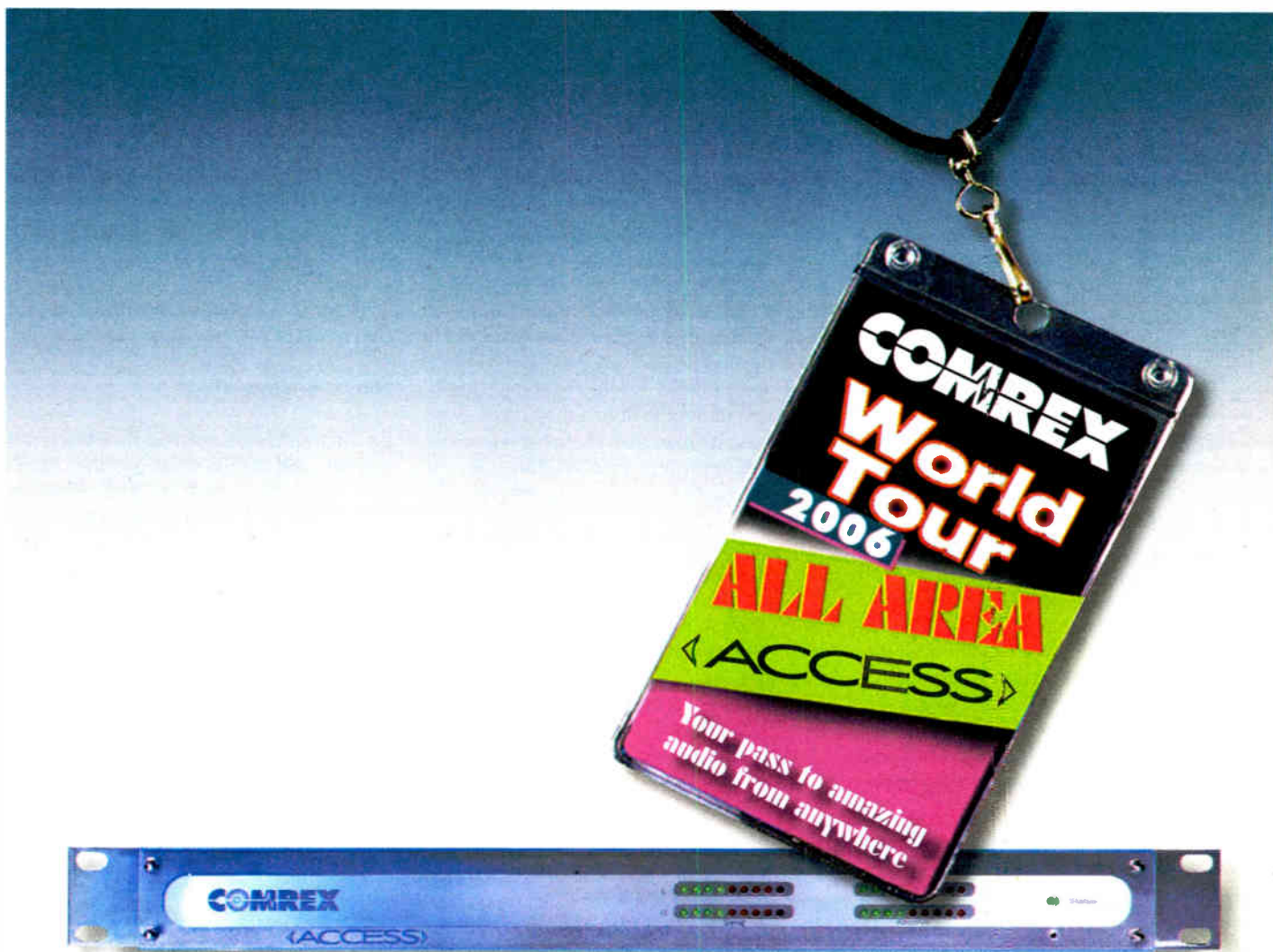
"I started on the air at my college station at Otterbein in Westerville, Ohio," said Mika; the station was WOBN(FM). "I did-



Andy Mika, 26, works for Clear Channel in Columbus, Ohio, as a staff engineer.

n't get too involved with the RF side, but I liked to fix things and problem-solve. When I got there they were still using cart machines and CD players, and they didn't have any automation."

See YOUNG, page 8 ►



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COMREX

Young

► Continued from page 7

Mika installed a Prophet Systems NexGen while he was a student. He later received broadcast and audio degrees and finished a four-year degree in communications with a broadcast focus.

What age gap?

In the northwest corner of the country you'll find Fisher Radio, Seattle. The assistant engineer there is Gabe Joseph, 26, who began his career as an on-air reporter, news anchor and disk jockey.

"I started at Cascade Radio Group in Bellingham, which included KGMI(AM)/KISM(FM)," he said. "I was attracted to engineering because I have technical abilities. The program director there, Greg Roberts, encouraged me to stick with that part of the industry."



Ben Ary, 29, is chief engineer for Clear Channel in Columbus.

Joseph was self-taught; he later took classes in computer network engineering and electronics. "But I must say that one advantage to the analog days was that if you had a cart machine break, you had another you could substitute," he said. "And it didn't bring down the whole station."

Because he didn't have a lot of RF experience, Joseph began working with older engineers. His main focus today is on automation systems, consoles and studio work.

"We have a TV station here too, and those guys can help me learn more about RF and other traditional engineering principles," he said.

Joseph believes that whether the department is sales or engineering, handling people represents the biggest issue he has to face.

"Sometimes we'll have jocks complain about equipment they believe is broken," he said. "But really, they just don't know how to use it. So I spend a lot of time helping them."

He is concerned about the future of radio engineering and the people who will become leaders.

"A lot of the guys are in their 40s and 50s; and when they retire I'm not sure who the engineers are going to be," he said. "Part of the problem is that young people are going into computer fields and there is very little encouragement by management to recruit new engineers."

Consolidation, according to Joseph, may also be part of the problem.

"It used to be that an engineer oversaw two stations and probably had an assistant," he said. "Consolidation means that one engineer has even more stations to deal with and has no assistant — if the station is lucky enough to have an engineer at all. Contract engineers have to be brought in to do the heavy stuff like climbing towers."

"And we wonder why it is getting harder to find qualified applicants."

Joseph said that the mark of a good engineer is that he or she wants to teach other people and leave good documentation. He also believes that the broadcast business is not for everyone.

"I don't think I would encourage someone to go into radio unless they really want to because it means hard hours and low pay in the beginning," said Joseph. "But if you're dedicated it can be very rewarding."

Networking

Here's something to ponder: The children of the Reagan era now are becoming chiefs.

Wescoast Broadcasting's KPQ(AM/FM), Wenatchee, Wash., is home to Chief Engineer Aaron Ishmael, age 23. He too was brought into the business by his father, a program director.

"I am mostly self-taught, but I do have an associate of science degree from Red Rocks Community College in Lakewood,

Colo.," he said. "I enjoy making things better, whether it's a new studio project or revitalizing a transmitter site. I spent some time in programming and sales, but I was never as good at those as I was at engineering."

Ishmael, shown on page 1, credits Brad Hart and Gary Nakashima, chief and assistant chief engineers at Jefferson Pilot Communications in Denver, and Jay White, corporate director of engineering for Morris Communications, all of whom have helped him in his career.



Older? Younger? Irrelevant? At 45, Dave Adams is chief at KSRV(AM/FM), Ontario, Ore.

"Networking with others is so important," he said. "If you don't know the solution to a problem, chances are someone else has faced the same thing and has the answer."

Ishmael is in the process of renovating a studio that is 17 years older than he is.

No two days alike

At 45, Dave Adams is almost twice the age of Aaron Ishmael, and thus bridges the gap between the youngest and the oldest in the engineering world. He is chief engineer at KSRV(AM/FM), Ontario, Ore. owned by FM Idaho Co.

Adams has been at his stations five years longer than Ishmael has been alive. He enjoys living and working in his hometown. After a brief stint in New Zealand he returned to the United States with a renewed appreciation for our FCC. Adams feels that our commission is more responsive to complaints and more fair to all parties in a dispute than its counterpart in New Zealand.

He started in radio at KYET(AM), Payette, Idaho. When the morning jock there was killed in a motorcycle mishap, Adams found himself on the air using an old Gates tube console and RCA ribbon microphones. He was hooked.

"I have had the privilege of working with some really good engineers who didn't mind me asking questions," he said. "But they all told me it was my responsibility to pass the information along and help others, too. Rockwell Smith at Journal Broadcasting in Boise and Chuck Harland at KSRV were both good influences. Rockwell is one of the best trouble-shooting engineers I've ever seen."

Adams loves the variety in his job. "Every day is different. You could be working on the septic tank, climbing a tower, then working on computers. You don't do the same thing two days in a row."

He also likes to have a job where he can make a difference in the lives of others.

"I believe a local radio station plugged into its community can inform people, fulfill a mission and still have fun. You might even save some lives."

Adams' boss is a corporate director of engineering at age 41. Jeff Allen operates out of the FM Idaho office in Twin Falls and also works for Locally Owned Radio in the city. He oversees eight AM and FM properties.

"I got crazy about radio when I was 10 years old listening to Portland's KGW(AM)," Allen said. "I started working for Al Lee at KART(AM)/KFMA(FM) in Jerome, Idaho back in 1978."

Allen is self-taught through books and what he could pick up from other engineers.

"I used to tear things apart as a kid, which was good experience," he said. "I now run a video production company in my spare time. I produce the TV spots for both radio companies along with voice-overs and animation for various TV groups."

Their emergency, my challenge

"Everything is an emergency to some people," said Fred Bennett, 24, a staff engineer for Infinity Broadcasting in Las Vegas. "So I have learned to do just about everything."

Bennett started in the small town of Port Huron, Mich., at WHLS(AM) and WSAQ(FM). He attended Kettering University and met his mentor Dick Howard, who now works for SBC, while doing a remote broadcast.

"Each day is different," he said. "The change is what's exciting for me."

Bennett said not a lot of formal training is available to young people who specifically want to become radio engineers.

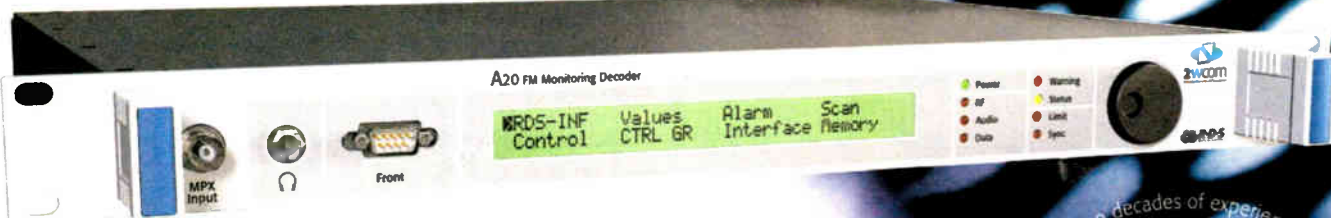
"My school didn't even have a radio department," he said. "But if it's something you're interested in, get involved with the local station setting up remotes. Just start someplace."

Rob Bertrand at WCBS believes that it is up to management to encourage young people to work as engineers.

"The entire notion of 'farm team' stations in smaller markets to develop new talent is becoming less common as staffs are being reduced or eliminated," he said. "If more leaders of our industry do not start taking more responsibility for developing young talent, we are going to be in a crisis situation very soon."

Bertrand may be right. Then again, looking at the young people we talked to for this article, maybe not.

Know a young engineer who makes you optimistic about the future? Share his or her name with the industry. Write to radioworld@imaspub.com.



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IBOC: The Next Copyright Battlefield

Several Reasons Digital Radio Is Attracting Such Attention From the Music Industry

by Skip Pizzi

You may be wondering why record labels seem to have recently discovered IBOC technology, and are rallying regulators, legislators and anyone else who will listen to add content protection to music broadcast over HD Radio.

After all, hasn't radio always broadcast music freely, and hasn't this seemed to help rather than hinder record sales? OK, IBOC transmission may sound a bit better, but won't peo-

ple searching for music still greatly prefer to download songs (legitimately or otherwise) from online sites, or copy them from CDs, rather than record them off-air in real time?

And anyway, isn't it likely that a song recorded from the radio will have its beginning and/or ending stepped on by DJ banter, commercials or the top/tail of another song (not to mention often being subjected to heavy dynamic-range reduction and other air-chain audio processing)?

Well, the answer to all these questions is very probably yes; but notwithstanding such practical and behavioral constraints, there remain several potentially valid reasons why digital radio broadcasts constitute a new threat to the music industry's copyrighted material.

These issues have prompted the RIAA to pronounce digital radio as a greater threat to the music industry than (the original) Napster ever was. Of course, the organization said the same thing recently about CD burning, but it may have been correct in *that* assessment. So what similar dangers do the RIAA and its members now foresee from digital radio?

First, consider that a lot of the "unpro-

The Big Picture



by Skip Pizzi

ected" music in the file-sharing environment is MP3-encoded at 128 kilobits per second. The HDC codec used by HD Radio (like AAC, WMA and other codecs of its general class) is at least twice as efficient as MP3, meaning that it can produce equivalent or better quality to these files at 64 kbps. This implies that HD Radio music broadcast at the full 96 kbps IBOC-FM payload rate can provide higher audio fidelity than much of the P2P music being shared, and it can even match or exceed the quality of higher-fi 192 kbps MP3 files.

While the newer, "protected" (or "legitimate") music download services use codecs of roughly equivalent quality to HDC, and at rates of 128 kbps or higher, these services have not yet attracted the bulk of online music users. Despite the strong growth of paid digital music downloading since its inception, the majority of online music activity still takes place in the unprotected MP3 domain.

The RIAA has pronounced digital radio a greater threat to the music industry than the original Napster.

The RIAA sees unprotected HD Radio as a potentially attractive step forward in quality for the "free" digital music environment.

Musicbots

Another concern of the RIAA regards how future digital radios might actually work, particularly those that could be built as peripheral devices to PCs or other computer-based devices (such as the next generation of powerful, "converged" handheld platforms).

Given the likelihood that most IBOC music broadcasts will include synchronized metadata identifying artists and song titles, the RIAA foresees a simple computer application that could record IBOC broadcasts, store songs as individual audio + metadata files, and then easily build rich libraries of freely obtained music.

Such an application could use the files' metadata to name, sort and search the files, and "clean" versions could

See IBOC, page 11 ►

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IBOC

► Continued from page 10

even be stitched together from multiple recordings (thereby eliminating voice-overs and crossfades that may have occurred when the cuts were aired). These relatively high-quality, automatically catalogued files — or entire libraries of them — could then be freely shared online.

It is for this reason that the RIAA is seeking not only a content-protection scheme for digital radio music broadcasts, but also rules that would inhibit a device's search capabilities after recording. This includes prohibitions similar to those already in effect for Internet radio, such as a limit to the number of consecutive songs that can be played from a single release, and a restriction that recording devices could only record long-form blocks of radio programming (e.g., 30- or 60-minute minimum), which must be retained as single, contiguous files — thereby disallowing subdivision into individual song files.

There has also been discussion of a preference by record companies for the purposeful de-synchronization of metadata from its corresponding audio, to foil the ability of automatic searching of recorded radio broadcasts. For example, this might require broadcasters to withhold transmission of a song's metadata until a few seconds had passed after the song started playing, and to keep this timing differential variable and randomized.

Cases in point

A final issue deals with some nuances in the digital music world's ongoing litigation. Several recent court decisions, including one in the U.S. Supreme Court, have bolstered the RIAA's position that certain music file-sharing practices constitute copyright violations.

In all of these rulings, jurists took great pains to distinguish between the today's file-sharing practices and the so-called "Betamax" case (*Sony v. Universal Studios*), which has stood as a guiding precedent in this area of law since its issuance in 1984. A key component of this distinction is that the initial access to music files by accused file-sharers was unauthorized by the copyright holder, and thus the subsequent activity constituted infringement. (It was stipulated that users initially obtained music files from illegal file-sharing services, or they ripped them from CDs that may have been legitimately purchased, but such purchase clearly did not include the right to republish via a file-sharing site.)

This was in stark contrast to the Betamax case, which held that the initial transmission of the content recorded by device-users was via TV broadcasts that were authorized by the copyright holder. Although it could still be argued that widespread redistribution of such content by the Betamax user would also be illegal, the initial capture of the content was legal. Any argument toward limitation of subsequent use of the content is

therefore harder to make, especially given that the content was already broadcast in the clear (i.e., without content protection and/or accompanying usage restric-

tions), and with the copyright holder's knowledge and permission, so this distribution came with certain known risk of uncontrolled downstream usage. On the other hand, if the content that a user stores on his own equipment is illegally obtained to begin with, any further redistribution of that content would also be illegal, so the argument goes.

The RIAA is seeking not only a content-protection scheme for digital radio music broadcasts, but also rules that would inhibit a device's search capabilities after recording.

Copyrighted disc, versus content that was obtained from authorized and unrestricted broadcasts. They foresee the possibility of not being able to extend the hard-fought recent victories over file-sharers of the past and present to future file-sharers that obtain their music via different (i.e., digital broadcast) means, and thus having to possibly argue such cases anew under different circumstances — and perhaps a higher burden of proof.

For all of these reasons, and possibly more yet to be identified, the subject of content protection on digital radio will remain a high-profile issue on the regulatory, legislative and technical fronts for the foreseeable future. The solution may ultimately rewrite copyright law.

Skip Pizzi is contributing editor of Radio World.



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Datacasting Services Spread

by Tom Vernon

Interest in datacasting with the RDS subcarrier seems to be on the rise. European broadcasters had been leading the U.S. in datacasting applications, but the gap is narrowing. Services such as emergency alerts, retailing and traffic information are being deployed. Even more exciting applications have been envisioned for HD Radio's data channel.

to satellites as that technology became cost-effective.

Still popular is the Microsoft Smart Watch, which uses existing FM subcarrier technology to deliver targeted information from the Internet to a subscriber's wrist watch display.

EWS

Today, a variety of services use RDS technology for datacasting.

viaRadio, for example, uses RDS

for emergency alerts and messages. It contains two tuners, one adjusted by the user, the second fixed to the selected RDS signalling station. Accuracy of the clock is maintained by regular updates from the network. A rechargeable battery pack ensures operation during power outages.

A professional version of the EWS receiver is available for first responders and the disabled. It includes a serial output port and contact closures.

viaRadio EWS systems have been deployed in Europe, with approximately 50,000 receivers in the field; the service is just being introduced in the United States.

Bill Marriott, president of viaRadio, said plans are under consideration to migrate the service to other platforms. "We're looking into datacasting viaRadio with DRM (Digital Radio

time traffic and weather information. Typically, this information is routed from a receiver to the car's TMC-enabled navigation system, which can offer dynamic route guidance. TMC not only alerts drivers to problems, but suggests alternate routes to avoid delays.

Systems usually allow the driver to view the information as icons on their navigation map or as text messages.

Information is collected from traffic monitoring systems, emergency services and drivers' calls at a central traffic information center. This data is passed to the TMC service provider, who adds the proper RDS coding protocols. Typical throughput of information from first report of an incident to TMC broadcast can be as little as 30 seconds.

Traffic information is received by the data channel, so drivers can listen to music or news simultaneously. Since the information is displayed in near-real time, there is no need to wait for the next traffic update or listen to a specific station.



Visteon HD Radio with traffic display

FM subcarrier technology has been around almost as long as the FM broadcast band. The FCC rules originally stipulated that Subsidiary Communications Authorization, or SCA, channels only be used for aural services.

In April 1975, the commission changed the rules to allow non-aural SCA services. Proposed applications included slow-scan TV, teletype and facsimile. The SCA channel could also be used for in-house applications such as return telemetry for transmitter remote control, or relaying sports or other specialized programming on a regional network basis.

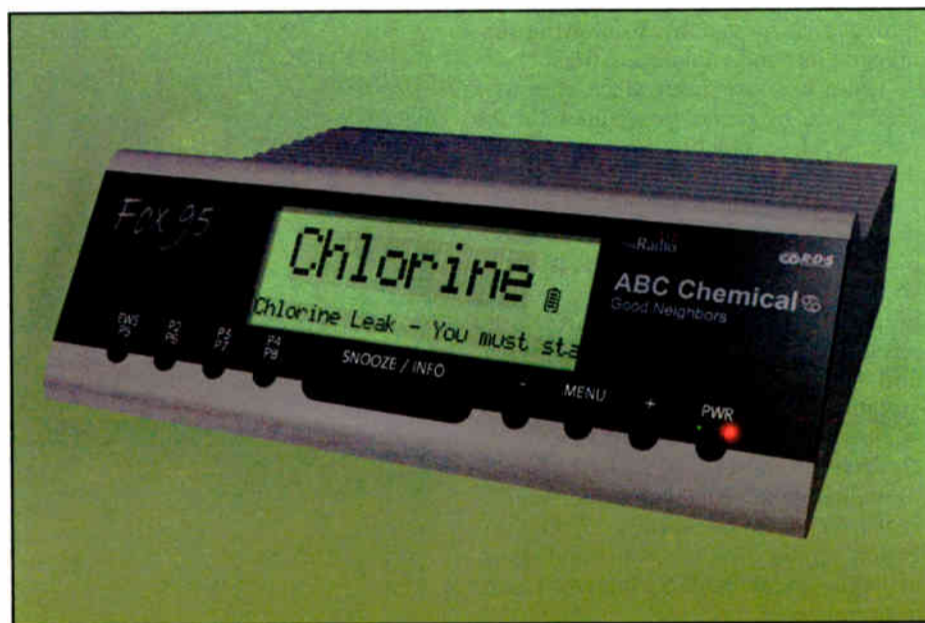
Most subcarrier revenue was generated by aural services such as Muzak and Physician's Radio Network, although data applications such as differential GPS and Quotron enjoyed brief popularity. Many services switched from subcarriers

coders and addressable emergency warning receivers for its Emergency Warning System, or EWS. The service recognizes a need to reach key people in emergencies, even when they are asleep. viaRadio relies on specially-designed clock radios with a digital text display.

Warning messages are sent via a station's RDS channel, which activates an alarm on the clock radio and displays a text message.

The owner of the system chooses what message to send, to which group of radios, and at what level of urgency, all by using a Web interface. Typical users include state and local government, nuclear plants, chemical plants, refineries, railroads and pipelines. Each EWS receiver can address up to 32 groups.

The viaRadio receiver looks and acts like a clock radio until it is activated



viaRadio EWR Receiver

Mondiale) for shortwave stations. It has a great potential to alert people in tsunami-prone areas where there are few local broadcasters."

He said chipsets for DRM are available, though prices are high. Costs are expected to drop when DRM-capable short wave sets are mass-produced.

TMC

Another datacasting application that utilizes RDS is the Traffic Message Channel (TMC), which broadcasts real-

TMC traffic information systems are standardized globally. The same standards are used by traffic data collectors, information service providers, broadcasters and receiver manufacturers. All receivers use the same list of event codes, while the location database contains a specific set of location codes.

The TMC system, too, has been deployed in Europe, where receivers can display information in language selected by the driver. New delivery channels are

See DATACASTING, page 14 ►



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Technology can save you money.

Consider: computers, VoIP phone systems and bandwidth cost less and deliver more every year. Wouldn't it be great if broadcast gear did, too? Thanks to Axia, it can.

Axia saves you money by using open Ethernet technology to replace expensive proprietary mainframe routers. Not only is Ethernet less expensive, it's simpler and more reliable — perfect for critical 24/7 operations. The Axia IP-Audio solution eliminates sound cards, DAs, punch blocks and cumbersome cables, so it reduces installation and maintenance costs.

And now, Axia has a cool new modular control surface: Element. Scalable from four to forty faders, you can build the ideal surface for every studio. Element's abundant outputs and flexible architecture can be switched between stereo and surround mixing. Its info-rich user display, built-in router control, and integrated phone and codec support simplify the most complex shows. You'll never outgrow it.

Like all Axia products, Element does more and costs about half what others try to charge for their "Trust us, this is better than Ethernet, would we lie to you?" stuff.

Element. Worth its weight in... well, you know.



www.AxiaAudio.com

MARKET PLACE

MGE Galaxy 4000 Uses IGBT Rectifier on Harmonics

MGE UPS Systems offers the Galaxy 4000 UPS, which features Digital Power Quality Management and IGBT technology that eliminates input harmonics.

The company says the 40, 50, 65 and 75 kVA online double-conversion Galaxy 4000 models' IGBT rectifier rids input harmonics from the utility-supplied power and corrects the input through power fac-



tor correction. These features allow the UPS to be installed using smaller cabling and breakers. Additionally, the Galaxy's power surge stabilization system regulates voltage during surge conditions.

Users can add more battery banks to the Galaxy for applications requiring extended runtimes. For example, the 40 kVA Galaxy UPS with four battery cabinets protects connected systems for more than two hours during a power outage.

The company says it has incorporated battery management into the series because batteries often prove to be a weak link in a UPS system. Through automated load testing of the batteries, the UPS determines battery performance parameters and alerts operators to irregularities. Additionally, automatic predictive failure analysis of the batteries allows users to know when they should replace batteries.

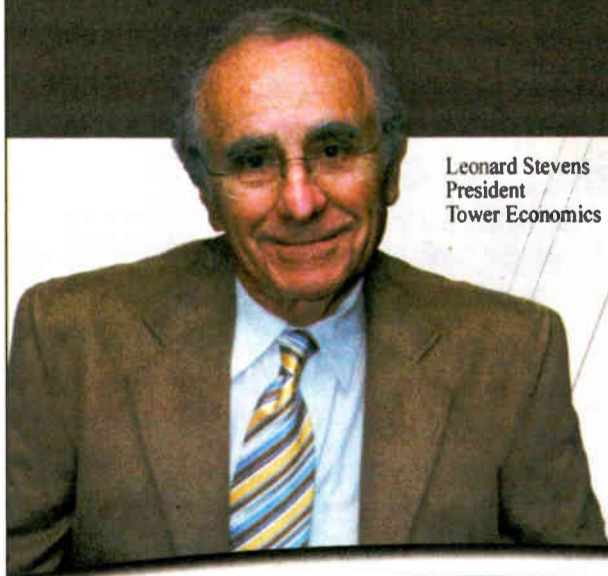
The UPS' front-panel LCD display offers measurements and diagnostic messages as well as an LED mimic diagram. Also, password-protected personalization menus enable specification of operation mode, warning threshold for battery operation and other customer-tailored features.

As an additional monitoring option, MGE offers its PowerSentinal service, which gives users immediate access to their UPS' power status by way of a Web site that also is monitored continuously by the company's Customer Care Staff.

For more information, visit MGE UPS Systems in California at (800) 523-0142 or visit www.mgeups.com/us.

"Accountability is indispensable to us

when putting up a new tower. That's why we deal exclusively with Sabre for our broadcast towers. Their people have been in the industry for years, and have a broad-based knowledge on all types of towers. Their construction department handles turnkey projects with ease, eliminating the need to hire subcontractors and worry about who is taking responsibility. We choose Sabre because we like the people, the product and the pricing."



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Tower Economics



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RFS Has CPF-Series Antenna Suitable for LPFM

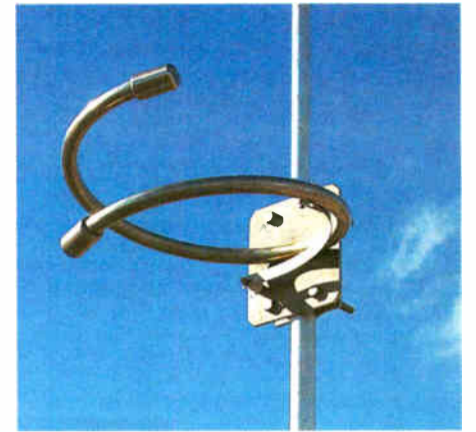
Radio Frequency Systems says its single-channel CPF-series side-mounted FM antenna is a new incarnation of its ECFM antenna, and offers a lightweight solution for low- to medium-power applications in the 87.5 to 108 MHz band. It features stainless steel construction, and is available with single-element power ratings of 500 W (CPF500) or 2.5 kW (CPF2500).

The company says the radiation pattern and axial ratio of the circularly polarized omnidirectional antenna have been enhanced to minimize tower effects and downward radiation.

The CPF-series also is available pre-packaged in multi-element arrays with a range of gains, using RFS power dividers and distribution cables. Powers of up to 20 kW are possible for an eight-bay antenna array, with gain of up to 6 dB in each plane.

Radome options for the CPF-series include a feedpoint radome, or alternatively a spherical radome that encloses the radiating element for locations when icing is a problem. Other optional components include heating elements and an input tuner for optimizing VSWR. The company says the CPF-series FM antenna complements its existing 828-series of FM broadband panel arrays.

For more information, contact Radio Frequency Systems in Connecticut at (203) 630-3311 or visit www.rfs-world.com.



Datacasting

► Continued from page 12

being developed so TMC services can be obtained via mobile Internet, paging and GSM/GPRS mobile phone networks.

In the United States, Clear Channel's Total Traffic Network provides RDS/TMC data to listeners in the top 50 markets. The project is a collaboration of Clear Channel and Tele Atlas, a provider of digital map data and location content.

Robert Hylkema, director of Dynamic Traveller Content at Tele Atlas, said the service is available through Audiovox auto navigation systems as well as Cobra and Garmin personal navigation devices.

'Get'

Technology from Stratos Interactive enables broadcasters to capitalize on the movement towards mobility and personalization.

Listeners have the opportunity to interact with station promotions through a variety of channels including: the Web, SMS, interactive car radios, mobile phones and MP3 players. Stratos President Kelly Christensen said the service started on car radios and grew from there.

"Once RDS chipsets became available for cell phones and mobile devices, there was a great opportunity to extend these interactive services."

To use the service, the station creates a call to action in its programming and/or advertising to motivate listeners. The listener can then hit the "Get" button on StratosInteractive radios, or appropriate buttons on pagers, cell phones or mobile devices. Listeners can respond to on-air promotions tied to advertising, music or other content, voting and calls-to-action such as purchasing concert tickets.

Interactive radio can provide accountability to advertisers via real-time data aggregation and fast response to ads. Advertisers can connect on-air activity to texting or on line follow through, or fulfill requests for additional product information.

While the interactive radio service has been extended beyond car radios, Christensen said the real strength of radio is "it's free." He adds that extending the service beyond the automotive market creates more opportunities for interactivity.

"There are some real safety issues that come into play when engaging listeners while they're driving."

Next

The future of datacasting with HD Radio holds "tremendous opportunity," according to Joe D'Angelo, vice president of advanced services for iBiquity Corp.


Services under consideration for the data channel include podcasting, enabling broadcasters to deliver audio files over their existing infrastructure.

Datacasting technology can add enhancements to onboard navigations systems such as real-time reporting of road conditions and dynamic routing around congested areas. It may also be possible to update the database for vehicle navigation systems with newer maps and points of interest, or POI.

More exciting is the potential for layering real-time data to the POI database.

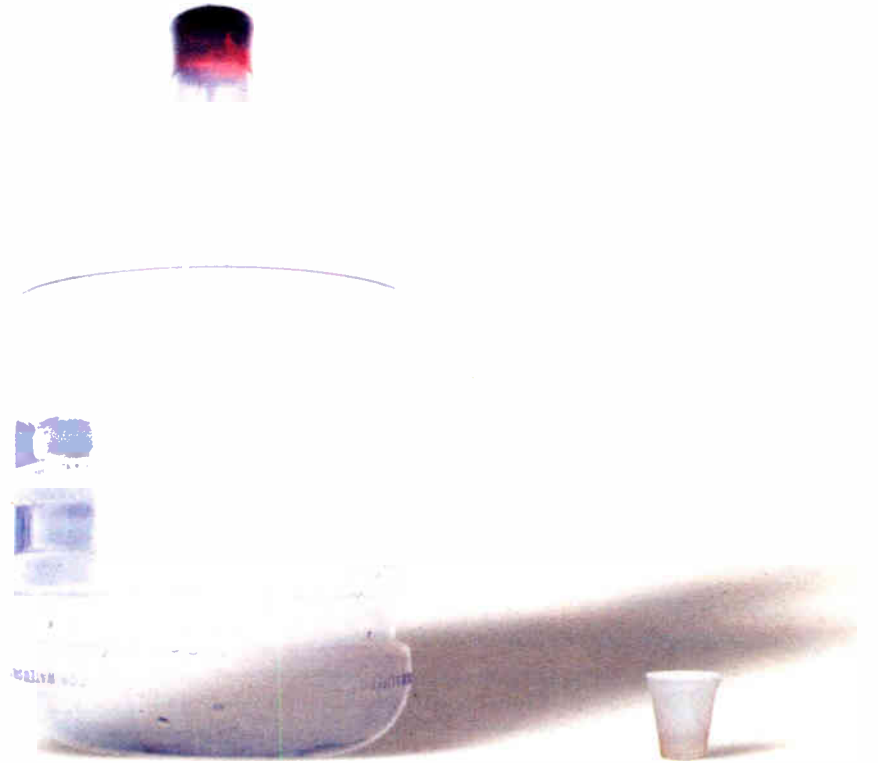
"It would be possible to use a vehicle's navigation system to get information about room availability in hotels, seating in restaurants, available spots in parking garages and the location of a station with the cheapest gas prices," D'Angelo said.

It might also be possible in the future to insert CDs in a car sound system and rip tracks to the system's hard drive, and use datacasting to get current artist and track information. Another option under consideration is the use of datacasting to distribute a station's electronic program guide, enabling last-minute changes not possible with printed materials.

Tom Vernon is a frequent contributor to Radio World. He wrote about software for documentation and training in the Jan. 4 issue. 

Multicasting.

It's like trying to fit —
well, you know.



Management has decided to multicast. Which seems like a terrific idea — until you consider just how little bandwidth each channel will get. How will the sound of your station(s) survive these shrinking bitrates? Omnia can help.

New Omnia Multicast with SENSUS™ restores the fullness and depth that bit-reduction steals. Our DSP gurus teamed up with the codec experts at Telos (the folks who introduced broadcasters to MP3 and MPEG AAC). Together, they developed a unique suite of tools to pre-condition audio for HD Radio™ multicasting.



Omnia Multicast with SENSUS codec conditioning, Omnia Bass Management system and distributed look-ahead limiter significantly improves the sound of HD multicast and other bit-reduced streams.

SENSUS technology enhances punch, preserves presence, and reduces artifacts. Even heavily bit-reduced channels (like multicast) can be significantly improved by Omnia running SENSUS. And like all Omnia processors, Omnia Multicast delivers the smooth, clean, pure signature sound that grabs your listeners and holds them hour after hour. No wonder the top stations around the world choose Omnia over all other processor brands.

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ROOTS OF RADIO

Early Remote Broadcasts

by John Schneider

Almost from the beginning of broadcasting, it was desirable to transmit programs that originated outside of a radio station's or network's main studios. Early remotes were referred to as NEMOs, taken from a telephone company abbreviation for "Not Originating Main Office."

system and fished it out at the remote site several blocks downstream. But by far the vast majority of remote broadcasts used broadcast-quality lines leased from the phone company.

Early remote amplifiers were monstrous affairs, with heavy tube amplifiers and storage batteries. The first photo shows a portable RCA remote amplifier from the early 1920s. Standing about 4 feet

Early remotes were referred to as NEMOs, taken from a telephone company abbreviation for Not Originating Main Office.

In the 1920s, radio stations frequently located in major hotel buildings. This gave them a rooftop antenna location in the city center, but also allowed audio cables to be run to the hotel ballroom for the pickup of a local dance band. Church service broadcasts and the live transmission of news and sporting events were also among the earliest remote broadcasts.

A number of methods were used to transport the program to the studio. Some early broadcasts were done using portable shortwave transmitters, but the quality and reliability was not very satisfactory. The famous Herb Morrison broadcast of the Hindenberg crash was actually a recording, cut at the scene on a portable acetate disk recorder for later broadcast. There is even the story of the enterprising station owner in Portland, Ore., who floated a tennis ball attached to an audio cable through the city sewer

high, the only thing that made it "portable" were the two handles on the sides of the cabinet, and it presumably took two strong men to transport it.

NBC dealt with the problem by building a number of self-contained remote broadcast trucks, such as the one shown in the second photo. It contained all the amplifiers, batteries, microphones and cables, and required only a connection to the leased phone line at the broadcast site.

By the 1940s, the equipment was reduced to suitcase-sized amplifier/mixers that could operate from the AC line or vehicle batteries. In the third photo, we see another NBC crew broadcasting an event. The location and nature of the event are unknown.

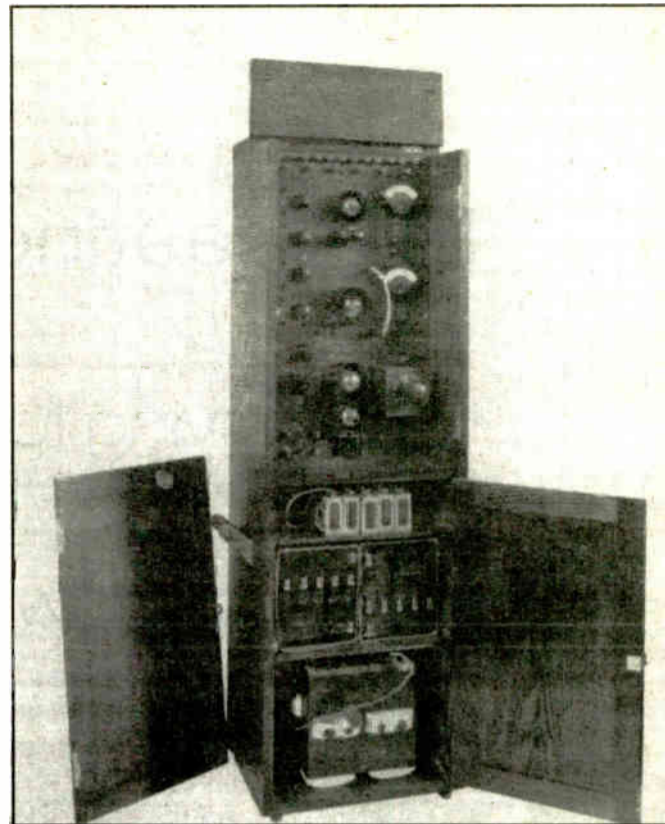


Fig. 1: 'Portable' RCA remote amplifier from the early 1920s.



Fig. 2: A remote broadcast truck. NBC's San Francisco Music Director Max Dolin is shown announcing a program in the early 1930s.



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

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

maintenance costs over an older transmitter ...and as a bonus they get exceptional reliability and that major market sound for free.

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

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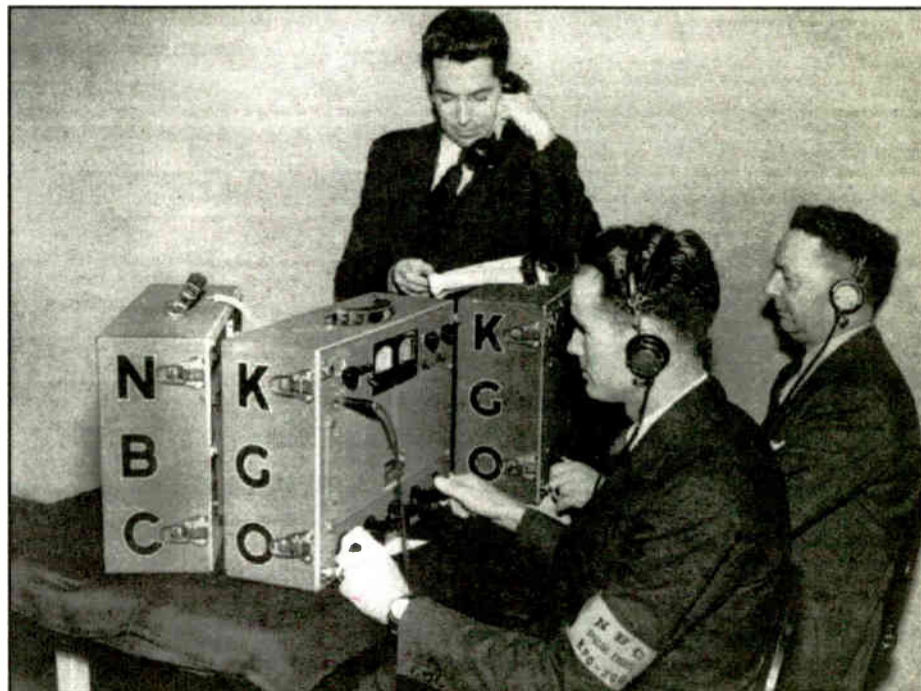


Fig. 3: Operating the mixer is Ernie Jefferson; the engineer on the right is G.B. Dewing. On the telephone is George Greaves, engineer-in-charge at NBC San Francisco.

“Some people don’t like change. Change doesn’t much care.”

“I guess being the very first station to use Ethernet for audio routing has made WEGL a little famous! Someone’s always on the phone:



‘Tell me about your Axia system. What’s the real story?’

“The real story is that two years ago, when our our old analog consoles began to fall apart, we put in an Axia IP-Audio network and SmartSurface. And I’ve never had a single reason to regret that decision.



“Sure, I was skeptical at first. But audio-over-Ethernet technology is compelling!

Other companies just use CAT-5 to carry audio using proprietary protocols. Axia uses standard Ethernet to build a true network with uncompressed digital streams



plus machine logic and program-associated data. No one else does that! I was a little concerned about dropouts and QoS

problems, so we went to the Axia factory and assembled a network ourselves. It was easy to do, and it just *worked*. We were sold.

“The jocks took to the new board like fish to water. Show Profiles are their favorite part, since they can all have custom board setups. Some like their headphone levels blasting, some don’t. Some like the mic on the left side, others on the right. I’ve got one guy who brings in his vinyl records every week for an oldies show; he’s the only one who uses the turntables but when he loads his profile, they’re ready to go.



“There were a few little bugs, but we had the very first surface! Axia support gave us new software right away and our problems were solved. Two years later, I’m more impressed than ever. I recommend Axia one-hundred percent.



“Since the first studio was installed, we’ve added a new production and interview studio, and we plan on building three more studios. It’ll be all Axia — all the way to the transmitter.”



— Marc Johnson, Chief Engineer, WEGL-FM
Auburn University, Auburn, Alabama



www.AxiaAudio.com

Strap This On for Size

by John Bisset

Ed Bukont of Commstruction and Services remarked about our reminder to check filters and heat sinks on solid-state transmitters, often overlooked because the transmitters run so reliably. Ed reminds us to check filters on sub-assemblies as well. This includes controllers, solid-state IPAs or an exciter mounted inside the transmitter. Ed adds that even

cause serious injury when moving. Ed suggests having at least one spare for each assembly so they can be rotated and cleaned at your convenience.

These small, mesh filters can be cleaned with a vacuum and a brush, then stored for the next rotation. If you've inherited a poorly maintained transmitter, also check the fan blades for dirt buildup, while the filter is being changed. Dirty blades also reduce efficiency. A cotton

Fig. 3 does? Think on it and we'll have the answer later in the column.

★ ★ ★

Vern Killion, engineering manager at KRVN(AM/FM) in Nebraska, writes about the INA217AIP, which is a plug-in replacement for the obsolete SSM2017.

The SSM2017 is an 8-pin DIP package, used as a low-noise, high-quality

production.

Vern Killion can be reached at vkillion@krvn.com.

★ ★ ★

Dale Tucker handles sales for Radio World, primarily on the West Coast. Dale is always finding neat companies with products that make engineer's lives easier.

Recently, he was talking to John Browne at K-Y Filter. John's company makes what are perhaps the best filters for dealing with RF in phone lines, always an issue for a



Fig. 1: Keep metal mesh filters clean.

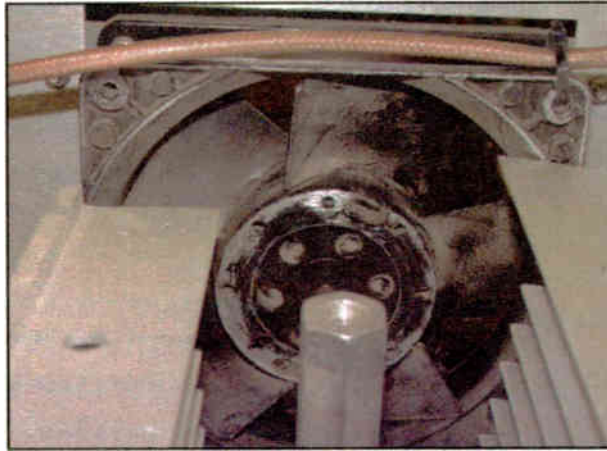


Fig. 2: Dirty fan blades reduce efficiency.

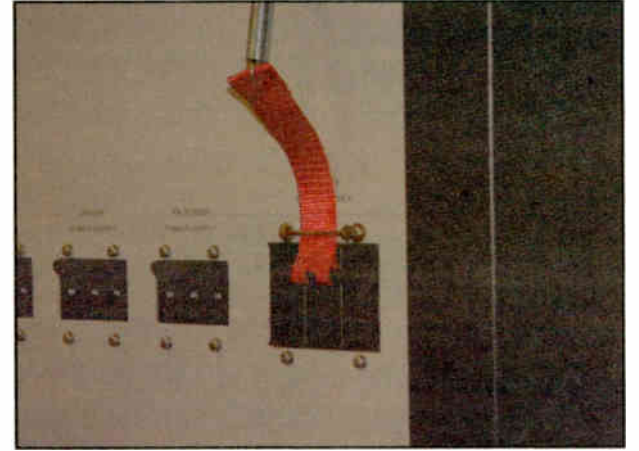


Fig. 3: Can you guess what this contraption does?

the HD Radio signal generators are filtered and shouldn't be overlooked.

Clogged filters will cause overheating and eventual thermal shutdown. Many of the filters used in these assemblies are metal mesh-type filters, as seen in Fig. 1. When they're clogged, airflow can be cut in half.

Cleaning is simple, but do it when the transmitter and associated assemblies are off. Even small muffin fan blades can

swab or rag dampened with isopropyl alcohol should remove the residue.

Of course, ensure all power is removed before attempting any maintenance on fans or blowers.

Reach Ed Bukont at ebukont@msn.com.

★ ★ ★

Can you guess what the contraption in

input amplifier. It's seen in many professional broadcast audio products including the Comrex HotLine and Orban 9200.

The replacement INA217AIP can be ordered from Digi-Key at (800) 344-4539. The part number is 296-13452-5-ND, and the cost is about \$5 each.

When searching for solid-state devices, Vern's found that the web site www.findchips.com is excellent and faster than Googling for devices still in

broadcast engineer. You can get more information from the web site; go to www.ky-filters.com/am.htm.

When you order, tell John you heard about his company from Radio World's Workbench column.

Dale Tucker can be reached at dale.tucker@surewest.net.

★ ★ ★

See AUTO RESET, page 20 ▶

New! Dual Digital Distribution!

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Distribute AES/EBU digital audio to 8 locations, with transformer isolation of inputs and outputs.

Two inputs, for use with one or two digital sources.

- Transformer isolated I/O
- NO delay or latency
- LEDs confirm signal OK
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BROADCAST TOOLS INC.



SPECIAL SALE PRICE! SAVE AN EXTRA \$100!!

Broadcast Tools TS-6

The TeleSwitch 6 Call Director offers a low cost, easy-to-use solution to interface six telephone lines to almost any hybrid. The TS-6 is supplied with one Switch Console and Controller. The units are interconnected via CAT-5 cable. Robust switches with bright LED indicators indicate whether a line is ringing, on-hold, busied out, along with other functions. The TeleSwitch 6 is a dual-bus device, meaning that calls can be answered on the telephone set, while calls are active on the hybrid. A great solution when you can't afford one of those expensive prebuilt phone systems. Now on sale!

TS-6 List \$1,059.00

LowestPrice only \$799!



The Tascam CD-01U Pro is a professional slot-loading CD player designed to fit in 1RU, with balanced XLR analog, RCA analog and digital outputs. This compact professional model will save room in your broadcast equipment rack. Also available is an affordable unbalanced version - the CD-01U. Both players have an RS-232 control port available for programming with AMX and Crestron systems. They also feature MP3 playback, 20-second shock protection and pitch controls for flexible performance.

CD01UPRO w/XLR out List \$699.00

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CD01U wo/XLR out List \$599.00

LowestPrice only \$499!

SAVE 50%!! AKG Studio Mic 2-Pack Only \$199!



AKG Perception 100 Rugged All-Purpose Mics

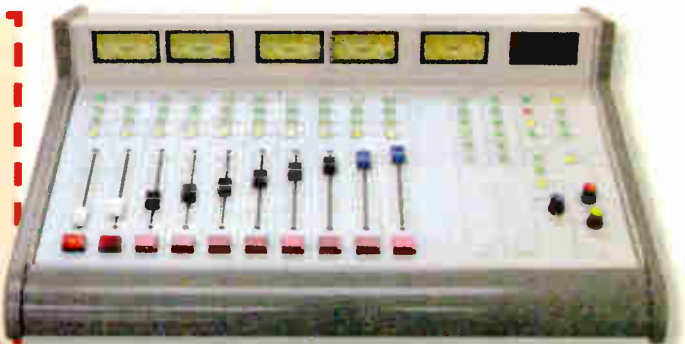
NEW!!

The new AKG Perception 100 is a rugged cardioid condenser microphone. The 1" diaphragm bring AKG-quality sound to recording, live sound and broadcasting. It features a gold-sputtered diaphragm to prevent shorting to the back electrode even at extremely high sound pressure levels, an all-metal body to help provide rejection of RF interference so you can use the microphone near transmitter stations and along with wireless mics, and high headroom with minimum distortion capable of handling sound pressure levels up to 135 dB.



PERCEPTION-2PKG List \$398.00

LowestPrice 2 for only \$199!



Arrakis X-Mixer Supports BOTH Analog and Digital Sources



Exclusively at BSW!! 10- and 14-Channel Consoles

The Arrakis Xtreme mixers are powerful digital audio consoles that support BOTH analog and digital sources! Designed for long-term reliability, each console features multimillion-operation switches, Penny & Giles slide faders, and LED illumination for all switches. Installation is quick and easy with a clamshell design that flips open, and with strain relieved connectors. Most ICs are socketed for easy replacement. The console features 3 mixing buses, stereo cue, monitoring for a control room and studio, and a powerful telephone interface for on-air talk shows and off-line recording. With both 10- and 14-channel models, the X-mixer is ideal for any size on-air or production application. Call us today for low sale prices!

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Record dozens of hours of MP3 audio on a single Compact Flash card (or as high-quality uncompressed WAV files) and easily transfer to your computer via USB port. You can even edit in the unit itself - use simple cut-and-paste editing or take advantage of non-linear, non-destructive playlist editing. Up to 99 virtual tracks let you compare edits, set up multiple sound bites or provide interview segments of varying durations. Features: onboard stereo mics for on-the-spot recording; two balanced XLR inputs and stereo line inputs; up to four hours power on AA batteries.

Sennheiser MD46 Interview Mic

This cardioid dynamic mic features a rugged, all metal body, is very insensitive to pop and wind noise, and has extended frequency response and a comfortable feel/balance for easy use.

Sony MDR-7502 Headphone

The Sony MDR-7502 is a lightweight, tight, sealed-ear design that provides excellent isolation and a frequency response of 10 Hz-16 kHz.

Cable and Case Complete the Package!

BSW even includes a 5 ft. XLR mic cable and quality Marantz carrying bag to protect your recorder. Get in on this great deal today!



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Single Rack Space Power Amps

These top selling compact ART linear power amplifiers provides clean, quiet power with ultra-low noise and distortion. Slim 1RU with power, clip, signal and protect LEDs; XLR and 1/4" TRS inputs; fan cooled. SLA1 with 100 watts of power. SLA2 with 200 watts.

SLA1 List \$279.00 \$199.00
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Our annual equipment source book is available. It has everything you need to build quotes, plan your remodel or just to find that perfect on-air CD player. Go online and request your free copy today.

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O.C. White's ProBoom is the best value in studio microphone booms. This 41" arm comes complete with a 12" riser for table-top mounting and two sets of upper springs to accommodate broadcast mics of all weights and sizes. Lifetime warranty. Save on the 2-Pack, ONLY \$149 at BSW!!

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DJ Profile: The Satellite Guy
Jumpin' Jimmy James always wanted to be on the radio. When he heard about satellite radio, he hitched a ride on the shuttle. He's still waiting for an audition.



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The Navigator 100 is a compact and affordable FM receiver with built-in GPS and delivered with a flashcard. It's the perfect tool for field tests, coverage and modulation analysis. It combines in the same chassis an RF, modulation, pilot, RDS and DARC monitor. A must-have for all engineers. Call for our discount price today.

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BSW stocks a large inventory of products. If we have it in stock, we'll ship it for you the next business day. 7:30 PM Eastern Time.

Free Shipping on Most Web orders over \$189
Some restrictions apply. Free shipping is not available for all products. Call for details.

Auto Reset

► Continued from page 18

With transmitter sites scattered in so many directions, it can be a real stretch to be at multiple sites, especially during storms.

Fig. 3 shows one engineer's solution to tripped breakers. This could save you from having to drive forever just to throw a circuit breaker.

I've heard of engineers with mountain-top or desert sites who encounter occasional current surges that trip the high-

time, new problems arise when you choose to reset the breaker by remote control and not in person. You really don't know why the breaker tripped; and by forcing a restart you could cause further damage to the transmitter.

For that reason the function is unlabeled on the remote control. You won't have some operator performing multiple resets in an attempt to get the transmitter going, making a bad situation worse.

Conversely, when one engineer must maintain multiple sites, he sometimes has to think creatively. Risky, yes; but faced with multiple late-night drives to the transmitter just to reset a breaker, I

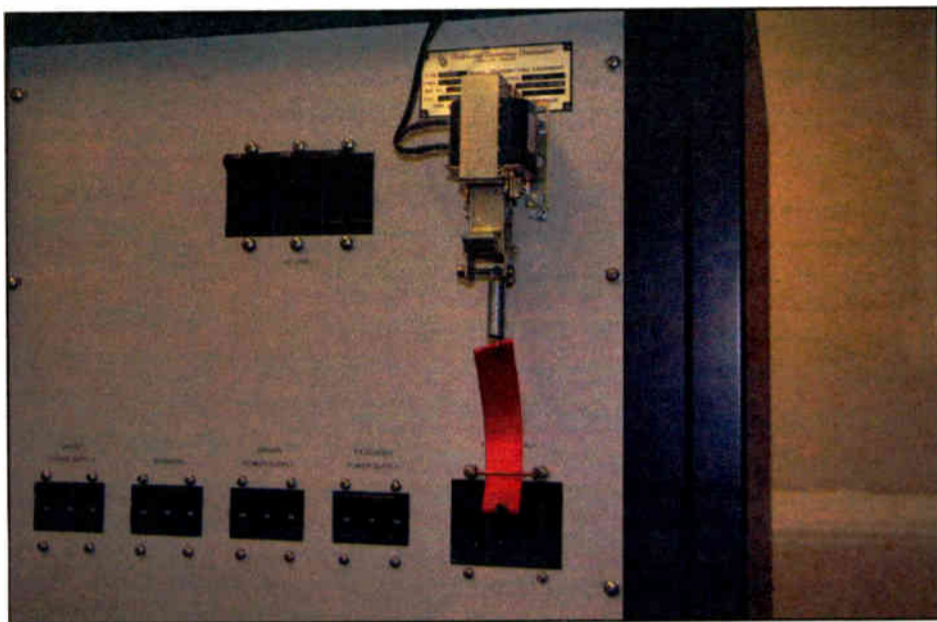


Fig. 4: The solenoid resets the circuit breaker.

voltage power supply breaker. The breaker does its job, guarding against the momentary short; but the transmitter won't come back on until the breaker is reset.

The solenoid assembly connected to the remote control resets the breaker remotely, saving a long drive.

There are caveats. First, this is not a factory-approved modification for Continental or any other transmitter. The engineer who devised this auto-reset assumes full responsibility.

Although this approach saves you

can understand the rationale. An engineer can ask for an assistant only so many times before he realizes it's not going to happen.

We've all seen engineering kluges. But I've got to give this engineer — who will remain nameless — credit for doing a nice engineering job in putting the auto-reset together. Everything is sturdy and well-mounted; even the leads to the solenoid are shrink-wrapped to minimize any shock hazard.

The addition of the spring ensures

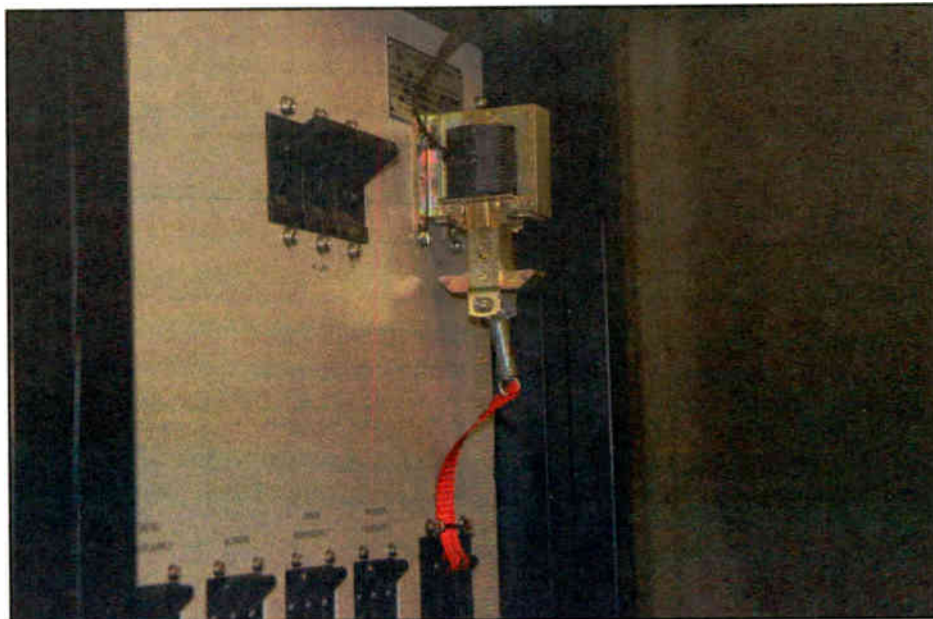


Fig. 5: A side view of the reset assembly.

that the quick action of the solenoid plunger doesn't rip the breaker handle off. This certainly was thought through.

Like it or not, many engineers have been forced to resort to such "tricks" to keep stations running.

John Bisset has worked as a chief engineer and contract engineer for more

than 30 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged and qualify for SBE recertification credit. 🌐

De La Hunt

► Continued from page 4

stereo on AM. I think at the time of that debate we had a fighting chance to light up AM again.

It's tough enough for the small AM broadcasters to make it now. A lot of owners unfortunately are running them as just a dumping ground. If they happen to have an FM, they'll concentrate on the FM, but when it comes to a sale, they just "throw in the AM."

I've hired people who have been with FM-only operations and they say, "Sell AM? We never do that."

I bought an AM station from a big conglomerate. They were so concerned about spending any money on that facility, they had it cranked back to 10 percent modulation so they wouldn't burn out the tubes! The coverage was about four miles! We fired up the air compressor, cleaned everything out, cranked the modulation up and we had coverage up to 25 miles.

Everyone in that town even today has a hell of a time supporting the AM. So we took a lot of our content including the Vikings and Twins and moved them over from FM, and everyone's listening to it again.

Let the AM broadcasters choose a system they want to choose and let it fly from there. Don't let the commission ever choose a standard or say to the AMs that they can't do this.

Also there's no radio station at local sunset that should have 6, 7 or 8 watts. Every radio station in the U.S. from 6 a.m. to 6 p.m. should never operate at less than 100 watts.

I wish someone would give Leonard Kahn a fair shake. He's eccentric, but he's a genius and a friend. Just let his system be part of the discussion. Don't take on any standard, let it be part of the whole show and let the broadcasters themselves decide. If I want to run Leonard's system, let me. The guy down the block wants to run Ibiquity, let him. May the best man win. It'll be the Cam-D.

Q: Would you encourage someone to get into AM? Doesn't sound like you would.

De La Hunt: It depends on what the facility is, the location and whether or not you can improve it. Anybody today in a small market with less than 5 kW, preferably 10 kW, doesn't have a prayer, unless they're an old, old timer, or they're in North Dakota where the conductivity is great and goes forever. Me, if I don't have power they won't hear me downtown.

Q: You get emotional talking about this.

De La Hunt: When the guys went to the Gulf War the first time — we made a Valentine to send them. It covered from one side of the street to the other and everyone came down and signed it. Some guys flew it over the street. We had 1,500 people standing downtown on Valentine's Day posing with this picture. We worked on it with the newspaper and the rest of the community.

When the Twin Towers got hit, we went on the air and we collected money to help. We sent \$25,000 cash to the Salvation Army in New York — not the national, to New York. We did that on the radio.

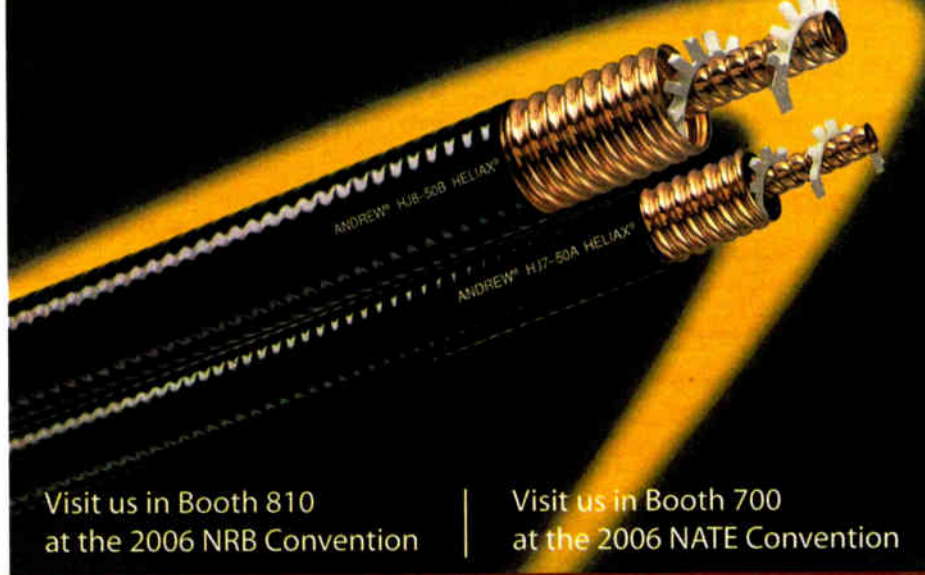
I don't need digital to do that. It's not going to make my fundraising any better, it's not going to make my community service any better.

I don't own these radio stations. I own the equipment. I'm a franchise holder of a license to serve the people of this country. Broadcasters need to come back to the idea that they're here to serve. If they don't want to come back to that, I guess they deserve what they get.

Thank God I lived through the era when AM was so important and public service meant everything, and you actually had to show the commission how many public service programs you ran.

Write to Radio World with your thoughts on this or any article at radioworld@imaspub.com. 🌐

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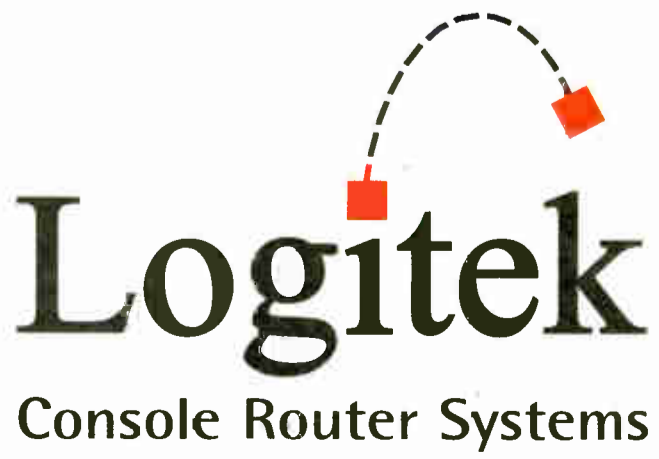
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World Radio History



Power Protection Starts at the Station

Even Non-Technical Managers Should Understand Utility Problems Due to Storms, Facility Design

by Paul Kaminski

The phrase "mission critical" usually describes enterprises or facilities on which people's lives depend — air traffic control, air defenses, hospitals, financial systems.

When disaster or bad weather strikes, radio can become mission-critical. People's lives can depend on broadcast information.

Within a broadcast plant, certain systems always are critical to the station mission of delivering programming and commercials. Studios and transmitter sites need reliable power.

weather, power problems become a public safety issue. It's in a station's interest to educate its managers in basics of power protection.

Six degrees of disruption

There are several ways power to a facility can be disrupted, including blackouts, brownouts, sags, spikes, surges and noise. Lightning also is a major disrupter. Even if it doesn't deliver a direct hit, it can cause disruptions.

A blackout is a complete loss of power and voltage. This can happen when, for instance, a power grid transmission line is cut, and the power from the power grid

other internal electrical equipment.

The best example is what happens when you plug an electric drill into a power strip into which a shop light is connected. When you start the drill, the shop light flickers because the voltage from the power strip tries to meet the increased demand from the drill motor, which takes power to get it started. This is a sag.

When the motor overcomes the inertia of a full stop and runs at full power, it does not need as much power, or voltage, to keep it running. The power strip still provides high power for a short time, which is not needed. This is a spike.

Using the power strip analogy, a "surge" can happen if more voltage than is required comes through the strip. If the surge or spike power, or voltage, is too high for too long, the overvoltage could

interference caused by electrical storms, and noisy electrical equipment such as motors or welding equipment, fluorescent lighting and even radio transmitters. This noise can make your computer lock up, crash, go off-line, transmit bad data or become corrupted.

Most radio broadcast equipment devices now contains microprocessors that can be negatively affected by power disruption and noise. It is prudent to protect that equipment and the revenue — or lifesaving information — it can provide.

Internal affairs

Power problems aren't limited to utility disruption, according to Gordon Brownlow, regional sales manager for transient voltage surge suppression devices for Control Concepts at Liebert Corp., a subsidiary of Emerson Network Power.

"Twenty percent of the power problems we see are utility problems, like blackouts and brownouts," he said. "The other 80 percent come from the customer's facility, because of inductive loads and switching."

Dr. James T. Kennedy, a member of Lucent Technologies' consulting staff, said the internal problems "are one of the two major problems we deal with."

Buildings built before 1980 weren't wired to accommodate the increase of electricity used by servers and mini switchers. Facilities in those buildings, he said, "have to reengineer from the ground up, and rewire internally to increase that capacity."

Kennedy says the first step in devising upgrades or protection is to perform an audit of a facility's existing wiring.

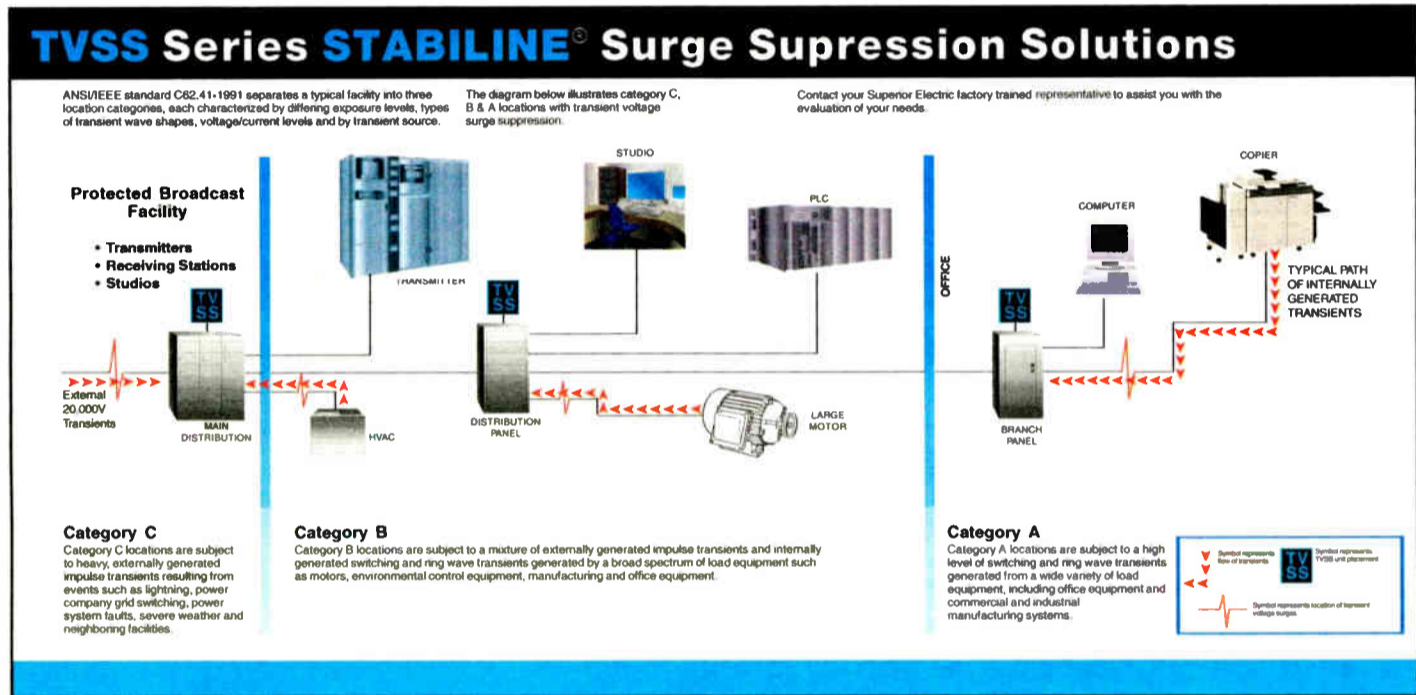
"An electrician will use an infrared device, which measures the heat of the wiring in the wall when all the devices on the circuit are in operation. That will indicate whether devices need to go on their own dedicated circuits. Many devices in service today require their own dedicated circuit," he said.

Kennedy stressed the importance of a proper ground in any installation.

"A water pipe is not a good ground. A properly installed ground rod (and system) is key."

So how can you protect your facility? Brownlow says surge suppression is a good start. Transient voltage surge suppressors, he said, "work by knocking

See POWER, page 23 ▶



Transient voltage surge suppressors are one form of power protection. This graphic is from Superior Electric and shows a typical broadcast plant.

Ideally, managers and engineers would play out the possible scenarios for disruption of power and devise workable strategies to deal with the effects of such scenarios before they happen. Otherwise, when power problems destroy data and equipment has to be repaired, replaced, reconstructed or recovered, station operations and revenue may take a hit.

In the case of a disaster or bad

to the facility goes to zero.

A brownout is a drop in power and voltage. This can happen when demand for electricity puts such a load on the power grid system that the amperage and voltage available are not up to the usual standards.

"Sag," "spike" and "surge" describe power and voltage problems that happen because of electrical storms and power demands from the outside power grid and

fry the filament in the light bulb and it would fail.

Consider what could happen to equipment connected to a system that includes lots of motors, like the electrical motors that run elevators, furnace and air conditioning systems, electric lights and electric welding machines, etc. Remember: "Not if, but when."

Electrical "noise" is electromagnetic

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Power

► Continued from page 22
down or 'clamping' voltage surges in a matter of milliseconds."

Four-point protection

Think about dumping water into a strainer. The suppressor acts like that strainer and strains out the big shock of the dump of electricity (or surge), but does not fully stop the flow.

A filter, according to Brownlow, "works on the voltage that wasn't clamped by the surge suppressor." Using the strainer example, consider what happens the strainer is lined with a dishcloth. Not only is the surge controlled, the flow is controlled to a manageable level. A manageable level of voltage helps micro-processor equipment and other electrical equipment run at optimal performance.

Brownlow suggests a four-point approach to protection for a facility, starting with the service panel, where electric power from the grid comes into your facility; the distribution panel, where the equipment gets its power; and end user equipment, such as what is connected to the distribution panel.

"Don't forget the communication wires (RJ-45, RJ-11 and coaxial cable inputs and outputs), either," he said.

Uninterruptible power supplies can help moderate effects of power problems. Off-line UPS systems work when the line power is interrupted; a battery supplies a limited amount of power. Line-dependent UPS systems with rechargeable batteries are a solution, but Brownlow says they have limitations.

"Those devices kick in when the voltage goes out," he said. "They are battery operated, and each time the UPS goes on, it makes a charge and discharge cycle. Those cycles will catch up with the battery," and the battery eventually will fail.

Brownlow says a true or "double conversion" UPS acts like its own utility.

"It breaks the circuit twice and cleans the power. It converts the AC or power grid power to DC, and that DC powers an inverter, which provides AC to the protected device or circuit.

"When the AC (power grid) power is lost, the true UPS automatically switches to the on-board DC batteries, which power the inverter without interruption. The batteries on true UPS units last much longer."

Kennedy said a true UPS should have sufficient capacity to cover all the devices connected to it, with a percentage in reserve.

In many installations, generators are used to provide backup AC power necessary to power the facilities. They can be gasoline, diesel and propane/natural gas powered units, and can be switched in manually or automatically, when a loss of AC power grid power is detected. They can be connected to true UPS systems for increased reliability.

When the AC power grid power is interrupted to such a system, the batteries will continue to supply the inverter until the generator system comes up to full power. In theory, this provides the

greatest reliability, because the generator (assuming it's been maintained properly), can supply power to the true UPS inverter for months — certainly long enough for AC grid power to be restored without loss of data or broadcast time.

With any enterprise, there is a cost-benefit ratio to any investment, power protection included. The question that must be answered is this: Is the dollar value for replacement of equipment damaged by power problems, and the dollar value of labor spent in remediation of the ancillary problems caused by that damage, less than the cost of power protection?

Paul Kaminski is a news director for the Motor Sports Radio Network. E-mail him at motorsportsradio@msrpk.com.

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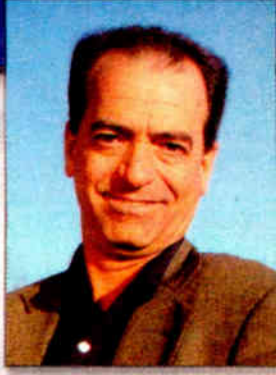
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Noncommercial WFUV(FM) moved into a broadcast center in Keating Hall on Fordham University's Rose Hill campus in New York. Station officials said the studio and production facility include new control rooms, an expanded performance studio, interview studios, voiceover booths and workstations. The GM is Ralph Jennings; George Evans, director of technical operations, supervised the transition. WFUV also is erecting a tower atop a medical center in the Bronx, which it hopes will double its signal reach from 7 million to 14 million people. ...

Fisher Radio-Seattle ordered a Nautel XR12 for KVI(AM). The chief engineer is Kelly Alford. Rob Dunlop is radio GM in Seattle. Walt Lowery of RF Specialties of Washington handled the sale. ...

Omnirax closed a deal for seven rooms of cabinetry with Pamplin Broadcasting for KPAM(AM) in Portland, Ore. The group is moving facilities to Milwaukie, Ore. Dave Bischoff is chief engineer, Paul

Clithero is general manager. SAS is providing consoles and Creative Studio Solutions is handling integration. ...

The Canadian Broadcast Corp. purchased V-Soft Communications' allocation software package. The supplier said the software will be used by CBC for AM allocations analysis. ...



Bob Holcomb, Fisher Radio transmitter supervisor, with KVI's Nautel XR12, the first XR Series transmitter in that market.

WHUR(FM) at Howard University expanded its Broadcast Electronics AudioVault system with new audio cards, new studio workstations and an upgrade of storage to more than a terabyte. New Digigram audio cards are also part of the project. Jim Watkins is GM. Criss Onan is BE Northeast Representative for

AudioVault.

Separately, BE said it responded to a request from the Pakistani government and shipped an FM transmitter to help serve people hurt by an earthquake in October. BE said it is donating the 1 kW Plug N Play 1000, to be used by the Volunteer Radio Service in Neelam

groupwide HD Radio deal with Buckley Broadcasting. The owner named Harris its digital transmission preferred vendor in a deal that covers four years and involves provision of transmitters, Flexstar products and Dexstar excitors for 10 FMs and nine AMs.

Separately, Harris said its Intraplex



Rudy Agus, chief engineer for Hi-Favor Broadcasting, and KSDO's Axia SmartSurface. Axia Studio Engine and Router Selector appear in the rack.

Valley. Naeem Mirza of Engineering Systems & Services in Islamabad planned to install it. ...

Prism Sound said console maker Solid State Logic took delivery of its 11th dScope Series III audio test and measurement tool. The unit will be used to test the new X-Rack Dynamics Package and XLogic E Signature Channel. ...

Harris Broadcast said it has won a

SynchroCast Digital Multiplexer is being used by Skai Radio Group, which owns stations in Athens, a city that sits among three mountains. The system allows the group to ring the market with synchronized transmitters and signal frequency boosters.

Harris said Sandusky Radio chose it to provide digital transmitters for three Seattle

See WBW, page 25 ▶

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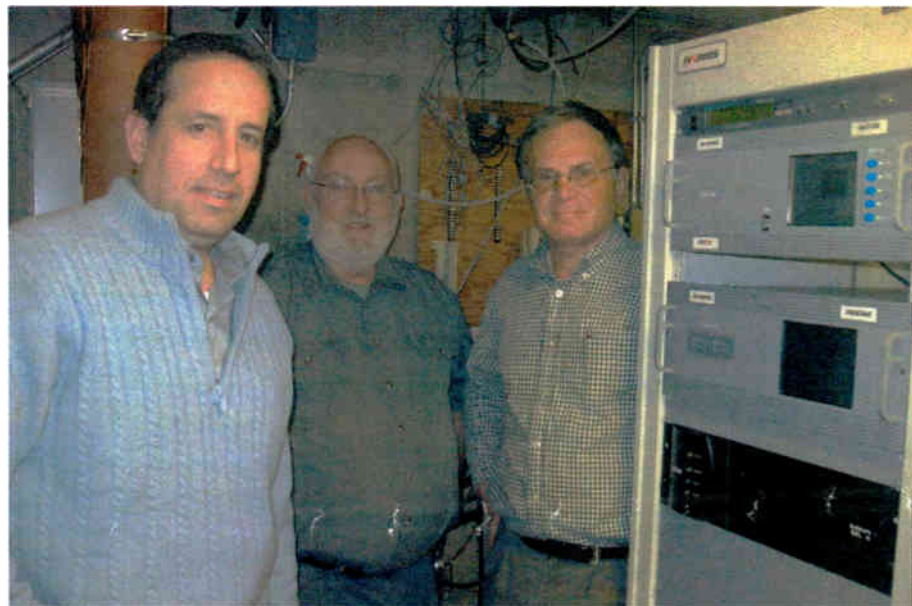
Even if you are a Radio World subscriber, you must sign up to receive RW-EE.

KVOD Uses Exgine

Colorado Public Radio officials said Denver flagship KVOD(FM) was the first to broadcast Exgine technology using Ibiqity Corp. Generation 3 technology with a new Harris FlexStar HDX-FM exciter.

Exgine lets FM stations place the audio codec, multiplex function and AAS data equipment related to multicasting at the studio rather than the transmitter.

The multiple outputs of the exciter enable KVOD to use separate ports to send the digital signal to the digital transmitter, and the analog signal to the analog transmitter. KVOD uses its digital transmitter as backup, allowing the station to assign both analog and digital signals to its digital transmitter in the event of an analog transmitter failure.



The photo was taken atop Lookout Mountain in Denver. From left: George Cabrera, Harris lead design engineer on FlexStar; Allen Stewart, director of RF engineering for CPR; and Gary Liebisch, Harris product line engineer. The equipment rack shows the Flexstar HDX-FM on top, the older Dexstar exciter and an Intraplex HD STL Plus. Robert Hensler is CPR's vice president of engineering.

The HD Radio portion of the broadcast is sent over a unidirectional protocol IP LAN extension card, while the analog is on a conventional Intraplex audio card, both on the same T1 line.

KVOD also began multicasting its AM station's NPR news/talk KCFR on HD Channel 2.

WBW

► Continued from page 24

FMs. The transmitters are included in turnkey packages that include Intraplex STL HD Plus systems, antenna systems, transmission line and processing equipment.

And Harris said three Brazilian broadcasters chose it as the digital transmission vendor for their HD Radio launches.

Univision Radio installed a **Wheatstone** Digital Audio and Control network purchased from distributor **SCMS** for use in San Diego. The system includes two Generation 4-20 control surfaces, three Satellite cages and a Bridge router linking two floors of the building.

Separately, Wheatstone said Radio One station **WHAT(FM)** in Atlanta was to receive five Generation 4 16-fader control surfaces, four Generation 4 eight-fader surfaces and one TOC Hub router. **Entercom Greenville** ordered a package from **SCMS** for a studio project including a Wheatstone D-4000, D70 Expansion, Bridge router system, prewiring and studio furniture. And **ABC Radio Operations/Washington** purchased a Wheatstone Generation 3 fader control surface along with one DSP-2001ND. ...

Wegener Corp. said it won a multi-million-dollar order from **Jones Radio Networks** to supply an Audio iPump Solution to replace its distribution equipment. The order includes an iPump 6420 Media Server, a MediaPlan Content Management System, a Compel Network Control System and Unity 4600 Satellite Media Receivers. JRN will augment a linear audio network with the store-forward technology. ...

Radio Notre Dame, a Catholic radio station in Paris, upgraded its audio facilities, installing a new **Studer OnAir 3000** digital audio broadcast console. ...

Hi-Favor Broadcasting's **KSDO(AM)** in San Diego installed an **Axia Livewire** Audio Network based around Axia's SmartSurface controller. The chief engineer is Rudy Agus. ...

Envision Radio Networks added **WAAF(FM)** in Boston as an affiliate to Guest Services, Envision's guest booking service.

SAS detailed recent projects including a studio facility for **Air America Radio** in New York, which includes a 32KD Digital Audio Mixer/Router and three Rubicon Console Control Surfaces; expansion of a Rubicon installation at Clear Channel's **WHTZ(FM)** in New York to four 32KD and four Rubicons; a 32KD, Rubicon and RioLink for Clear Channel's **WKTU(FM)**, also in New York; and a new studio facility for Infinity's **WOGL(FM)** and **WPHT(AM)** in Philadelphia, including two SAS 32KD, eight Rubicons and eleven RIOLinks.

Also at SAS were a studio renovation for Infinity's **WVEE(FM)** and **WZGC(FM)** in Atlanta; a new studio facility for **WARW(FM)** in Washington; and projects for **Bonneville** stations in Chicago and San Francisco; **Westwood One**; **Radio One** in Raleigh, N.C.; **Greater Media** in Boston; and **Pamal Broadcasting** in Florida and New York. 🌐

First Use of Comrex BRIC

Cumulus station **WFAS(FM)** in Westchester, N.Y., aired the first live broadcast delivered via a Comrex BRIC/IP Codec in the fall, using the wireless Verizon EVDO network.

BRIC is the company's "Broadcast Reliable Internet Codec" technology, which is implemented into its new Access codec. The supplier says it is the first codec to deliver reliable wideband audio over IP networks in real time.

Morning host Jay Michaels, left, and engineer Randy Shull are shown.

Audio from the remote was posted on the Comrex Web site at www.comrex.com.

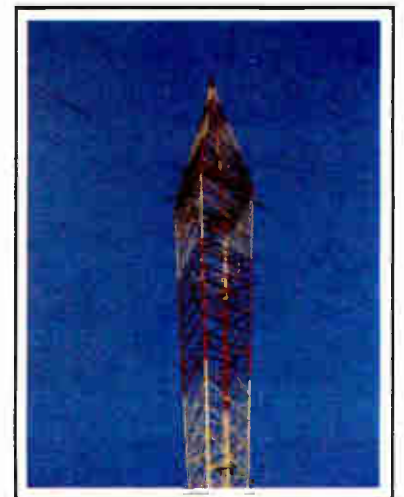


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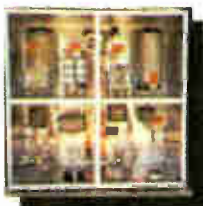
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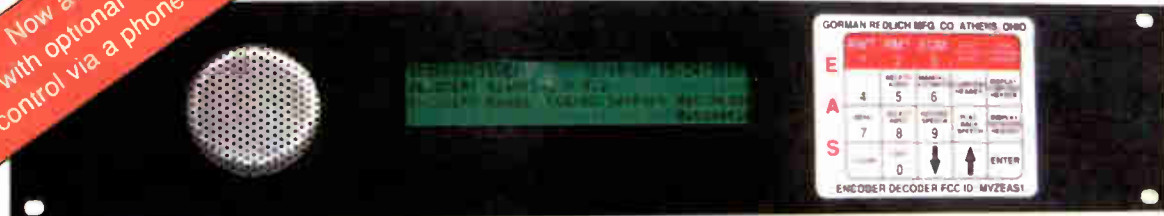
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GM Journal

Get Organized
Page 30

Radio World

Resource for Business, Programming & Sales

February 1, 2006

HD Radio Branding Hits Listeners

by Timothy Kimble

More radio stations, it seems, are starting to tell the story of their HD Radio capabilities. AM stations, like Beasley Broadcast Group's WAEC and WWWE in Atlanta, are touting the cleaner signal of digital. Some FM stations are promoting added program streams.

are hearing on the air about HD Radio capabilities; copy is provided by the stations:

"WVTF is now broadcasting in the all-new digital format, called HD Radio, in Charlottesville. Soon, we'll offer HD Radio in other communities as well. A special HD Radio receiver is

course, it's free." — WCSX(FM), Greater Media, Detroit

"We're glad you're here at More Magic HD, a place where you can relax and unwind. We feature 'Office Magic' every workday until 7 p.m. 'More Magic' is a soft adult contemporary format, consisting of a mix of '70's and



Logo for WMGC Detroit

Magic is a classical companion when you're looking for an escape from the ordinary radio dial. Familiar works and great performances are presented without interruption. Whether it's Mozart, Vivaldi, Bach or Gershwin, you'll find that you'll recognize these melodies." — WMGC(FM), Greater Media, Detroit

"The left brain appreciates the leading-edge digital technology. Your right brain just thinks it sounds cool. This is WRAL-HD2" — WRAL(FM), Capitol Broadcasting, Raleigh, N.C.

"Beasley Broadcasting has launched a brand-new HD-2 radio station in South Florida called Gretchen 99.9...modeling a 'new attitude' of country inspired by Gretchen Wilson and other musical rebels. From Toby Keith, Hank Williams, Jr., Lynyrd Skynyrd, Charlie Daniels, Montgomery-Gentry, Travis Tritt, Waylon Jennings, Tanya Tucker, The Allman Brothers, Gretchen Wilson and others ... Gretchen 99.9 mixes today's cutting edge, rebellious country with music from the 'outlaws,' southern-rockers, along with 30 years of genre-stretching risk-takers to merge a country heart with a rock-n-roll soul." — WKIS(FM), Beasley Broadcast Group, Miami

Is your station promoting HD Radio on the air? How about multicasting? Send us your promotional copy or artwork and we'll share it with readers. Write to radioworld@imaspub.com.



Greater Media's WCSX in Detroit includes the HD Radio logo on its vehicle.

Chris Edmonds, manager at WAEC/WWWE, hopes to attract listeners with a better sound quality. "At this point, people still need to be informed about HD Radio. We anticipate that in the near future, HD Radio will become a significant factor in programming as well as listenership," Edmonds said.

required to hear our new digital signals. And the big advantage is you can now hear our all news and talk service,

'80s icons, plus standards from artists like Harry Connick Jr. and Diana Krall. We'll also add a touch of Broadway

'Deep Trax features the lesser-heard gems from deep within the classic albums. 'CSX Deep Trax delivers enormous variety with virtually no repetition and even fewer interruptions than you thought possible.'

Radio IQ, wherever you hear WVTF, on either 88.5 or 89.3 FM. For more information about HD Radio visit our Web site at WVTF-dot-org." — WVTF(FM), Virginia Tech University, Roanoke, Va.

"WCSX is harnessing the power of HD Radio, providing you the highest fidelity ever available and even more choices. 'Deep Trax,' our HD-2 programming, is inspired by 'CSX Classic Rock A to Z. 'Deep Trax' features the lesser-heard gems from deep within the classic albums. 'CSX 'Deep Trax' delivers enormous variety with virtually no repetition and even fewer interruptions than you thought possible. It's a great Classic Rock listening experience. 'CSX 'Deep Trax.' And, of

such as hits from Phantom of the Opera and jazz favorites from George Benson and Kenny G. Every single night, More



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Logo for WRAL-HD2 in Raleigh, N.C.

Glenn Gleixner, manager of WVTF(FM) in Roanoke, Va., uses his main signal to promote the availability of the public station's additional talk stream, Radio IQ.

"Radio IQ was started with a donated AM station. HD will give us the ability to offer full coverage of our area," Gleixner said.

Here is a sampling of what listeners



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Avoid the Radio Payola Police

by David H. Solomon

The author is a partner in the Washington law firm of Wilkinson Barker Knauer, LLP, and a contributor to Radio World. From November 1999 to May 2005 he served as the first chief of the FCC Enforcement Bureau; he was FCC deputy general counsel from 1994-99.

During 2005, the issue of payola received more public attention than at any time since the "pay-for-play" record scandals of the late 1950s. A year that began with controversy over the Department of Education's undisclosed payments to Armstrong Williams for on-air support of the No

Child Left Behind Act ended with New York Attorney General Eliot Spitzer entering into his second "pay-for-play" settlement agreement with a record company — this one with Warner Music Group for \$5 million.

The FCC has entered into the fray and announced several investigations. Radio broadcasters should be focused on ensuring that their stations have policies and procedures in place to avoid getting entangled in a payola scandal that could result, at the very least, in monetary penalties.

This article provides background about payola and broadcasters' sponsorship identification obligations, summarizes recent events and provides sugges-

tions about what radio broadcasters can do to protect themselves.

What's the law?

The Communications Act generally requires that when money or other valuable consideration has been paid to a broadcast station for the airing of program material, the station must, at the time of the airing, disclose that fact and identify who made the payment or provided the consideration.

To ensure that stations have the necessary information to make these disclosures, the Act also requires not only station employees, but others involved in the production or preparation of broadcast material, to disclose such arrangements up the production and distribution chain. Failure by the payor or recipient to disclose such payments or arrangements is commonly referred to as "payola." Payola is a federal crime and violations have sometimes led to convictions in federal court.

A broadcast station must make an appropriate sponsorship identification announcement whenever it receives a report of consideration, even if the station itself did not receive the payment. In addition, a broadcaster must exercise "reasonable diligence" to find out about any such payments from those with whom it deals directly.

Above and beyond the requirements of the statute, the FCC has required that, even when no payment or consideration to anyone in the chain is involved, a broadcaster must identify the sponsor of programming involving a "controversial issue of public importance."

Although cable operators are not covered in the statute, the FCC has applied the same disclosure and diligence requirements to them for programming they originate themselves.

What's the buzz?

In January of last year, the press began reporting about undisclosed payments to

Armstrong Williams for broadcast appearances supporting the No Child Left Behind Act. After an e-mail campaign organized by the advocacy group Free Press and strong statements by FCC Commissioner Jonathan Adelstein, then-FCC Chairman Michael Powell announced an investigation into the Armstrong Williams matter, as well as into allegations reported in the New York Times regarding undisclosed "pay-for-play" at a Buffalo-area radio station. Both those investigations remain pending at the FCC.

Shortly thereafter, press and congressional attention focused on the related use of so-called Video News Releases. These are prepackaged news stories prepared by government agencies or businesses with actors playing reporters and provided to broadcast and cable stations to be aired as if they were real news stories. Not all Video News Releases disclose their source. In April, again prompted in part by a Free Press filing, the FCC responded by issuing a public notice reminding broadcasters and cable operators of their disclosure obligations in this context and threatening enforcement action where appropriate.

In June, Free Press submitted another filing to the FCC — this time calling to the commission's attention examples of situations where people paid to promote products and corporate brands appear on broadcast stations in the role of on-air experts, without any disclosure. The commission issued a payola fact sheet for consumers, and Adelstein encouraged viewers and listeners to catch and report payola violations, analogous to a "Neighborhood Watch" program.

Then, in July, New York Attorney General Eliot Spitzer announced a \$10 million settlement with Sony BMG involving "pay-for-play"-related issues under state law. Adelstein again urged strong FCC enforcement, saying that he believed "this payola scandal may represent the most widespread and flagrant violation of any FCC rules in the history of American broadcasting."

See PAYOLA, page 29 ▶

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Radio KOL Airs From Disney World

Radio KOL aired for a week from Walt Disney World recently. The program is carried on KOL Service for Kids, which is a version of AOL designed for children.

Host Rick Adams did the remote the week of Dec. 12. He is a former Nickelodeon and Children's BBC talent.

America Online positions the webcast program as "exclusive content from industry-leading kids brands and all-new original programming," and promotes its parental controls to assure a safe online experience. The company says the program has more than 1 million weekly listeners and viewers and that Adams has received 8 million IM messages in the two years since the show launched.



Photo by Laura Goertzel

Payola

► Continued from page 28

Chairman Martin promptly announced an FCC investigation and also supported enforcement where warranted: "Broadcasters must comply with these rules. The commission will not tolerate non-compliance. While payola may not be a widespread practice in the broadcasting industry, to the extent it is going on, it must stop. ... If the Bureau determines violations of the payola rules have occurred, the commission will take swift action." Following the \$5 million Warner Music Group settlement in November, the commission indicated that it would investigate the underlying facts there as well.

Both the Sony BMG and Warner Music Group settlements include a number of strict behavioral limitations on the record companies' interactions with radio stations. Attorney General Spitzer is also investigating major radio licensees.

In November, U.S. Senator Russ Feingold, D-Wis., introduced legislation to strengthen the anti-payola statute. The legislation would, among other things, require broadcast licensees and their employees and affiliates who receive any money, services or other consideration, directly or indirectly, from a record company, recording artist, concert promoter, music promoter, or music publisher (or an agent or representative thereof) to disclose that fact to the FCC and to

the public each month. The commission could make an exception for nominal transactions and certain paid broadcasting.

The monthly disclosure would also have to include a list of songs and musical recordings aired during the period, indicating the artist, record label and number of times the station aired the song. In addition, all station transactions with the entities listed above would have to be reduced to writing, with copies retained by the licensee.

Finally, in late December, after a Washington Post article on the subject, Commissioner Adelstein called for an investigation regarding television station charity drives co-sponsored by advertisers that also get mentioned in the station's news coverage of the charity drive.

What can stations do?

Licensees should ensure they have a payola/sponsorship ID compliance plan. The details of the plan should be developed with the licensee's attorneys. In the pay-for-play context, the compliance plan should include such elements as the following:

- ✓ Clear station policies regarding when gifts or other consideration may be accepted by station employees or the station itself and when they must be approved in advance or at least reported to station management. These station policies should be clear that any such permissible gifts or other consideration may never relate to air time (or must be

disclosed if they are).

- ✓ Clear station policies regarding acceptance of items by station employees or the station itself for contests and giveaways, and appearances or performances at station-sponsored events and when they must be approved in advance or at least reported to station management. These station policies should be clear that any such permissible items, appearances or performances may never relate to air time (or must be disclosed if they are).

- ✓ Clear station policies regarding arrangements with independent record promoters, to the extent stations still have such arrangements.

- ✓ Compliance training for new employees and periodic compliance training for existing employees (or others involved in making programming decisions) regarding the law and station policies.

- ✓ Periodic affidavits from employees and others involved in making programming decisions. Stations may also wish to get information about employees' outside business interests.

- ✓ Appropriate affidavits or certifications of compliance in contracts with record companies, program syndicators, time brokers and other program providers (and their employees).

- ✓ Imposition and maintenance of appropriate recordkeeping requirements to per-

mit stations to track compliance.

- ✓ Periodic station audits to ensure compliance.

- ✓ Disciplinary action against violators.

The key here is don't play dumb — stations should keep their eyes and ears open and take additional steps to keep any problems from arising and to deal with them if they do arise.

Conclusion

The FCC took its most recent FCC payola/sponsorship ID enforcement action more than five years ago, when it issued two related \$4,000 proposed forfeitures, which the licensee promptly paid.

The landscape has changed considerably since then. Payola has received much public attention, both in the pay-for-play context and in other contexts as well. Moreover, indecency enforcement — and all its surrounding political controversy — has pushed broadcast penalties much higher. As the commission considers new potential enforcement action in the payola/sponsorship ID area, we may see significantly higher penalties there as well.

Broadcasters would be well advised to ensure that they have up-to-date compliance plans addressing payola and sponsorship identification that are closely followed in practice. Otherwise, they could get whacked, not only with bad publicity but with high monetary penalties as well. ●

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Cluttered Desks and Cluttered Minds

Some people can keep piles of paper and endless stacks of junk on their desks and yet be organized.

"I know exactly where every scrap of paper on this desk is, as long as nobody moves anything," a promotion director remarked to me not long ago.

If you're one of the rare breed with a photographic memory and can retrieve a particular piece of paper or folder from a disorganized desk, good for you. If you are like the rest of us, you only kid yourself about this magic ability to find things in instant.

Let's face it: Electronic communica-

tion has created more paper, not less, because we often print out important e-mails and attachments. E-mail also has increased the need to be organized. Now people expect answers in hours or minutes, not days, so you've got to be able to get your hands on materials at any given moment. And even if we don't print our electronic communication, we must consider storage issues.

Touch it once

Let's get organized for the rest of this year while it still feels somewhat new.

Manila file folders are still the most

efficient way to keep paper organized. Unfortunately, many people don't keep enough of them handy to file things away immediately.

As soon as you touch a piece of paper, deal with it in some form. If you're going to need it later, put it in a folder, label the folder and file the folder away. If necessary, make a note on your task list or calendar to deal with the file later.

If the paper is informational and requires no further action, file it away or toss it in the trash. If you feel you're going to need it for a long time and you have a scanner on your desk, take another moment to scan the paper and file it electronically.

You should use the same basic filing system for electronic information as you do with paper, so you can more easily recall how you labeled something. If you don't have a file cabinet system in your e-mail program, create one so that you can move e-mails into those category folders.

Do not save sound files or big graphic files in your e-mail program unless you have been granted unlimited storage space by the Lords of IT. Instead, transfer those to your network or hard drive in another folder.

For those who prefer to not second-guess about how they may have labeled an electronic file a few months ago, several wonderful free programs can perform a search instantly.

My favorite electronic search system is Google Desktop. A note of disclosure: I have no Google stock — and I'm sick about it. Those guys are freakin' geniuses. Their desktop solution indexes every file and folder on your computer in the background so that when you do a "desktop search" it works on your hard drive like it does on the Web. All you do is

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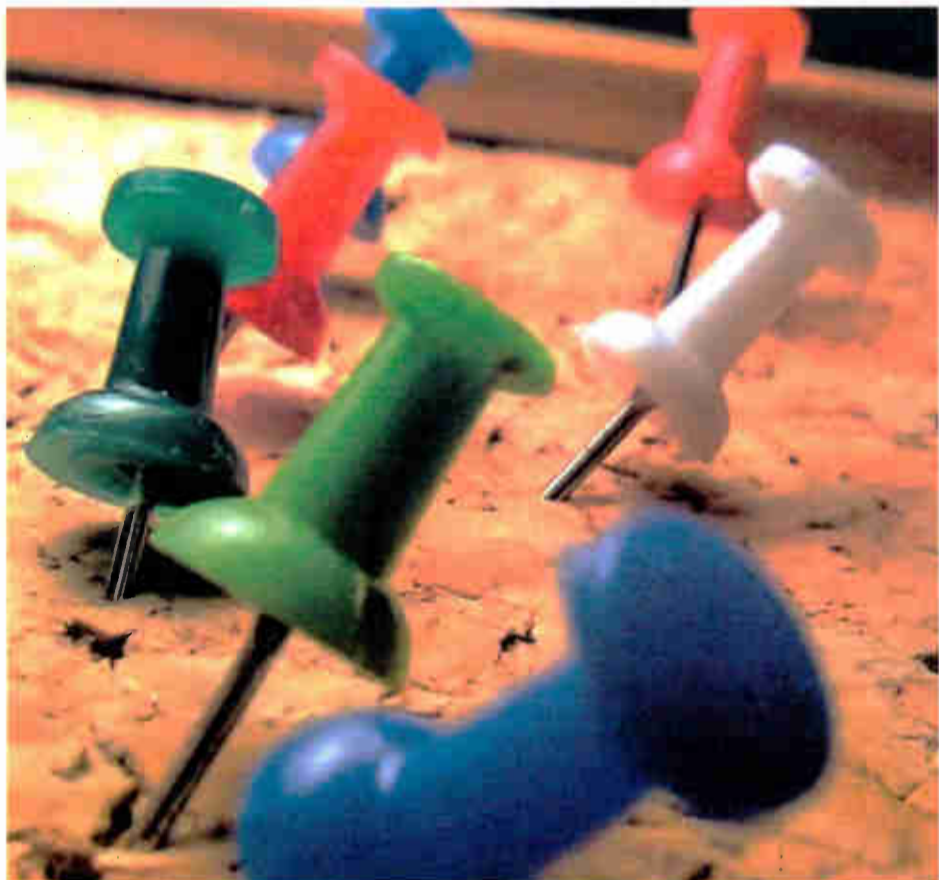
by Mark Lapidus

Big Rat Seen in Hospital

Mascot Rocky visited area pediatric wards for Greater Media's WRAT(FM) in Lake Como, N.J. dressed as "Santa Rat" to deliver stuffed animals, puzzles and games.



Barnes & Noble contributed gifts. Doug Sjonvall is promotions director of the station.



See ORGANIZE, page 31 ▶

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STATION SERVICES

'Twist' Aims at Gay Listeners

Wilderness Media and Entertainment is promoting "Twist," which it believes is the first syndicated national commercial radio brand aimed at the gay audience.

The company, run by President Matt Farber, said initial affiliate deals for the

music company and MTV executive; he began his career in radio with stints including WAVA(FM) in Washington and WAPW(FM) in Atlanta.

The show hosts are Dennis Hensley, Will Wikle and Melissa Carter. The program uses a morning show format and will include "music, celebrity interviews and entertainment reports, along with relationship and lifestyle experts, advice and news." Features will include a countdown of the week's top five songs as



Dennis Hensley, Melissa Carter and Will Wikle

weekly program were signed with ABC's WPLJ(FM) in New York, Clear Channel's KYSR(FM) in Los Angeles, Infinity station KLLC(FM) in San Francisco and Susquehanna station WWQ(FM) in Atlanta. The company subsequently signed affiliates in Houston, Seattle and Washington. Most are airing the program Saturday or Sunday evenings at 8 or 10 p.m. It's also on AOL Radio.

The syndicator believes 15 million U.S. adults consider themselves in the LGBT demographic. Matt Farber is founder of MTV Networks' gay and lesbian channel LOGO and is a former

selected by listeners and a highlight segment on a U.S. city including "must-sees" for gay visitors.

For information contact the company in New York at (212) 591-0193 or visit www.wildernessmedia.com.

Radio and the 'Language of Text'

Wirecutter Technologies released an updated version of MobileMatic, a text-messaging tool it says lets stations better

communicate with an increasingly mobile audience.

"Outbound mobile text messaging can be an uncontrolled expense for radio," Managing Partner Paul Sullivan says in the company's promotional material. "Furthermore, the typical one-way text blasts do not create a dialogue with the listener."

The Seattle-based company says the product puts the audience in contact with on-air staff "and the listeners happily foot the bill" at 30 cents per mobile message.

For every message received from the listener, MobileMatic client stations receive an instant auto reply message and earn an outbound message to send at a time of their choosing. Local advertiser messages can ride outbound messages.

For information contact the company in Washington state at (206) 772-7200 or visit www.mobilematic.com.

RadioNews Corp. Offers Features

RadioNews Corp. launched a marketing tool for radio advertisers that provides sponsorable 30-second features in categories like sports, entertainment, news and technology. Marketing firm Interep is the vendor for RadioNews Corp.

The service is a "customized news feature" designed to enhance brand awareness. Each prerecorded feature is updated weekly and formatted with a five-second open for station branding and/or sponsor mention and :20 of content plus a close for sponsor mention.

The news feature is intended to be combined with an advertiser's 30-second commercial to occupy a 60-second slot. Dan Sanders founded the company; he is also regional director of Interep's Kansas City office.

For information call (913) 677-4000 in Missouri or visit www.radionews.com.

Organize

► Continued from page 30
enter a few keywords like "budget" "2006" — and all the files, folders and pictures that contain those words will appear on your screen in seconds.

Google Desktop even searches all e-mail you've opened and saves their text, even after you've deleted the original e-mail! That feature has saved me on numerous occasions. A caution: Such search systems do search everything, so if you've saved or even looked at anything on the Web you don't want others to know about, you'll have to block that content.

Captain's Log

Here's a tip about organizing everything you do via the phone.

Don't write down messages or take notes on slips of papers. That's so 1990s. Instead get yourself a little notebook or open an electronic file, then keep a running list of who called on what date and put any notes about the call in that file.

Inevitably, you're going to need information you wrote down during a phone conversation or one of those phone numbers. If you've put it on a Post-it note, you'll need luck locating it even a few days later. If you go for the notebook concept, keep the notebook right next to your phone so you can find it in seconds. If you travel a lot, take always take it with you for easy reference.

Finally, once every few months clean out your paper and electronic filing system, mercilessly tossing old things in the trash. Organized managers typically are happy managers because they can spend their time more effectively on things that have impact.

The author is president of Lapidus Media. Write him at marklapidus@yahoo.com.

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RAB Tries to Move the Meter

by Craig Johnston

"Radio Revitalized" is the rallying cry of the 2006 Radio Advertising Bureau convention, set for Feb. 1-3 in Dallas.

The convention originally had been scheduled for New Orleans but had to be moved to Dallas because of Hurricane Katrina. RAB, as a sales and marketing arm of the radio industry, has about 7,000 members and serves 6,000 stations in the United States.

While 2005 wasn't a stellar year for radio revenues — flat through the first 11 months of 2005, according to RAB; see chart at right for the track record of the previous 34 years — convention organizers predict sales opportunities from new initiatives should buoy radio spirits for 2006.

Seeds

"I think there's been a lot of seeds that have been planted in 2005 that hopefully will come to fruition in 2006," said Gerry Boehme Sr., vice president of strategic planning for Katz Media Group and a member of RAB's convention planning committee.

He cited as examples the "More Is Less" radio commercial inventory reduction initiative from Clear Channel, and research done by the Radio Advertising Effectiveness Lab.

Clear Channel's move "was designed to change the way that advertisers look at radio and make things more effective, and also improve the experience for the listener," he said.

RAEL, funded by the radio industry, advertisers and agencies, has produced research to explain how radio works and how it can benefit advertisers.

"The studies basically show that radio can be very effective, it works on its own and works in conjunction with television, it's good for branding, it actually moves the sales needle," said Boehme.

He pointed to two Thursday sessions, "Radio's New Advantages: Emotion, Impact & ROI, Too!" and the "How Radio, Your Stations and You Can Max From R.O.I. Marketing" as panels where these initiatives will be addressed.

Another area that may bear fruit for radio is digital or HD Radio. Jeff Dashev, president of Interep-West and another RAB convention committee member, said he thinks the newly formed HD Digital Radio Alliance will make a big difference.

The alliance was announced in December by media companies including Clear Channel, CBS Radio, Cumulus, Bonneville, Emmis, Entercom and Greater Media; Beasley joined shortly after.

"I think the idea that they're together with the top broadcasters and they're going to work together rather than fight each other, I think there will be a real big push in 2006," said Dashev.

"Anytime you can bring together a message that is one, on the same page, and focus on one, rather than having different broadcasters saying different things, I think it's a unified approach that's going to be successful."

Coordinated push

Though the alliance was formed well after RAB's convention agenda was set, digital likely will be a lot of the buzz at the convention.

"There are so many opportunities that HD Radio represents, and really it would be almost unfair for me to characterize because some of them we're still exploring," said

George Hyde, RAB's executive vice president for meetings and training.

Of the enhancements promised by HD Radio, he said "from a programming perspective it will make terrestrial radio more competitive against other sources of entertainment or music or information programming.

"Secondly, there are some data applications to it that are absolutely fascinating, including the possibilities to tailor messages, to provide some additional information, perhaps some additional offers to peo-

ple who might be hearing a commercial as they might be driving around in their car listening to the radio."

to bring non-traditional advertiser dollars to the bottom line.

RAB offers a schedule of sessions running from as early as 6 a.m. to nearly 6 at night. "One of the consistent themes we've used throughout the years is 'you come, you learn, you make money,' period," said Hyde.

He said while perhaps half of radio stations attend the conference, "those 50 percent represent 84 percent of the total radio revenues."

"We're working with the people who are

RADIO FACTS ANNUAL REVENUE (IN MILLIONS)

Year	Network	National	Local	Total	%Change	Non-Spot	Grand Total	%Change
2004	\$1,081.0	\$3,453.0	\$15,479.0	\$20,013.0	2.0%	\$1,398.0	\$21,411.0	2.0%
2003	1,033.0	3,470.0	15,100.0	19,603.0	1.0%	1,260.0	20,863.0	
2002	1,000.0	3,275.0	15,134.0	19,409.0	5.7%			
2001	919.0	2,898.0	14,552.0	18,369.0	-7.5%			
2000	1,029.0	3,596.0	15,223.0	19,848.0	12.3%			
1999	878.0	3,211.0	13,592.0	17,681.0	14.6%			
1998	739.0	2,768.0	11,923.0	15,430.0	11.9%			
1997	646.0	2,407.0	10,741.0	13,794.0	11.1%			
1996	465.0	2,093.0	9,854.0	12,412.0	8.2%			
1995	426.0	1,920.0	9,124.0	11,470.0	7.8%			
1994	411.0	1,867.0	8,374.0	10,652.0	11.1%			
1993	407.0	1,629.0	7,532.0	9,568.0	9.3%			
1992	377.0	1,479.0	6,899.0	8,755.0	1.9%			
1991	440.0	1,575.0	6,578.0	8,591.0	-2.8%			
1990	433.0	1,626.0	6,780.0	8,839.0	5.0%			
1989	427.0	1,530.0	6,463.0	8,420.0	6.6%			
1988	382.0	1,402.0	6,109.0	7,893.0	8.2%			
1987	371.0	1,315.0	5,605.0	7,292.0	3.8%			
1986	380.0	1,332.6	5,313.1	7,025.7	7.0%			
1985	328.7	1,319.4	4,915.0	6,563.1	11.5%			
1984	288.0	1,184.4	4,412.0	5,884.4	17.3%			
1983	253.5	1,022.8	3,739.0	5,015.3	11.7%			
1982	217.5	909.4	3,365.0	4,491.9	10.7%			
1981	195.9	854.3	3,007.0	4,057.2	14.4%			
1980	157.9	746.2	2,642.9	3,547.0	11.8%			
1979	138.5	637.3	2,396.6	3,172.4	9.6%			
1978	126.4	589.7	2,179.2	2,895.3	15.2%			
1977	118.1	521.3	1,873.1	2,512.5	12.9%			
1976	92.2	494.6	1,639.3	2,226.1	17.6%			
1975	72.7	416.3	1,403.3	1,892.3	7.8%			
1974	60.3	386.8	1,308.8	1,755.9	6.6%			
1973	59.4	382.3	1,205.4	1,647.1	6.4%			
1972	65.0	384.3	1,098.4	1,547.7	11.5%			
1971	55.1	378.0	954.6	1,387.7	10.4%			
1970	48.8	355.3	852.7	1,256.8	4.7%			

Annual U.S. radio revenue, in millions, since 1970 as tracked by RAB. Sources: FCC (to 1980); RAB analysis (1981-present).

Includes information from Ernst Young, Radio Expenditure Reports, Miller Kaplan & Arase Co. and Hungerford Aldrin Nichols & Carter.

ple who might be hearing a commercial as they might be driving around in their car listening to the radio."

Hyde will moderate the "Selling Radio in a Digital Age" panel on Friday.

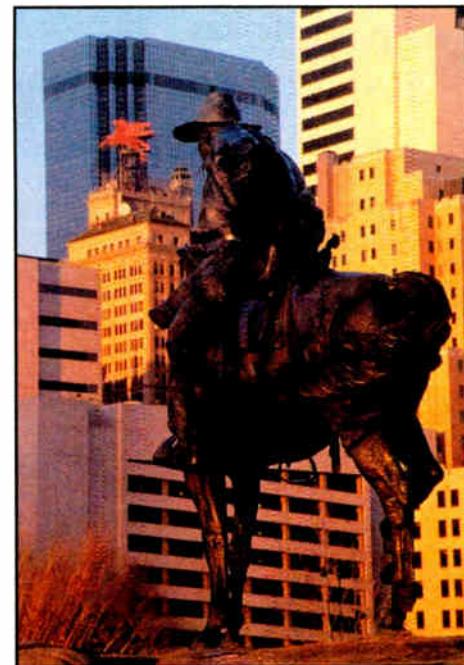
While some of RAB's sessions address such new issues in radio sales, areas such as sales-force recruiting, retention and motivation are ongoing concerns, as are bushing up on negotiation skills and how

most serious about radio sales, and most serious about trying to grow it." Hyde estimates 20 percent of the show's attendance will be from overseas.

Other perspectives

All four of RAB's conference keynote speakers come from outside radio.

John G. Miller will deliver the opening keynote at Thursday's breakfast session.



Dallas Skyline View From Pioneer Plaza

Miller is author of the book "The Question Behind the Question" and founder of the organizational development firm QBQ Inc.

Hyde said Miller will examine how taking responsibility can create opportunity, overcome obstacles and achieve goals, and how success is a result of personal accountability.

He'll also give pointers "on getting out of some of the traditional traps that particularly newer managers fall into — blaming somebody else, blaming the economy or blaming the ratings or whatever," said Hyde.

Instead, Miller will talk about how to focus on things managers can do to make themselves and their sales efforts more effective.

Thursday's luncheon keynote is by Rob Britton, managing director of brand development and advertising for American Airlines, who will look at the challenges he and his organization face. American is one of radio's largest advertisers.

"Many people have said over the last 10 or 15 years that the airlines, as an industry, from an inventory management standpoint, most resembles the radio business," said Hyde, noting the perishable nature of inventory in both businesses. "So to hear his perspectives on how they deal with that I think is going to be very interesting."

Friday's breakfast keynote will deal with staying creative as the years take their toll. Mark L. Fox, former chief engineer for the U.S. space shuttle program, now teaches creative thinking exercises.

"He's got some fascinating statistics on how quickly you lose creativity as you grow older, even in your 20s, 30s and 40s," said Hyde. "His presentation will be on how you get it back, how you can regain and stimulate creativity, creative problem solving solutions and so on."

In line with RAB's "Radio Revitalized" theme, at Friday's luncheon executive life coach Francine Ward will talk about turnaround success. Ward overcame addiction, alcoholism and low self-esteem to become an attorney, author and public speaker.

Info

What: 2006 RAB Conference

When: Feb. 1-3

Where: Hyatt DFW in Dallas

Cost: \$699 for members, \$999 for non-members.

Info: (800) 998-2153 or www.rab.com

Control Freaks



SRC-8 III

The SRC-8 III is a computer interface to the real world. Connection through an RS-232 or RS-422 serial port the SRC-8 III can notify your PC software program that any of 8 opto-isolated inputs have been opened or closed and allows your software to control eight SPDT, 1-amp relays. Communication with the SRC-8 III can be accomplished via short "burst" type ASCII or binary commands from your PC (computer mode). Also, two units can be operated in a standalone mode (master/slave mode) to form a "Relay extension cord," with 8-channels of control in each direction. The unit can communicate at data rates up to 38400. The SRC-8 III may be expanded to 32 inputs x 32 outputs.



SRC-32

The SRC-32 is a computer interface to the real world. Connection through an RS-232 or RS-422 serial port, the SRC-32 can notify your PC software program that any of 32 optically isolated inputs have been opened or closed and allows your software to control sixteen SPDT, 1-amp relays and an additional 16 open collector outputs. Communication with the SRC-32 can be accomplished via short burst type ASCII or binary commands from your PC (computer mode). Also, two units can be operated in a standalone mode (master/slave mode) to form a "Relay extension cord," with 32-channels of control in each direction. The unit can communicate at data rates up to 38400. The SRC-32 may be expanded to 128 inputs x 128 outputs.

ESS-1

The ESS-1 provides a cost-effective, small profile solution for standard serial-to-Ethernet connectivity. Designed with the broadcaster in mind, the ESS-1 is equipped with extensive RFI protection. It is ideal for applications requiring data support for both RS-232 and RS-422 communications. The ESS-1 allows any device with a serial port, Ethernet connectivity and is ideal as a serial bridge/tunneling or applications where a COM port, TCP Socket, UDP Socket, or UDP Multicast functionality is needed. The small profile of the ESS-1 makes installation hassle-free.



AVR-8

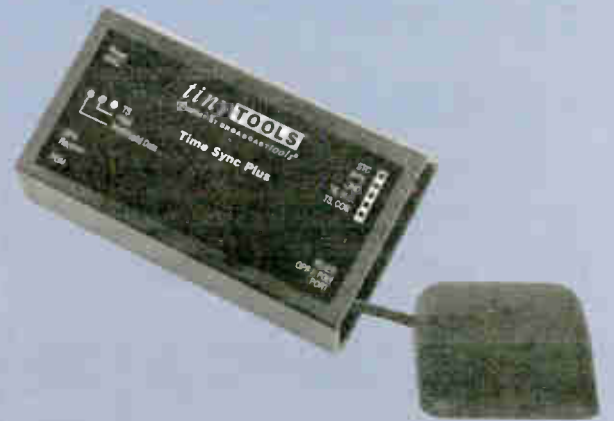
The AVR-8 is a voice remote control system that automatically reports changes detected on any of its eight status inputs to a remote telephone and/or pager. After speaking a greeting message that may identify the source of the call, the AVR-8 then speaks a unique message for each status input. The user may customize each factory-recorded message. After reporting, the AVR-8 is ready to receive commands through your telephone keypad. Functions include telling the AVR-8 to report on the input state of any of the eight status inputs, commanding the AVR-8 to pulse any one of its four SPDT relays for 750 ms and/or turning any one of the relays on or off. When a relay command is given, the AVR-8 speaks the relay 'name' followed by the 'on' or 'off' message.

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WRC-4

The tiny TOOLS WRC-4 is a fresh approach to remote site monitoring and control, or providing an inexpensive solution to Internet enabling your present remote control system. The WRC-4 combined with web access and your favorite web browser brings you the following features; A powerful built-in web-server with non-volatile memory; 10/100base-T Ethernet port; four each channels of 10-bit analog inputs with a large monitoring range; optically-isolated status (contact closures or external voltages) inputs; normally open dry contact relays; open collector outputs; front panel status indicators, a single front panel temperature sensor and 4-email alarm notification addresses. The WRC-4 is also SNMP enabled. The WRC-4 has carefully been RFI proofed, while including the accessories other manufacturers consider optional. The WRC-4 is supplied with removable screw terminals and loaded with a generic web page that may be easily edited by the end user.



Time Sync Plus

The tiny TOOLS Time Sync Plus provides four separate GPS time referenced outputs. The first is a SPST relay, which pulses at 12:00, 22:00, 42:00, 54:30 each hour and is user programmable in each of four locations for any minute and second each hour. The second output is an active high driver with a 100 ms pulse each second, while the third output is a 4800-baud, RS-232 serial port providing a time zone adjustable hours, minute and seconds time code. The fourth output provides an active high driver in the ESE TC-90 serial time code format. Indicator LED's are provided to display power/valid GPS data, programming mode and time sync relay operation. A Garmin 12 Channel GPS receiver with embedded antenna is supplied.



SRC-2/SRC-2x

The tiny TOOLS SRC-2 interfaces two optically isolated inputs and two SPST relays to a RS-232 or USB port, while the SRC-2x does this via a 10/100baseT Ethernet port. Both the SRC-2 and SRC-2x can notify a user's PC software program that any of two optically isolated inputs have been opened or closed and allows your software to control two SPST, 1-amp relays. The SRC-2x is also able to send an email when either of the two inputs change state. The user may also add up to 48 ASCII strings per input and 16 user defined strings per relay. Communication with the SRC-2(x) is accomplished via short "burst" type ASCII commands from the user's PC. Also, two units may be operated in a standalone mode (master/slave mode) to form a "Relay extension cord," with two channels of control in each direction. The SRC-2 communicates using RS-232 at baud rates up to 9600 and the SRC-2x via 10/100baseT Ethernet. The SRC-2(x) is powered by a surge protected internal power supply. Either unit may be rack mounted on the optional RA-1 mounting shelf.



VAD-2

The tiny TOOLS VAD-2 is a user programmable two-input multi-number voice/pager auto dialer with integrated stereo silence sensor, designed for dial out paging and/or voice message notification. The VAD-2 is equipped with two dry contact inputs and stereo silence sensor, which, when tripped, will sequentially dial a pager and/or up to four different phone numbers and play back a user recorded message corresponding to the tripped input. The VAD-2 also provides two SPST one amp relays for the control of external equipment.

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◆ READER'S FORUM ◆

Equipment Identified

The transmitter in Tim Singleton's WTRC pictures (Reader's Forum, Dec. 21) is an RCA 250 watt transmitter, circa 1934. That rig also was sold as the exciter section of an RCA 1-D, and was labeled as "ET-4241" when used in that configuration. I do not know if RCA used a different designation when it was sold as a stand-alone transmitter.

The decorative grill between the meters covered a speaker that could be used for audio monitoring. The matching cabinet for the 1 kW section had an oscilloscope in the same location. I recognize General Radio modulation and frequency monitors in the speech rack shown in the picture, but do not know their model numbers.

WTAG(AM), in Worcester, Mass., had an RCA 1-D that was purchased in 1934. The transmitter was still operational until the late 1970s, when it was dismantled. The ET-4241 exciter had 805s in the PA, and would have been complete as a 250-watt rig if the modulation transformer had been connected.

That exciter was not a joy to service, as the components were arranged on shelves

with shield covers. But it did work, and the audio through the 1-D sounded quite good. It actually spent most of its life driving a 5-D amplifier and modulator, with the original 1 kW rig being used only when power consumption was an issue.

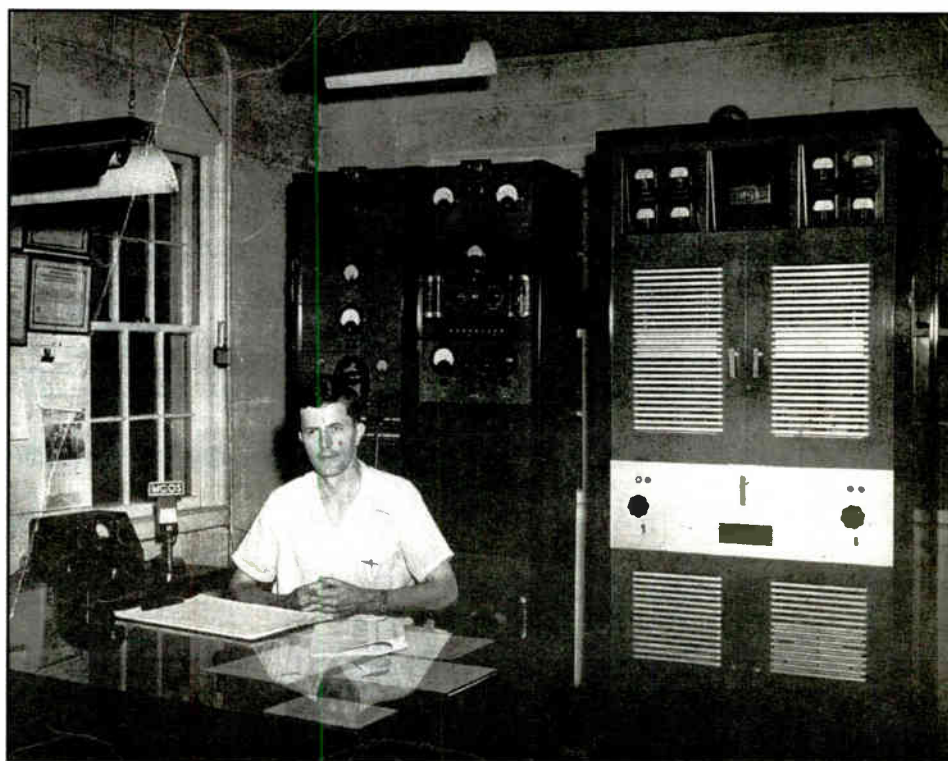
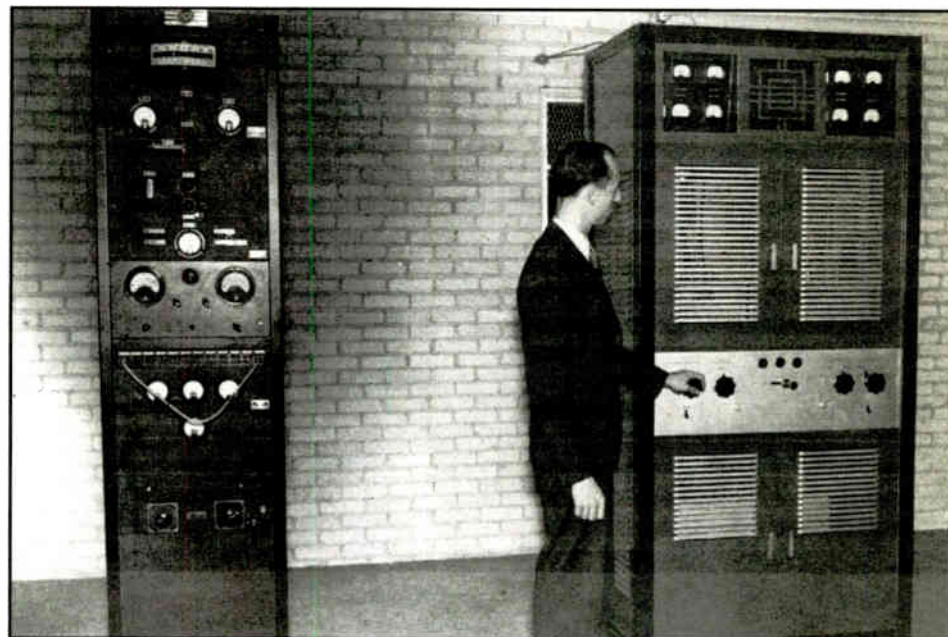
WTAG still has an RCA 250-D transmitter that looks very similar to the older model in the picture, despite being four years newer. The internal construction is quite different, however. That rig still works, and is being kept as a museum piece.

*John Andrews
Engineer
Comrex Corp.
Devens, Mass.*

The WTRC transmitter is an RCA, an earlier version than the 250D now in the S.C. State Museum. Your obituary for Bobby Lambert ("Lambert Made News Early and Often," Dec. 17, 2003) had a picture of him standing by the 250D. (See second photo below.)

This could be a 100- or 250-watt model. I don't know the model number, just that it precedes the 250D. Perhaps it's a C or B version.

*Milton Holladay
Columbia, S.C.*



Radio World
The Newspaper for Radio Managers and Engineers

Our readers have something to say

"I read Radio World and RW Engineering Extra all the time. I rely on these publications to keep up to date on technology and trends in radio."

Steve Tuzeneu
WNEB-WVNE Manager-Engineer
Blount Communications Group
Technology Manager
Worcester, Mass.

HEIL SOUND
www.heilsound.com

Shows: Heil PR40 Large-Diameter Dynamic Studio Microphone.

◆ READER'S FORUM ◆

SBE Titles

I appreciated the article about our new president and his objectives for the coming year ("SBE's 24th President Steps In," Jan. 4).

The article mentions Chriss Scherer as the current chairman of the SBE Certification Committee as well as being the current president. He is president, but he is immediate past chairman of the Certification Committee. James Bernier, CPBE, CBNT is the current Certification Chairman. Jim is with Turner Entertainment Networks in Atlanta.

John L. Poray, CAE
Executive Director
Society of Broadcast Engineers Inc.
Indianapolis

FM Stereo:
At What Cost?

Bill Gillman of WIT Inc., the Web-based remote control guy, and I were discussing the recent move by a Salt Lake broadcaster to simulcast news on its FM. Since they changed format from music to news, I assumed they turned off the stereo generator.

They did not; the news is in stereo. Interesting since the Salt Lake Valley has a significant multipath problem. Bill then started a discussion of the penalty of operating the 38 kHz, double-sideband, L-R subcarrier.

In a paper published by the IEEE in 1962, Norman Parker and Donald Ruby state that the theoretical FM detector noise rises 6 dB per octave. Parker and Ruby calculate that when the FM baseband is extended from 15 kHz to 53 kHz (by turning on a stereo generator) the signal to noise ratio suffers a 23 dB penalty.

Looking at this in another aspect, a 100 kW, stereo FM station would have signal parity with a 500-watt, mono station operating from the same site. Do the math. Reduce 100,000 watts by 20 dB. That's 1 percent of 100,000, or 1,000 watts. Then, subtract another 3 dB. Half of 1,000 is 500 watts.

Next, there's the modulation consumed in the 19 kHz pilot and the 38-kHz L-R subcarrier. This energy could be diverted to the 15 kHz mono signal.

Here's an idea. When there are significant HD Radios on the road and you're confident the majority of your listeners are digitally enabled, turn off the analog stereo generator. Then when the receiver

is in an area of low digital signal and reverts to analog, you have a stronger and louder analog signal for the listener.

This action is no stranger than limiting AM bandwidth to 5 kHz. If you think this is a good idea, please mail me a buck. I promise to share all the cash with Mr. Gillman.

Walt Lowery
Associated with RF Specialties
of Washington
Mukilteo, Wash.

Save Those Clips

Radio World ran an article last year reviewing a new all-in-one computer system that ran automation in a fanless computer enclosure for less than \$3,000. I thought I had kept that article safely hidden for future reference, but I cannot find the clipping in my news studio.

Might you have either a link to that article, or a link to the manufacturer? I am hoping someone can assist in this search, as I now have a need to investigate the product more completely.

Thank you for your wonderful publication.

Phillip Swindall
News Director, WGAD(AM)
Gadsden, Ala.

The article "Russell Johnson's Station in a Box" ran in the Sept. 16 issue. Visit the company WorldVibrations at www.worldvibrations.com.

In a Pinch

I am writing in response to the article about an AM radio station that lost its tower due to a natural disaster and was off the air for a week waiting for the tower to be replaced ("Have You Seen My Tower?," Oct. 26).

Recently, a 1,000-watt daytime AM station in California lost its 200-foot tower when a small tornado ripped through the area. Yes, even California has tornadoes.

The station, realizing it would be off the air until the tower could be replaced, used a unique method of erecting a temporary one.

The station engineers went to a party store and filled about 25 big balloons with helium. They used these balloons to hoist a 20-gauge, twisted wire antenna 200 feet into the air. To stabilize the array, they ran three small, lightweight nylon ropes to separate anchor points,

Compatibility Begins at Home

Surround-sound broadcasting has been a hot topic for both terrestrial and satellite radio. As with any enhancement to an existing broadcast format, backward compatibility is a must. The systems proposed or in use for surround radio adhere to this requirement, delivering surround audio to properly equipped new receivers, without compromising existing mono or stereo reception on existing devices.

Yet radio faces a unique problem in delivering such compatibility: The content itself may not allow it.

The bulk of surround-sound material that radio will broadcast is likely to come from the growing number of music releases produced in 5.1-channel formats. But unlike cinematic and television productions that include surround sound, these music releases — distributed on DVD or SACD formats today — generally include separate surround (5.1) and stereo (2.0) mixes of all material, and the two mixes may differ considerably.

Most importantly, because the surround mixes are intended exclusively for surround listening, they are typically not created with consideration of how they will sum — or "downmix" — to stereo or mono. These downmixes often can present suboptimal (if not downright unacceptable) results, pleasing neither the creative community nor listeners.

Naturally, this creates a problem for broadcasters, who do not have the luxury of bandwidth adequate to simultaneously provide two separate versions of their programs, nor the facilities to manage such dual audio inventories. They require instead a hierarchical approach — a single audio source format that addresses surround, stereo and mono listening environments with equally satisfactory results — just as film and TV soundtracks do.

The music industry's different approach confounds broadcasters with a dilemma on how to best present surround content in a singular form. All the great engineering applied to compatible surround delivery formats will be for naught if the audio content does not allow itself to be transmitted properly through such systems.

Consider how FM stereo would have fared if much of the stereo music of the day had summed poorly to mono. Despite the backward-compatible design of the FM stereo multiplex system, the format likely would have languished and eventually failed if most broadcast content had been created in mono-incompatible form.

We believe surround sound broadcasting is an important part of radio's future, but fear its prospects are threatened by the lack of downmix compatibility in its primary content source. We suggest that the music and broadcast industries work toward a compromise solution on this point, for their mutual benefit.

While we appreciate the artistic and technical reasons behind the music industry's preference for creating surround mixes that are unfettered by compatibility concerns, we remain confident that satisfactory, downmix-compatible surround music mixing can become standard practice, as in the movie and television industries. Without such an effort, surround-sound radio broadcasting may never reach its potential.

— RW

each positioned about 200 feet from the lower part of the antenna.

By the way, they selected orange-colored balloons as a warning to low flying aircraft, but no nighttime beacon light was installed.

By carefully measuring the length of the 20-gauge wire, the SWR was kept low for the station's operating frequency, which eliminated the need for any matching device. While the wind did push the balloons back and forth, the arrangement was stable enough to keep the station on the air.

The temporary antenna was kept well away from where the original tower stood, so as not to interfere with the erection of the replacement.

While the RF radiation from a 20-gauge

wire does not equal that of a broad tower face, the station got enough signal on the air to fill its primary coverage area.

Additionally, because the station was the only one with local coverage, the town emergency services and the Red Cross asked for the station's assistance in the emergency. Because the station was a day-timer, it could immediately go on the air 24 hours a day, without FCC authorization, until the emergency was over.

Even erecting a short tower, with a base load or a horizontal wire, will work. In this day and age, there is no legitimate reason for an AM station to be off the air, and not serving its community, pending the erection of a replacement tower.

Jerry D. Burling
Long Beach, Calif.

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