HELP A COLLEAGUE IN NEED. Page 46

'Exciting Times'

Jeff Jury writes that HD Radio technology has reached several milestones not yet apparent to the average consumer.

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Family Listening

Skater Tara Lipinski is among notables who have been heard on Focus on the Family's 'Radio Theatre.'

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Radio World

$2.50 The Newspaper for Radio Managers and Engineers December 3, 2008

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STUDIO SESSIONS


Photo by Rosie Levine

M JOURNAL

PINION

Radio, For Those Who Cannot Hear It

NPR Demonstrated Over-The-Air Subtitled Radio For Deaf and Hard-of-Hearing On Election Night

by Leslie Stimson

TOWSON, Md. NPR Labs successfully demonstrated captioned radio using over-the-air IBOC signals of several stations as part of its Election Night coverage.

If all goes according to plan, the network hopes to generate captions for its main programs by the end of 2009.

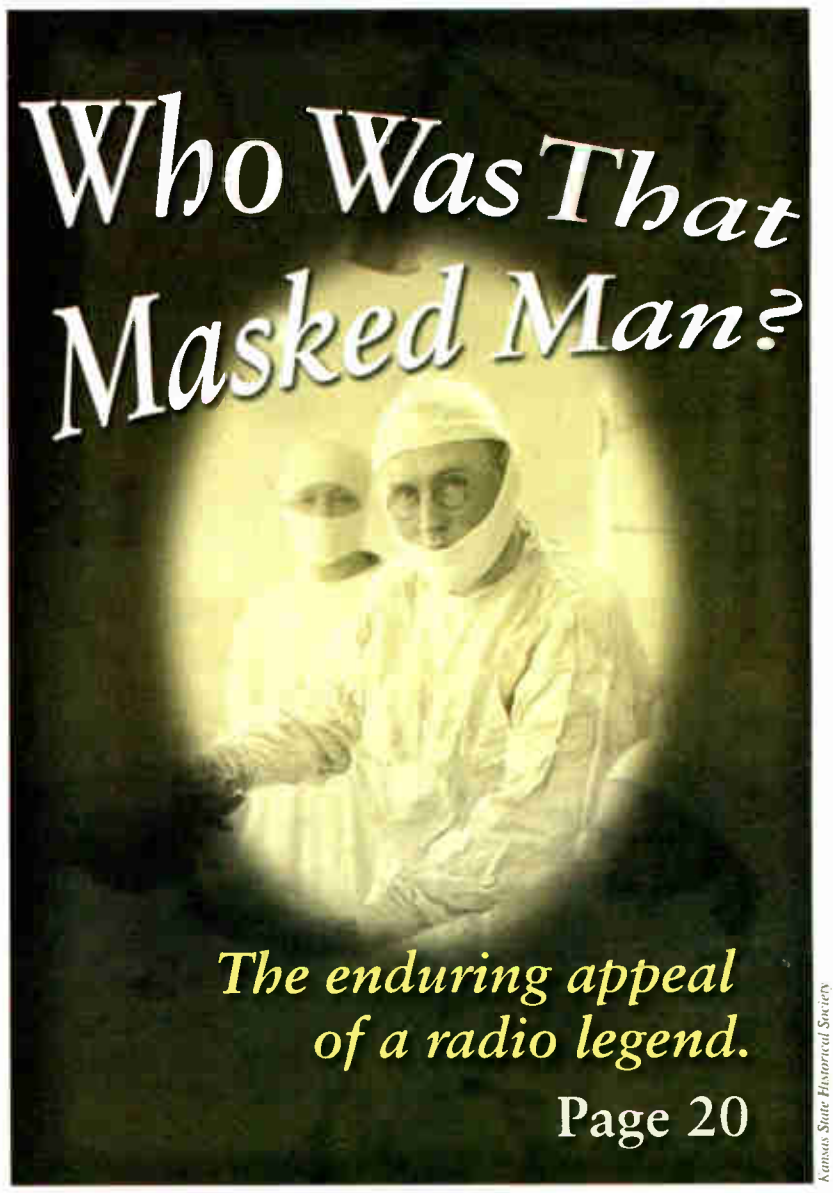
Deaf and hard-of-hearing people who have experienced the captioning are excited about it, saying it will help them use and enjoy radio — again, or for the first time.

NPR Labs personnel plan to meet with receiver makers in January before the start of the Consumer Electronics Show, hoping to encourage one or more manufacturers to produce HD Radios that can receive and decode the captioning.

The International Association of Audio Information Services has developed design standards for captioned radios to help manufacturers.

The idea is to build in accessible features from product inception, rather than trying to include a feature

See CAPTIONING, page 6 ▶



Kansas State Historical Society

NEWSWATCH

Parsing Obama, Media Regs

WASHINGTON Since the election, observers have been speculating about changes that might be brought about by the choice of Barack Obama as president and a larger Democratic majority in Congress.

In 2007, Obama weighed in on media ownership, joining Sens. Byron Dorgan, D-N.D. and Trent Lott, R-Miss., as well as Rep. John Dingell, D-Mich., in opposing FCC Chairman Kevin Martin's proposal partially to relax the cross-ownership ban.

Obama had urged the chairman to slow down: "The FCC must meet its obligations to our country's minority communities and not special interests by ensuring that broadcasters are doing right by the communities they operate in before it considers loosening media ownership regulations." The commission ended up passing the proposal.

'White Space' Rules Pass FCC

WASHINGTON The Federal Communications Commission in November established rules to allow wireless devices to operate in broadcast television spectrum in places where the spectrum is unused, commonly is referred to as white space.

Though the wireless devices would be licensed on a secondary basis, broadcasters and others have protested these rules, saying such devices could interfere with wireless microphones. The FCC said mics will be protected in several ways. White space devices are subject to equipment certification by the FCC Laboratory.

Sennheiser, noting that details had not come out as of early November, stated: "We were surprised that the commission acted so quickly despite the erratic performance of white space device prototypes tested by the FCC's own engineers. However, it is encouraging that the FCC press release and each ... commissioner's statements cite safeguards to protect wireless mics from interference.

"We hope that the rules are drafted to ensure adequate protection. Nevertheless, this ruling will pose new challenges for the pro audio industry, requiring high-quality gear operated with best practices."

News Roundup

INDECENCY: Supreme Court justices heard oral arguments in a case involving so-called "fleeting" indecency, short utterances that the FCC says violate its rules. Court watchers expect a ruling on FCC v. Fox Television Stations by June. Attorneys expect the commission to look to this decision to guide it in several pending cases.

HILL CHANGES: California Democrat Henry Waxman, the number two Dem on the House Energy and Commerce Committee, challenged Michigan Democrat John Dingell for the chairmanship and won. Dingell had chaired the committee from 1981 to 1994, when Republicans took control of the House, and regained the chair in 2007. In the Senate, 90-year-old Democrat Robert Byrd of West Virginia agreed to give up his Appropriations Committee chair. The next senior member of Appropriations, 84-year-old Democrat Daniel Inouye of Hawaii, will take over. Inouye is chairman of the Commerce Committee; Hill publications reported that West Virginia Democrat Jay Rockefeller will likely take over Commerce, which has jurisdiction over communications. Also, Alaska Republican Ted Stevens lost his bid to retain his Senate seat.

Index

NEWS MAKER

He Finds His Place in Granite State

Young Broadcast Engineer Believes Radio Is Relevant and Exciting

by Randy J. Stine

One in a series of occasional articles about people who are remaking the face of traditional engineering.

CONCORD, N.H. Steven Gallagher admits he was in the minority of students attending the New Hampshire Technical Institute. While classmates pursued studies in mechanical, architectural or electrical engineering and were interested in video game design, he was dreaming of becoming a radio broadcast engineer.

Gallagher, 22, is in his first radio job since attending the school in 2007 with a major in computer engineering and a minor in electrical engineering. He is a broadcast technician for New Hampshire Public Radio in Concord, N.H., responsible for a variety of studio and computer maintenance. He has already helped rebuild the transmitter site of non-commercial WEVO(FM) in Concord.

New Hampshire Public Radio, based in Concord, operates the 50,000 kW WEVO along with five other transmitters and four translators across the Granite State. It broadcasts local programming in addition to programs from National Public Radio, Public Radio International and American Public Media.

NHPR has gone digital at most of its transmitter sites and plans to expand its HD Radio coverage across the state, station officials say. It has yet to commence multicasting.

For Gallagher, who was hired fulltime at NHPR in late 2007 after completing a six-month internship, the opportunity to learn hands-on broadcast engineering skills at such a young age is not being wasted.

Described as a "hardworking young man" by the station's chief engineer, Michael Saffel, Gallagher provides engineering support around the studios and at the transmitter site.

On-call

"I'm on call and work with the other engineers to ensure we stay on the air and make sure the studios are kept up," Gallagher said. "I interface with all of the computer systems and have worked specifically with Burk Technology on remote control issues and functionality at some of our different sites. I'm just absorbing as much as I can."

WEVO's facility includes a master control, edit suites, production studios, office space and work areas. The public broadcaster uses Broadcast Electronics' AudioVault for digital automation.

Earlier this year, Gallagher was a recipient of a $1,000 scholarship from the Association of Public Radio Engineers to attend the NPR Labs/APRE Public Radio Conference in Las Vegas. He attended seminars and workshops and rubbed shoulders with fellow engineers for three days.

"I took in so much just meeting the other engineers. It was a terrific learning setting for me. A lot of the material dealt with NPR's technical initiatives, including its HD Radio 10 dB hybrid mode developments."

The scholarship, which covered airfare, hotel and some expenses for the three days, is funded by donations from APRE members, additional station managers and interested broadcast equipment vendors, according to the announcement of Gallagher's award.

He graduated from Pinkerton Academy High School in 2005 but long had an interest in electronics growing up in Derry, N.H., often tearing apart things that weren't working, like the family's VCR or phone, to see how they worked.

"I really didn't know how to fix things but I learned. I just knew some kind of a career in electronics was where I was headed," Gallagher said. "In high school I immediately jumped into as many technology classes as I could."

That led to Gallagher enrolling in New Hampshire Technical Institute, where he believes he was the only one interested in broadcast engineering.

"I was a bit of an oddball, I guess. They don't have a specific broadcast engineering degree there, but I certainly took classes that certainly help me in my current position," Gallagher said.

I definitely think terrestrial analog radio is going to be around for a long, long time.

— Steven Gallagher

At New Hampshire Technical Institute, Gallagher majored in computer engineering and minored in electrical engineering. He has yet to receive his degree from NHTI, but plans to continue his formal education.

Gallagher, a member of SBE Chapter 110, has taken advantage of SBE Webinar training and local training sessions.

See GALLAGHER, page 5 ▶

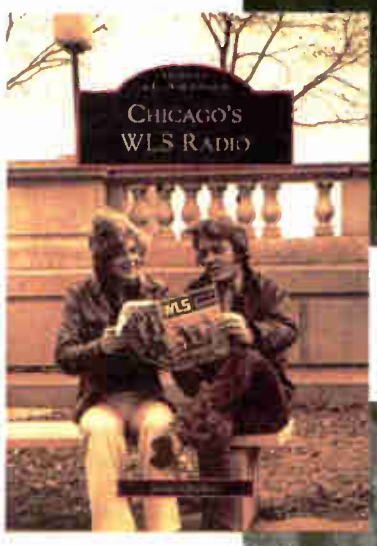
So Many Books, So Little Time

We Conclude Our Look at Super Gift Ideas for Your Book Lover

Our cover story this issue about Dr. J.R. Brinkley was prompted in part by the publication earlier this year of a book that is now about to come out in soft-cover.

Let's wrap up our gift discussion with more ideas for the book lover on your shopping list.

"Chicago's WLS Radio" by Scott Childers — Of keen interest to fans of WLS will be this addition to the fabulous "Images of America" photo essay series you've seen in bookstores.



The "Images" series began with books about specific towns and cities — I have one about my hometown of Westfield, N.J. — and has expanded to include various industries, ethnic groups and other topics.

Readers will find numerous wonderful promotional and behind-the-scene pix not only of early station talents but of more recent notables like Art Vuolo, Kurt Hanson, Catherine Johns, Larry Lujack, Dick Orkin and Dick Biondi.

If you have any interest in the storied history of WLS, buy this soft-cover pictorial overview. Retail $19.99.

If Arcadia knew what's good for it, the company would launch a full series of radio station history books in the mold of this WLS title. They'd have a hit.

A fun thing for a history-minded reader to do: Visit the Arcadia Web site, click on Images of America and browse the thousands of topics in print.

Just within radio, the company has titles, in that series and in others, on topics such as broadcasting in Birmingham, Ala.; Detroit sports broadcasters; the history of WIVK(AM) in Knoxville, Tenn.; the "Cincinnati Sound"; and WNAX(AM) in Yankton, S.D. That book was co-written by a man who literally grew in its transmitter building.

Courtesy Chris Cline

WLS technicians create sounds using plungers, cloth, roller skates, a sewing machine and a bass drum. The strange contraption on the right may have been used to generate a wind or airplane sound.'

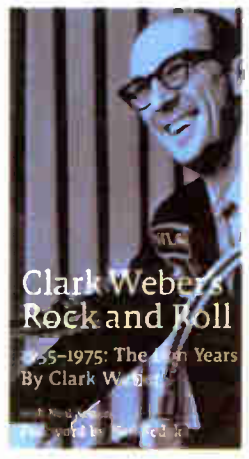
Courtesy John Gehron

WLS Engineer Ed Glab works a remote in the Hometown Square gazebo at Mariott's Great America. These two pix are from the book 'Chicago's WLS Radio.'

From the Editor

Paul J. McLane

"Clark Weber's Rock and Roll Radio — 1955–1975, The Fun Years" by Clark Weber with Neal Samors — This book didn't reach me in time to look over for this column but here's the summary from the author:



"I'm Mother Weber's Oldest Son Clark. I was very much a part of your rock and roll musical scene in the '50s, '60s and '70s. As the program director and disc jockey at WLS radio in Chicago, I chose the music that was played on that 50,000 watt rock and roll giant. My new book is complete with dozens of pictures and a special CD that returns you to those fun years. Come with me and we'll go back in time to when rock and roll was clean and the Chicago River was dirty."

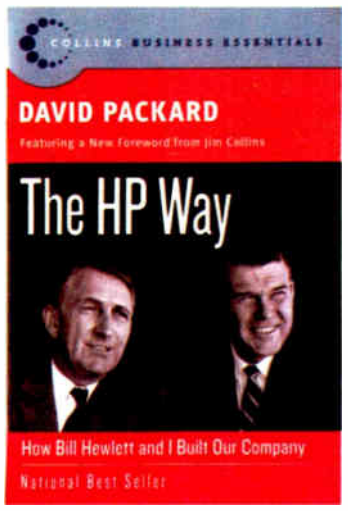
Published by Chicago's Books Press, $37.50 hard, $29.50 soft.

"The HP Way" by David Packard — Not just a radio book but featuring first-person electronics and business history, this is a favorite of tech managers including Mike Dosch of Axia Audio.

"Catfish" recommended it to me as a fine example of how engineers can find

corporate success.

Packard co-founded Hewlett-Packard with Bill Hewlett in the late 1930s with $538 and a coin toss to determine who would get top billing. Packard retired as chairman in 1993. Do you dream of turning a garage-based radio/audio business into something bigger? You'll enjoy this.



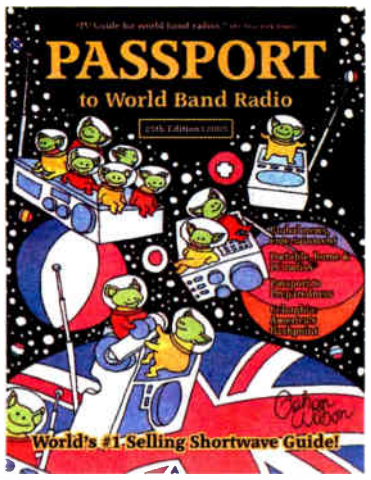
Packard deals out his share of corporate platitudes about HP management; but this easy-to-read paperback is a pleasant excursion. Published by Collins Business Essentials in the mid-1990s, now in paperback, it retails for $14.95.

(Also on Dosch's recommended list: "The Innovator's Dilemma" by Clayton M. Christensen, published in 1997 and also part of the Collins series, about how "disruptive technologies" and traditional business practices overlap and diverge.)

"Passport to World Band Radio" — Here comes the 25th edition of a popular title we've reviewed in Radio World before.

This remarkable resource includes reviews of dozens of receivers and antennas; hour-by-hour descriptions of shows that can be heard in English; country-by-country schedules in English and other languages; frequency-by-frequency graphics of all channels and languages; and a look at developments in South America, where radio "serves as a powerful tool for the Colombian army, paramilitary squads, Marxist rebels, missionaries and drug runners."

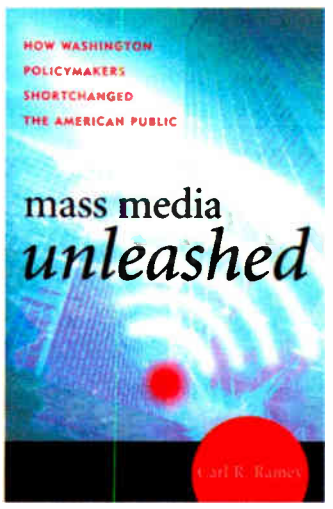
A handy tip sheet gives suggestions about the best times and frequencies to maximize the listening experience.



Published by International Broadcasting Services Ltd. Softcover, retails for $22.95.

"Mass Media Unleashed" by Carl R. Ramey — The subtitle of this 2007 book is "how Washington policymakers shortchanged the American public." Ramey is a communications attorney (and former radio announcer) who thinks the country deserves better from its media policymakers.

His topics include consolidation, deregulation and what he considers the huge transformation of policy since 1980.



Ramey is realistic about such issues: "This is hardly a new debate," he writes at one point. "For virtually its entire history broadcasting has been enthusiastically embraced by the masses while critics worried and complained that the medium was being controlled by too few owners whose sole motivation was profit."

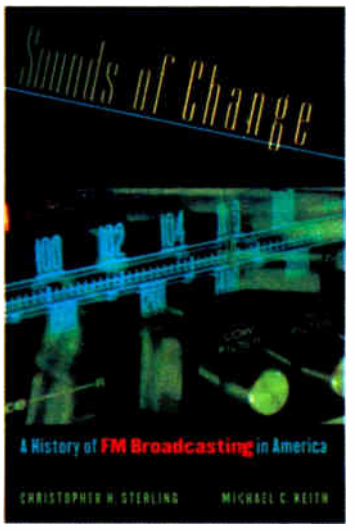
If you feel media are delivering less public service and that their concerns for the bottom line are deleterious to our society, you'll find thoughtful discussion here.

You may however take issue with his provocative ideas for fixing media regulation. He proposes a three-part policy that would give commercial broadcasters permanent license status, expand antitrust enforcement and "reenergize" the public broadcasting system.

He would do away with the "public trusteeship" model of regulation for commercial broadcasting but retain that model for public stations (for instance, among his goals is a return to the Fairness Doctrine for public stations only).

The book is a thoughtful, academic, readable essay about the history of media policy and Ramey's surprising views on what should be done next. Agree with him or not, it's timely reading — perhaps for any new presidents of the United States or FCC commissioners out there.

Published by Rowan & Littlefield. Softcover, $29.95.



"Sounds of Change: A History of FM Broadcasting in America" by Christopher H. Sterling and Michael C. Keith — Suitable as a teaching reference (which is not surprising given that the authors are college professors), this book portions the history of FM radio into seven time periods: its creation (pre-1941), war and evolution ('41–45), the "dismal years" ('45–57), FM's turnaround ('58–65), the period when the FM band was a "sound alternative" ('66–80), dominance ('80–95) and "clouds in the air" (everything since).

This is a non-technical and straightforward retelling of significant FM developments going back to Maj. Armstrong. It is intelligent and well documented, but broad rather than deep. The text is illustrated with some neat graphics such as a list of pioneering FM experimental stations in the 1930s, a chart of commercial FMs operating by late 1944 and a comparison of the holdings of the largest radio owners in 1996 compared to 2007.

Useful appendices provide numerous charts and five national maps showing how FM coverage has changed since 1945.

Published by the University of North Carolina Press, cloth $55.95, paperback $22.50.

And don't forget *"Charlatan: America's Most Dangerous Huckster, the Man Who Pursued Him and the Age of Flim-Flam"* by Pope Brock, about Dr. Brinkley the "Goat Gland Man," currently in hardcover (I saw it on sale recently for less than $17) and due in paperback in January for $14.95 retail. Published by Crown.

Gallagher

▶ Continued from page 3

"I want to learn more about antennas and the finer details of how radio works. I have a very basic understanding of RF and a general idea of how it works, but I'm eager to work more on them."

Seeks experience

Gallagher gained valuable experience helping rebuild the FM transmitter site for WEVO in August. The station added a new transmitter building, antenna and transmitter.

"It was a month-long project. We added the pre-fab building, new transmission line, transmitter and antenna. I found out I still have a lot to learn."

Gallagher credits Saffell with being a mentor and taking time to show him the workings of FM radio.

Saffell wrote in Gallagher's APRE recommendation letter, "He takes initiative to improve our facilities and operations whenever he can."

Gallagher, who plays guitar and loves music, thinks terrestrial radio is still very relevant, despite his generation's preference for portable audio devices like iPods and other MP3 players.

"I definitely think terrestrial analog radio is going to be around for a long, long time. HD Radio is definitely still developing. I think a lot of consumers are holding back because of the perceived lack of benefit. Streaming is huge since people are online all day now," Gallagher said. "But there are still things I can get from radio that I cannot find anywhere else."

Those include local news and "analysis of the economy; which I find hard to get from any other media source," he said.

Gallagher knows he is a young man working in an industry known for its grizzled tech veterans. He said he appreciates the opportunity presented him at his age.

"The older generation, the baby boomers, they'll all be retiring before long. I think there will be a lot of room for younger people like me to move up in the industry."

Captioning

▶ Continued from page 1

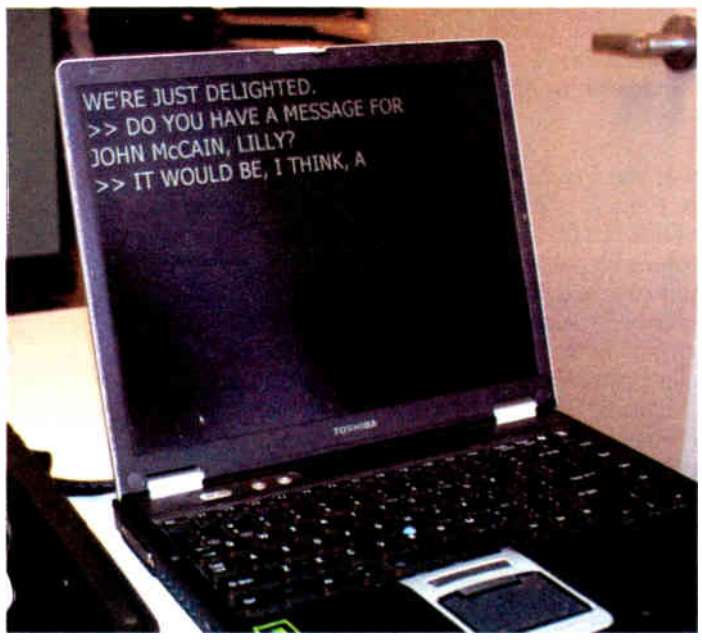
when a product is farther along the production path and "reasonable accommodation" becomes an unreasonable expense, according to Dave Noble, chairman of the IAAIS HD Radio Task Force and development director of radio reading service Sun Sounds of Arizona.

Observers believe designing accessible features into a radio design platform early is key, particularly given the state of the economy.

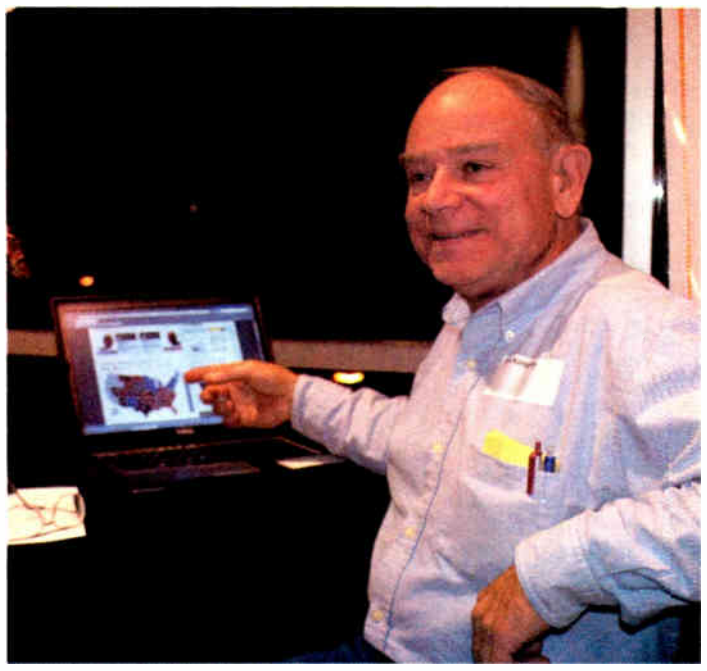
Nearly 7 million people in the United States are deaf or hard of hearing, according to Gallaudet University; many more have trouble with their hearing.

"We think accessible radio makes both economic sense and social sense," said Dr. Ellyn Sheffield, assistant psychology professor at Towson University. She is co-director of International Center for Accessible Radio Technology, located at Towson, along with Mike Starling, NPR VP/CTO and executive director of NPR Labs.

"We're looking at some 650 million people affected by sensory issues such as low vision, blindness, hard-of-hearing and deafness," she said.



WGBH in Boston sent captioned text from a CNN audio feed to NPR on this iBiquity Digital reference receiver. Public radio stations in Arizona, Baltimore, Boston and Denver used similar receivers on Election Night.



Steve Gregory lost his hearing late in life; he drove from New Jersey to see the demo in Maryland.

Funding

Digital radio offers an opportunity to reach these groups of consumers with emergency information and reading services as well as captioning, Sheffield said.

The captioned radio project is a joint effort of NPR, Harris Broadcast and Towson University; Harris has contributed $50,000 in funds over two years as well as engineering support. But more money is needed and several things have to happen at the same time in order for captioning and radios to be available in 2009.

The network is trying to cut the expense of live captioning, which typically can cost around $120 per hour, according to Starling.

IBM is working on a speech-to-text algorithm that promises to deliver live, real-time translation, rather than a typical delay of 20 minutes or more. That algorithm is due to be ready in 2009, Starling said.

With such an algorithm — combined with the efforts of, say, an English student paid $20 per hour to clean up any garbles — live captioning becomes more cost-effective "and would help the network make the commitment" that it will caption its main programs next year, he said.

NPR seeks to obtain an underwriting commitment towards the cost of generating captions; its estimated cost could be roughly half a million dollars per year — 100 hours of live programs per week multiplied by $100/hour of bargain bulk caption pricing multiplied by 52 weeks, for a total of $520,000.

HD Radio receivers capable of displaying the captions would be needed. The technology uses IBOC's data capacity to carry text data to be shown live on a screen on future versions of HD Radio receivers.

At least four receiver manufacturers have expressed an interest in making HD Radios capable of decoding and displaying the captions but none has made a formal commitment. Radio World has reported that Radiosophy and Delphi are among those interested.

Ibiquity Digital Corp. would need to incorporate the specification for live captioning in its chipsets next year and then work with receiver manufacturers on the displays. It has committed to following through on these actions, Starling said.

Participants

In an exclusive demo a few days before the election, Radio World saw captioned text of CNN programming coming off a Web feed from WGBH in Boston to NPR and displayed on an iBiquity Digital reference receiver — the same type of unit that was then used on Election Night at public radio stations in Arizona, Baltimore, Boston and Denver.

The captioned election broadcast was shown at listening demos on Nov. 4 at NPR in Washington and at FM stations KJZZ, Phoenix; KCFR, Denver; WTMD, Towson, just outside Baltimore; and WGBH, Boston. The stations carried the captioned text as part of their HD Radio signals.

A total of about 100 deaf or hard-of-hearing participants came to the events by invitation, according to NPR. About 100 people also took the online survey.

NPR publicized the listening events and online survey and contacted organizations that work with deaf and hard-of-hearing people in the five locations; it expected more people to take part online.

Election Night was a busy time, depressing online participation, observers speculated.

The election demo at NPR used WAMU's HD Radio transmission of the captioned coverage. NPR also carried the captioned broadcast and a survey online at *www.npr.org/*. Harris linked to the broadcast and survey from its Web site.

At the events, participants saw scrolling text projected onto large display screens. The image was fed by an HD Radio reference receiver that can decode captioned text included in the data portion of the IBOC transmission. The reference receiver was hooked up to a computer and monitor.

Photos by Leslie Stimson

Participants watch the captioning on screens at Towson University.

The idea is to build in accessible features from product inception.

The demo chain

To create the caption displays at the demonstrations, NPR in Washington first sent audio of the election programming via a phone line to WGBH, where stenographers quickly transcribed the material using headphones and special keyboards.

WGBH sent a text stream back to NPR on a socket connection so that NPR could uplink the feed to participating stations via the Public Radio Satellite System on a dedicated data channel.

At each participating demo location, the text stream then was fed to a defined port in a station satellite receiver, which, in turn, fed into the station's HD Radio importer in its main air chain. Demo attendees saw text that was airing over a radio station's signal.

Several of the deaf and hard-of-hearing participants at the Towson event had traveled through several states to see the demo and said they eagerly have been anticipating captioned radio. Such capability would make radio easier to use; they also said the emergency alert component of the project is vital.

For example, an HD Radio could carry an alert caption or, someday, trigger a strobe light or a bed shaker in the event of an emergency, a function that's part of the accessible feature set ICART is developing.

Captioned radio would help Amanda Comninos use radio more, especially in the car. The 22-year-old Towson University senior doesn't use radio much now; she finds it's easier to get her news from TV and the Internet. She has some hearing and uses her iPod to listen to music.

Christopher Watters, from the Baltimore area, told RW captioned radio "would help me follow what's going on in the world," and "for emergencies. There'd be a lot of benefits."

Emergency alerting

Deaf and hard-of-hearing people can't benefit from traffic reports on the car radio, Watters said, and may be unaware of alternate routes around an accident. Captioned radio "would limit my dependence on other people."

Lisa Kornberg, director of the Maryland Governor's Office of the Deaf and Hard of Hearing, used to listen to listen to radio before she lost her hearing over time. She's "thrilled" at the prospect of captioning and wondered if other radio companies besides NPR eventually would offer it.

The emergency alerting aspect appealed to her and likes that captioned HD Radios could have a battery backup. Such a radio could have helped her and her friends as they drove to Florida as

See CAPTIONING, page 8 ▶

The Metropolitan Opera sets the standard for great sound.

And it's chosen ACCESS to let the world listen in.

Photo: Jonathan Tichler/Metropolitan Opera

"Opera is one of the most challenging musical genres to do complete justice to in a broadcast, but ACCESS makes it easy."

—Matthew Galek, Broadcast Engineer for The Metropoiltan Opera

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ROOTS OF RADIO

A Look Back at Serrasoid Modulation

Educator Says the Format, Developed In the '40s, Can Be Seen as a Harbinger

by Ed Montgomery

"There is nothing new under the sun" is a phrase proclaimed in Ecclesiastes. We are at the brink of converting radio and television broadcasting over to digital yet the theories behind these systems have been around for decades.

On a greater scale of scientific study, mathematicians say Isaac Newton knew how to land humans on the moon. He just didn't have the means to get them there.

At the terrestrial level, the same is true with telephone and wireless communications. Dr. Harry Nyquist developed the mathematical models to digitize audio in the 1920s. In the 1940s a digital telephone system was placed in operation between Washington and London permitting President Franklin Delano Roosevelt and Prime Minister Winston Churchill to converse on a secure line.

There was one drawback to this method of transmission: It took a room full of vacuum tube electronics and about a dozen technicians in both cities to make it work.

Fifty years later the microprocessor and RAM made digital encoding, transmission and reception the preferred method of sending pictures, video and audio.

The same is true for radio broadcasting. Engineers discovered early in the game that amplitude modulation had several limiting factors inherently built into it.

Carrier change

AM reached its peak when transmitters capable of generating 100 percent modulation came along, creating the greatest audio fidelity and signal-to-noise separation. When Edwin Howard Armstrong brought FM forward, most engineers knew it was a superior system, but it was before its time.

FM had several problems. There was the political battle, with RCA doing all it could to hamper its growth, but there were also technical issues.

AM was and is stable, operating off of a crystal-controlled oscillator; AM is easy to receive. FM requires the carrier frequency to be altered, changed.

FM does not function as often illustrated, like a Slinky expanding or contracting. In reality, these expansions and contractions are changes in the angular velocity of the carrier, creating pairs of sidebands with varying amplitude levels.

The number of pairs of sidebands and their rate of change carry information. Amplitude levels are discarded.

Using the Bessel Function you find that the sum of the sidebands add up to the total power of the transmitter. At times there is little or no power at the carrier frequency.

In the early years of FM, the age of no phase-locked loops and microprocessors, it was difficult keeping these transmitters on the assigned frequency. Many had AFC circuits driving servo motors that mechanically re-tuned the transmitter throughout the broadcast day.

Throughout the 1950s there was really only one reason to keep FM on the air: "storecasting," using the subcarriers.

In the mid '50s, most of the FM stations either were owned by universities or were commercial stations simulcasting the AM programming plus a little money-maker called Subsidiary Communication Authorization.

SCA provided background music to businesses and stores. Stations often contracted with companies like Muzak or they created their own service.

Transmitter stability was improved by keeping the main channel modulation low, always keeping some energy at the carrier frequency. Loudness didn't matter; there were few listeners out there anyway.

A better transmission system was needed. FM needed stability.

Sawtooth approach

Serrasoid modulation was developed in the late 1940s by James R. Day working for Radio Engineering Labs, a company that worked closely with Major Armstrong in the development of FM transmission and receiving equipment. Armstrong endorsed serrasoid FM as a preferred system.

Serrasoid modulation was a development that came from the electronic scanning system developed by National Television System Committee in the 1930s to generate electronic picture scanning. Serrasoid FM created linear sawtooth waves (thus the name) and applied audio to them.

Serrasoid FM actually is a forerunner to digital sampling. Resistive-capacitive timing circuits are used to create the desired outputs.

REL and Gates built these systems through the 1950s and '60s, reducing their size to a unit about 19 inches square. The Gates unit used nine-pin miniature tubes producing a 10 watt output — often used as a transmitter for Class D educational stations.

An extremely linear sawtooth wave was created and applied to the control grid of a triode vacuum tube. With no audio signal applied, the tube is biased to cut off half-way up the slope of the waveform, rapidly dropping the plate voltage and creating a "spike" through a short RC time constant (Fig. 1).

The spikes occur at the same frequency as the crystal oscillator. When audio is applied to the sawtooth wave, the location where the spike occurs is varied depending on the location where the tube is cut off (Fig. 2), creating a modulated signal from a crystal-controlled oscillator.

When the chain of spikes is fed to a tuned circuit, sine waves are produced. This signal actually is phase modulated and needed some minor adjustments to be converted to FM.

As with most early transmitters, the modulation was done at a low frequency and was narrow-band in nature. The modulated output passed through a series of frequency multipliers to create a wide-band FM broadcast signal. Adding additional subcarriers to this system presented no real problems.

What I find unique about this is how close serrasoid FM is to digital encoding. The crystal oscillator typically operated between 100 kHz and 125 kHz, frequencies well suited for sampling audio.

If the negative spike had been changed to the creation of pulses, digital encoding could take place.

A drawback of serrasoid exciters was poor low-frequency performance. Frequency stabilization was an issue with this system. This along with the introduction of stable PLL circuitry is why serrasoid exciters fell out of favor.

Serrasoid FM was a harbinger of things to come decades later; its exciters were so effective, many broadcasters retrofitted their old transmitters, affording them extra life. This modulation method contributed to the success of FM today.

The author is laboratory director for video technology and communications at the Thomas Jefferson High School for Science and Technology in Fairfax, Va.

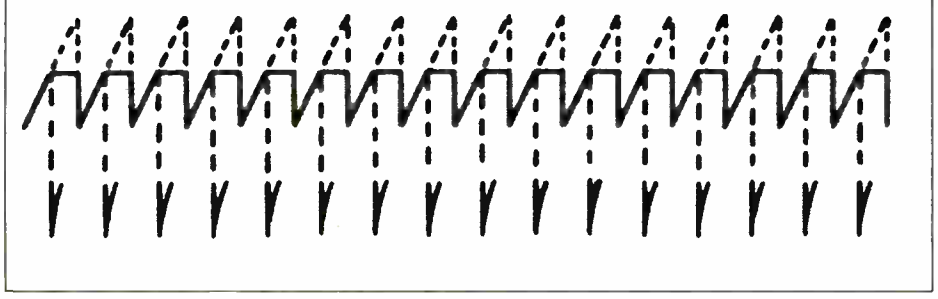

Fig. 1: An extremely linear sawtooth wave was created from the crystal oscillator and applied to the control grid of a triode vacuum tube. With no audio signal applied, the tube is biased to cut off half-way up the slope of the waveform, rapidly dropping the plate voltage and creating a 'spike' through a short RC time constant.

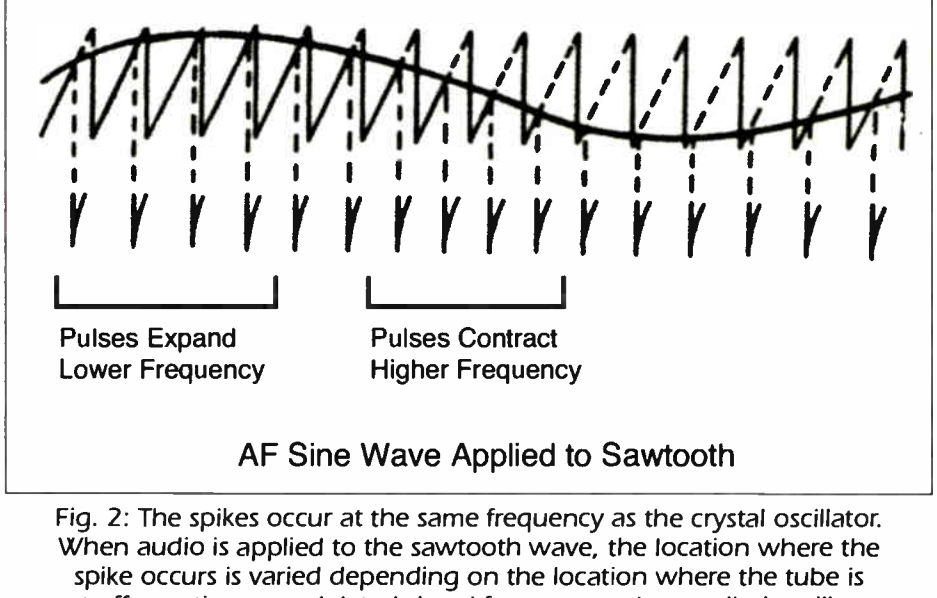

Fig. 2: The spikes occur at the same frequency as the crystal oscillator. When audio is applied to the sawtooth wave, the location where the spike occurs is varied depending on the location where the tube is cut off, creating a modulated signal from a crystal-controlled oscillator.

Captioning

▶ Continued from page 6

Hurricane Andrew approached in 1995. They noticed they were the only ones driving toward the coast on I-95; everyone else was driving the other way. Kornberg stopped at a gas station and asked the attendant to call her father, who was able to tell her about the approaching hurricane and to leave the area.

In Arizona, Ralph Hogan, DOE at KJZZ(FM), in Tempe, said his station was the first to get its demo operational since some participants came early; several took part in the surveys, including the president of the Arizona Association of the Deaf, Jim Oster. Many attendees are "eager to continue participating in the dialogue" and interested in hosting workshops with member organizations that serve the deaf and hard-of-hearing, Hogan said.

Both online and at listening events, participants answered questions developed by Sheffield and research associates Mary Hinch and Dan Schwab about the display.

The text display on the screens was a little jerky, and there was between 8 to 15 seconds of delay between audio and text. Starling said more buffering of the received signal in the radio would help both situations over time.

Interpreters for the deaf and hard-of-hearing were on hand at the events to help with the surveys; participants were asked questions about the captioned text, such as which type fonts and colors they prefer, text placement on the screen and how they would like speakers to be identified.

Participants also were asked how they think emergency alerts should be displayed.

Many participants said they preferred scrolling text rather than the text that appears over a "block" as in TV program captions.

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Workbench

Radio World, December 3, 2008

Past columns are archived at *radioworld.com*

It's Time to Clear Your Tower, Guys!

by John Bisset

Long-time readers know that when we see a picture of a lone tree in a field, usually guy wires and an anchor are hidden within.

Figs. 1 and 2 are no exception. I'm not sure why bushes and trees like to grow around tower anchors; maybe it's because the crew mowing the field won't get that close to the guy anchors to keep the brush down, which is probably a good thing. Bush hogs and anchor points don't mix.

So the job may fall on you, lest a forest grow around the anchors. Here are useful tips as you tackle the problem.

Hand trim bushes, cutting the trunks off at ground level. Use caution in applying chemicals to kill the roots, until you are sure there will be no effect on the buried anchor. Ditto for digging up the roots.

The problem can be exacerbated when a briar patch grows around the anchor. Yes, there is an anchor hidden in Fig. 3. But those thorns are sharp, as seen in Fig. 4; tackle them with heavy gloves and lopping shears.

Don't leave the cut branches on the ground; they can encourage nesting. Instead, grab a pack of those heavy paper lawn bags — the branches won't poke through, making transport easier.

After removing the growth, carefully inspect the anchoring system for rust, corrosion or any other compromise of the anchor point. It's not a bad idea to take a digital photo, just to document the condition.

★ ★ ★

Margaret Bryant was reading in the Oct. 8 *Workbench* about labelling UPS units and offered a useful comment.

See LABELS, page 11 ▶

Fig. 1: The lone tree in a field usually marks an anchor point.

Fig. 2: Reduce rust and potential damage to anchors by keeping brush trimmed.

Fig. 3: Can you find the anchor? A snare of weeds buries it.

Fig. 4: Brambles can make removal especially difficult.

Labels

▶ Continued from page 10

When she was at ABC Radio Networks in Dallas, they had one large UPS serving all of the studios and the Technical Operations Center. In addition, there were several smaller supplies scattered around.

The breaker boxes were labelled with what every breaker was and how they were fed. Some were utility-only, some generator-only and some were UPS and generator. The boxes that were UPS fed had extra labelling, using a color code indicating a priority.

The color code was for load shedding — in the event of a generator failure, the UPS batteries are only going to stay up for a certain amount of time. The idea with the priority color code was to extend the amount of time as much as possible by shedding whatever load they could. It was an easy-to-read color code, indicating which studios could be shut down to prolong the amount of time remaining on the batteries.

Margaret adds that she's not sure if the system was ever used, but in theory it would provide additional on-air time.

This is the kind of forward-thinking for which broadcast engineers are known. In the midst of a catastrophic electrical failure, load shedding is probably one of the last things you'd think about. Better to come up with a plan in advance of the problem.

It's neat to see that Margaret still keeps tabs on broadcasting through Radio World, especially when absorbed by her other passion: pet photography! Looking for a portrait of your pet for the holidays? Head to Margaret's site and enjoy the talented photo gallery at *www.bryantdogphotography.com*. She can be reached through the site.

★ ★ ★

While you're at your transmitter site for the groundskeeping we mentioned earlier, check the integrity of above-ground conduits, such as those used to run satellite cables inside the studio or transmitter building.

Fig. 5 shows a conduit inviting failure. The wide opening will serve as a drain for rain or snow — if the rodents don't get there first. The water-filled conduit then freezes and cracks; and the cable may be damaged. At the least, trying to replace cables in an ice-filled conduit is not an experience to be repeated. Even though open horizontal runs may not serve as drains, they are a welcome sign for rodents, as you can see from the nesting material in Fig. 6.

Plug conduits with a tight-fitting plastic cap or a combination of stainless steel or copper wool and expandable foam. The foam provides a weatherproof seal (which can be removed), and the metal wool thwarts rodents. Tying a string or wire around the wool plug will make removal easier, if cables have to be replaced or added in the future.

John Bisset has worked as a chief engineer and contract engineer for 40 years He recently joined Nautel as regional sales manager for Europe and Southern Africa. In 2007 he received the SBE's Educator of the Year Award. Reach him at johnbisset@verizon.net. *Faxed submissions can be sent to (603) 472-4944.*

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

Fig. 5: Plug conduit openings like this one to keep out the elements — and worse.

Fig. 6: Open conduits invite nests.

NEWS MAKER

Christian Stations Get the FTP Option

A Chat With Jim Sanders About Amb-OS Media and the AMR-100

Amb-Os Media is a partnership of Ambassador Advertising Agency and the principals of SkyLight Corp. It was formed to fund a new satellite FTP platform for Christian radio program producers and radio stations.

Radio World Editor in Chief Paul McLane discussed the project with Amb-OS President Jim Sanders via e-mail.

***RW:** What is the Christian Radio Consortium?*

Sanders: It was a somewhat informal group of Christian radio satellite distributors — Ambassador, Salem Radio, Moody Broadcasting, Skylight Network, USA Radio, Focus Satellite and VCY America — which formed in the late '90s to find a receiver platform that would allow each station to have one receiver capable of capturing multiple networks.

Our lengthy RFP and review process led us to Wegener's Unity4000, which remains in service for many of these networks mentioned. However, it's an inefficient platform for program delivery and has many limitations. As a result, several years ago we were prompted to look for a better solution.

After that mission was accomplished, most of the networks were not interested in pursuing the satellite FTP option, so a subgroup of the consortium eventually formed into Amb-OS Media.

***RW:** What did the recent satellite receiver project for Christian radio stations entail?*

Sanders: Focus Satellite Network and Ambassador, as networks, were joined by Ken Van Prooyen of RBC Ministries and Dick Becvar of SkyLight Corp., who is also GM of Amb-OS Media, to create another RFP.

The program began in earnest about 3-1/2 years ago at an NAB convention. We looked carefully at three manufacturers, focusing on the balance between price, performance and flexibility of each system. Concurrently, there were patent issues to resolve which, frankly, consumed more time than we expected.

In the end we're very pleased with the flexibility of the receiver. Formerly stations were required to capture an audio stream as the Unity4000 fed the audio. Today, we send a file to the Amb-OS AMR-100 receiver, which can be played out live to air, played to capture in their automation system, or copied across their network and imported into their automation system.

We've also designed the AMR-100 to be able to decode and stream audio as a replacement for the Unity4000. When a station's existing receiver has failed (as would be no surprise after eight years), the receiver can stream other networks' programming, given the permission. There are two stations using the AMR-100 in such a way.

To date, we've distributed around 630 receivers but we expect that number to increase to as many as 1,000.

***RW:** What was Westport Research's role?*

Sanders: Westport Research, based near Kansas City, are a group of gifted engineers who have been highly flexible in the system design and implementation. It was for that reason, and their price competitiveness, we chose Westport.

At the direction of our development team, they've been responsible for the hardware and software design of the AMR-100, some of which was extracted from their extensive work for Muzak.

***RW:** What was the project budget? How was the project financed?*

Sanders: The funding was provided through our partnership. Over the course of five years, Amb-OS will recapture the capital expense from fees paid by programmers who are using our system for delivery.

***RW:** Out of the "universe" of Christian radio, who are the most notable broadcasters served?*

The development group: Steve Reinke of Focus Satellite Network; Boyd Gafford of Westport Research; Dick Becvar, general manager of Ambo-OS Media; Ken Van Prooyen of RBC Ministries; Jim Sanders, president of Amb-OS Media; and Don Cartner, president of Westport Research.

Sanders: Essentially, anyone taking any Christian programming via satellite would be on our list. The most notable, perhaps, would be stations from networks like Salem Communications, Moody Broadcasting, Bott Broadcasting and Crawford Broadcasting.

***RW:** What satellite and transponder are you on?*

Sanders: We're using AMC3 on transponder 17C, which is the same satellite and transponder as the "legacy" Unity4000 system. This allows us to easily decode and stream as a backup other networks' feeds. With their permission of course.

***RW:** The Amb-OS receiver is essentially a satellite-fed FTP site. Why is that approach notable?*

Sanders: That's exactly right. Each receiver has an 80 GB hard drive in it.

A station can transfer a file via their local network to their automation system. This avoids yet another layer of transcoding error and retains the quality of the content. If a station wishes, they can have the AMR-100 act as a playback device and play the audio out just as it would be on the existing Unity4000. This can be triggered based on a timed event or serial command or relay closure. The station can also stream the file via the Ethernet to another distant machine capable of decoding the audio stream. Essentially, there are lots of options.

One of the most important features is addressability. We can talk to any single receiver or group of receivers. We can deliver a custom program every day for every station. The receiver comes with a file transfer utility that will automatically blend multiple pieces into one cohesive file.

There are huge advantages to local identification, especially when this is done without a station needing to fiddle with the program material. For station identification, local events and local chapters, testing market-specific offers, this platform offers a great variety of options.

Also, receivers connected via Ethernet with Internet access can self-heal by "reporting home" when there is an error. Missing bits of audio are sent "automagically." We run a fully redundant terrestrial FTP server dedicated to supporting the transmission system, in addition to "traditional" FTP servers. We can re-send pieces via satellite or via Ethernet. When it's connected, we're able to securely monitor the receiver should there be any problems.

Installation is easy since we're using the same satellite and transponders as the existing Christian Radio Consortium DVB carrier. The AMR-100 ships with a coaxial splitter and a couple chunks of cable.

We also have the flexibility of creating a live stream ad hoc as we did for the Obama/McCain Civil Forum in August. We have the ability to deliver files of any type — video, PDFs, MS Word documents, etc. We hope to use this as yet another method of distributing any electronic information.

The AMR-100 can be controlled via a simple HTML interface or using our custom user interface. As a result, a station engineer can provide remote support for the receiver without needing to be on-site. This includes simple monitoring such as the receiver's signal performance.

Best of all for the station carrying our programs, we're *giving* them the AMR-100s — there's no charge for qualified stations.

See AMB-OS, page 14 ▶

To date, we've distributed around 630 receivers but we expect that number to increase to as many as 1,000.

— Jim Sanders

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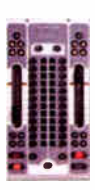

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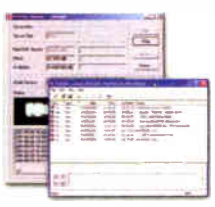

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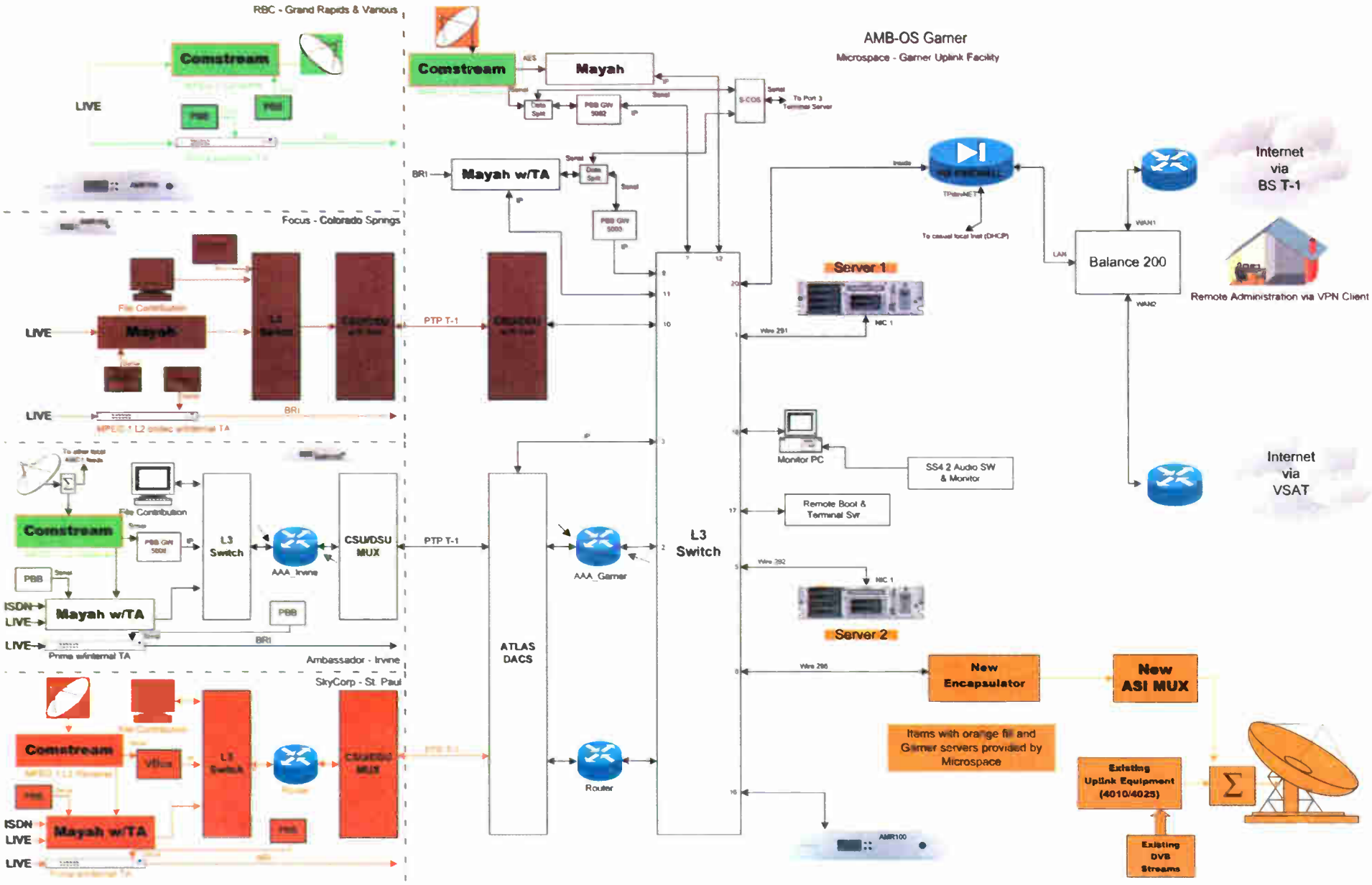

Diagram of the Amb-OS system

Amb-OS

▶ Continued from page 12

***RW:** These receivers replaced Wegener Unity4000s. Are those now obsolete?*
Sanders: No. Several networks will continue to use the U4K such as Salem, Moody, SkyLight, IRN/USA, VCY and others.

***RW:** Does the system offer new audio algorithms for improved quality at the receiver with higher efficiency?*
Sanders: Yes, given the fact that we avoid transcoding errors. With our former system, there was a constant A to D, D to A, A to D, D to A and A to D cycle. At this point, the file material stays in the digital domain until the station transmits the file.

We're using broadcast-standard MPEG-1 Layer II algorithms which are compatible with many automation systems.

The receiver also is supported by our custom User Interface, which allows a station to convert any file to linear PCM/WAV, which is usable in virtually any automation system.

***RW:** What programs are available now on the system?*
Sanders: There are about 230 live and pre-recorded programs we feed. A list is at *www.focussat.net/ambos/programs.html*.

***RW:** Is there anything unique to Christian radio that makes this project different from how it would have gone elsewhere?*
Sanders: Yes. I think there's a great synergy and dedication to mission with separate entities working together to accomplish a task no single organization could tackle on their own. That's been true for both the Christian Radio Consortium and Amb-OS Media.

Can a radio console be over-engineered?

(Only if you think "good enough" really is good enough.)

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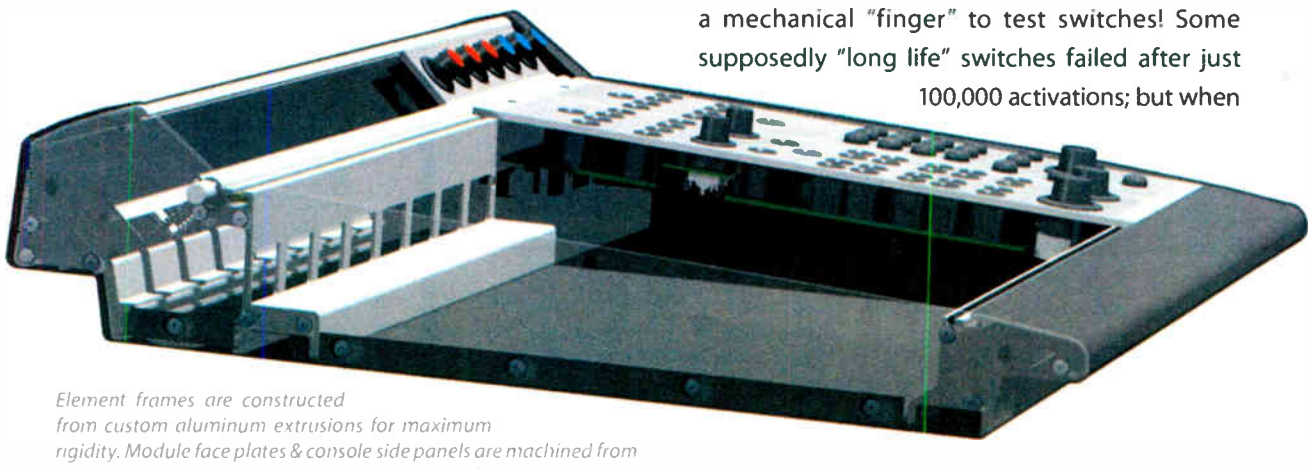
There's more to a great board than just features. **Consoles have to be rugged,** to perform flawlessly 24/7, 365 days-a-year, for years at a time. So we literally scoured the globe for the absolute best parts — hardware that will take the torture that jocks dish out on a daily basis.



Element frames are constructed from custom aluminum extrusions for maximum rigidity. Module face plates & console side panels are machined from thick plate aluminum. Even the hand rest is a beefy extrusion. All this heavy metal means even the most ham-handed jock can t dent it..

First, Element is fabricated from thick, **machined aluminum extrusions** for rigidity and RF immunity. The result: a board that will stand up to nearly anything.

With so many devices in the studio these days, the last thing anyone needs is gear with a noisy cooling fan. That's why Element's **power-supply is fanless,** for perfectly silent operation inside the studio.

Element modules are **hot-swappable**, of course, and quickly removable. They connect to the frame via CAT-5, so pulling one is as simple as removing two screws and unplugging an RJ — no motherboard or edge connectors here.

Faders take massive abuse. The ones used in other consoles have a big slot on top that sucks in dirt, crumbs and liquid like the government sucks in taxes. By contrast, our silky-smooth conductive-plastic faders actuate from the side, so that **grunge can't get in**. And our rotary controls are high-end optical encoders, rated for more than **five million rotations**. No wipers to clean or wear out — they'll last so long, they'll outlive your mother-in-law (and that's saying something).

Element's **avionics-grade switches** are cut from the same cloth. Our design team was so obsessed with finding the perfect long-life components that they actually built a mechanical "finger" to test switches! Some supposedly "long life" switches failed after just 100,000 activations; but when our guys found the switches used in Element, they shut off the machine after **2 million operations** and declared a winner. (The losers got an all-expense-paid trip to the landfill.)

Element's individual components are **easy to service**. Faders come out after removing just two screws. Switches and rotary volume controls are likewise simple to access. And all lamps are LEDs, so you'll likely **never need to replace them**.

Engineers have said for years that console finishes don't stand up to day-to-day use. Silk-screened graphics wear off; plastic overlays last longer, but they crack and chip — especially around switches and fader slots, where fingers can easily get cut on the sharp, splintered edges. We decided that we could do better.

There s a reason these board-ops are smiling. Axia consoles are in more than 1000 studios worldwide.

Element uses high-impact Lexan overlays with color and printing on the back, where it **can't rub off.** And instead of just sticking the Lexan to the top of the module like some folks do, our overlays are **inlaid on the milled aluminum module faces** to keep the edges from cracking and peeling — expensive to make, but worth it. For extra protection, there are **custom bezels** around faders, switches and buttons to guard those edges, too. Which means that Element modules will **look great for years.**

By the way, those on/off keys, fader knobs and bezels are our own design, custom-molded to give **positive tactile feedback**. The switch is flush with the top of the bezel, so it's easy to find by touch. But if something gets dropped on it, the bezel keeps the switch from being accidentally activated.

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Even the best products are nothing without **great support.** So Axia employs an amazing network of people to provide the best support possible: Application Engineers with **years of experience** in mapping out radio studios... the most knowledgeable, **friendly** sales people in the biz... Support Engineers who were formerly broadcast engineers. Plus a genius design team, software authors who dream code... one of the **largest R&D teams** in broadcast.

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Are Axia consoles over-engineered? **You bet.** If you're looking for a cheap, disposable console, there are plenty out there — but this ain't it. Not everyone appreciates this kind of attention to detail, but if you're one who seeks out and appreciates excellence wherever you may find it... Axia consoles are built **just for you.**

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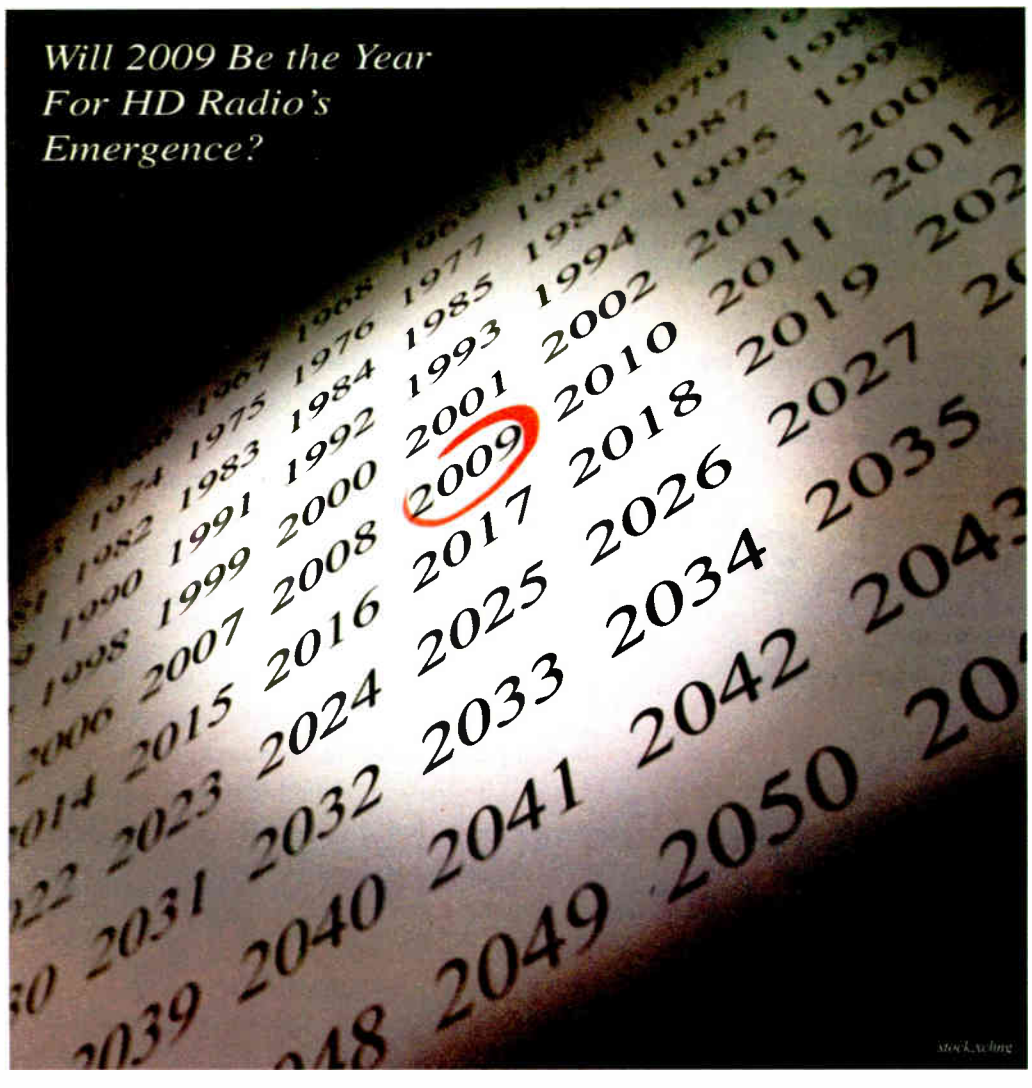

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

As another year draws near to a close, we once again reset our expectations on HD Radio's success.

Now we are told it's 2009 that will be the big year for the format to take off. Maybe or maybe not. Let's look at what we know lies ahead.

First, consider the overall context.

To some extent, and as we've said here before, the slow start that HD Radio has experienced is a challenge that every voluntary format conversion faces. Without a deadline, only market forces can drive the transition. And as noted previously, reasonable consumer satisfaction with the status quo suppresses these market forces.

Nevertheless, like baseball, hope springs eternal, and when spring training comes around, every team has a shot at the new season's championship. So the cry of "Wait 'til next year!" rings out once again for HD Radio's prospects.

Unlike baseball, however, there are a finite number of seasons in which to play the consumer electronics game before the public (and CE retailers) tire of hearing the same story. Chicago Cubs fans they're not.

Thus the pressure builds with each successive year to show real growth, and 2009 may indeed have to be a pivotal year if HD Radio receivers are to remain a viable product in the marketplace.

New prospects

That said, there are indeed a number of factors that will likely hit the market in 2009 that could alter the currently shallow trajectory of HD Radio, and put enough of an inflection point in the curve to keep hope alive for the format.

Besides the continued incremental growth of receivers and expanding inclusion of HD Radio capability in car radios that have been announced, the truly new elements expected in 2009 include the first portable form factors, more devices supporting HD Radio tagging, the addition of Conditional Access (CA) features, and the possibility of integrated storage in HD Radio receivers. We may even see the first forays into improved visual displays, perhaps anticipating broadcasters' inclusion of electronic program guide (EPG) data, which is likely to emerge in 2010.

On the regulatory side, two issues are on the table: Mandatory inclusion of HD Radio receivers in Sirius XM devices (and/or vice versa), and the digital power boost.

If either of these initiatives makes its way into FCC rules in 2009, the rollout could benefit significantly (although any such impact would probably not be truly felt until later years). But as we well know, these regulatory processes march to their own beat, and forecasting if or when final decisions will be taken is certainly a risky business.

Among these upcoming items, the introduction of portable HD Radio receivers in 2009 will probably be most influential.

The lack of portable receivers for a medium that generally touts portability as its greatest asset has been a critical handicap to the transition so far. Well-designed and properly priced portable devices that include HD Radio capability could finally make the format truly "iBiquitous." This trend was also borne out in the U.K. DAB upswing, where portable receivers have been the most successful form factor.

Portable devices that include HD Radio capability could finally make the format truly 'iBiquitous.'

Regarding CA, while it has been widely promulgated as a method of providing future "premium" multicast channels that are only available to subscribing users (or for enabling radio reading services by providing the requisite protection to satisfy copyright holders), there is one other proposed application that is not yet so well known.

It involves a proposal to use the HD Radio system's CA capability, along with anticipated storage-capable receivers, for delivery of targeted advertising — even on the main HD Radio channel.

This approach would leverage the unique ID of each HD Radio receiver to deliver specially targeted ads to individual receivers that had been specified by their owners to be interested in certain advertising content (by demographic or other cohorts, such as "I'm going to buy a new car sometime this year").

Targeted ads would be encrypted by the CA system, and delivered in greater-than-real time fashion via HD Radio datacasting. (For example, a 30-second spot encoded at 48 kbps HDC could be delivered in about 5 minutes over a 5 kbps datacast channel.) Individual receivers would recognize specific ads via their associated metadata, and locally store only the ads that the radio's owner had opted in to receive.

Once the complete ad is captured by the receiver, it waits for a trigger in the currently tuned audio broadcast channel (which the broadcaster would incorporate into an ad break), and substitutes the locally stored ad for the general broadcast spot, after which it returns to the regular broadcast channel.

The broadcaster could insert such a trigger ahead of a "replaceable" (and therefore probably discounted) broadcast spot, or simply run the targeted ads over station promos or music breaks, as is commonly done for local avails in network feeds. Cooperating stations can even trigger an ad inserted into one station's audio broadcast that was delivered to the receiver by a different station's datacast.

Whether this idea is ever implemented remains a very large question, but it has been demonstrated by NDS, developer of RadioGuard, the CA system used by HD Radio (and described in this column in the Sept. 1, 2007 issue). Very little broadcaster bandwidth and receiver storage is required, and NDS cites research from the TV world showing that 10 percent audience participation in the program could result in a 100 percent increase in a station's advertising revenue.

A moving target

A final element to consider here is that FM radio has not stood still during this process.

The recent move to include music tagging in the RT+ enhancement to RBDS is a good example. If analog radio continues to improve its service, this makes it even harder for HD Radio to break through.

Broadcasters also continue to expand and improve their Internet-delivered services, and as mobile broadband takes off, this will provide an even more competitive environment for portable HD Radio devices to enter next year.

Thus HD Radio has to compete not only with the high consumer satisfaction of analog FM radio, but also to confront the growing appeal of Internet radio, now delivered both wired and wirclessly. It's a tough hill to climb, and time may be running out. Yet we can see that there are some important, potential game changers ahead, and perhaps other critical developments we are not yet aware of will also emerge.

The lack of much opera on the today's radio notwithstanding, it isn't over until Brunhilde sings ...

Skip Pizzi is contributing editor of Radio World.

Who Reads Radio World?

Phil Beckman

Filbec AudioVideo and former station owner

Favorite station growing up: WHYE(AM), Roanoke, Va.

My first radio job: WBLT(AM), Bedford, Va., doing weekend mornings.

Favorite piece of radio equipment or technology: Audio processors.

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WIRED FOR SOUND

Touch a Supernova

by Steve Lampen

I learned a fact the other day, one I would like to share with you. Now it may seem at first that Lampen has finally flipped his lid, so bear with me for a paragraph or two.

Some 13.7 billion years ago the Big Bang occurred.

String theorists believe this produced a duotrigintillion (10^{99}) strings of energy, or maybe a lot more.

In the first few microseconds, these settled into the simplest atom, hydrogen, and bits of a few other elements.

Hydrogen is one proton, one electron. The universe is still 75 percent hydrogen. Now all this hydrogen floated around in space, where gravity made a couple of hydrogen atoms stick (weakly) together, then a couple more, then a ball of hydrogen. Then the balls stuck to each other, bigger and bigger, until the pressure at the center of the ball got higher and higher and finally reached around 10 million pounds per square inch.

That pressure fused one hydrogen atom into another hydrogen atom, creating helium — the next element on the periodic table.

Since the helium atom weighs less than two hydrogen atoms, the difference in weight is converted to energy. (The actual reaction is slightly more complicated than this, but you astrophysicists who read Radio World will allow this condensed version.)

The energy (E) created from the fusion of the two hydrogen atoms is equal to the mass of the difference in weight between the helium atom and the two hydrogen atoms times a huge number: the speed of light *squared*! Or $E=mc^2$. That's a whole lot of energy from a tiny amount of mass.

This energy was transferred from atom to atom, working its way through the ball of hydrogen. It took 150,000 years for that energy to travel from the center of the ball of hydrogen to the surface, and another eight minutes to reach the earth. And God said, "Let there be light!"

Meanwhile inside this star (that's what we call this ball of hydrogen, a "star"), the helium was squeezed together into lithium. The lithium was squeezed into beryllium, and so on.

In a star the size of our sun, there is enough pressure to squeeze out all the elements up to iron (element 26 "Fe"). Carbon, hydrogen, nitrogen, oxygen ... all the stuff we are made of came from the inside of stars maybe very much like our sun.

These early stars lived a few billion years, more or less, and died, some quietly, some not so quietly. Some exploded as supernovae and the pressure of those explosions was so great that it produced *all the other elements in nature*.

It is believe that this happened at least twice before in our neighborhood, that there were stars that were born and died where our sun (and we) now live. And when our sun was formed, it formed from much of the starstuff left from its predecessor suns. The planets, including earth, coalesced from those same star-leftovers.

Thus for the existence of all the elements heavier than iron, we owe a supernova that, in its death-throes, created them: silver, tin, gold, lead and many others. And one of these was copper.

So next time you hold a copper wire, think about the fact that you are holding the product of a supernova! Thanks to a star that lived and died violently billions of years ago, you can now hook up your facility.

Copper, of course, is mined. There are copper mines all over the world. The largest of the copper-producing countries are (in order) Chile, Russia, the United States, Canada and Zambia.

Volatility in the price of copper typically has little to do with mines. In fact, they're opening more, especially in China. It's all about "speculation" and the commodities markets.

Copper is then smelted (refined) with different grades. The process is called "electrolytic tough pitch" and produces copper with a very high degree of purity.

In the United States, most copper users go by the ASTM (American Society of Testing & Materials) grading system. This is where we get all those nines: ASTM B115, for instance, is 99.95 percent pure. ASTM B170 is 99.995 percent pure. You get the idea.

This is why when someone says they use "oxygen-free copper," I ask what purity, how many nines are in their copper. Most of the time this elicits a blank stare. Sometimes they understand but don't know. Rarely, they actually tell me the number of nines.

Can you measure purity? Of course you can. It shows up as (slightly) lower resistance per unit length. Can you hear the difference in a speaker cable? Well, that depends on whom you talk to. If you can hear the difference, spend those big bucks. If you can't, stick with ASTM B115. That's good stuff. Of course, I am sure there are some manufacturers who might say that ASTM B115 is "oxygen-free."

Then they start arguing about how many nines are appropriate. And with each added nine the price of that copper, and the cable made with it, goes up. So if you care about this kind of thing, ask the question: How many nines?

Steve Lampen has worked for Belden for 16 years and is multimedia technology manager. His book "The Audio-Video Cable Installer's Pocket Guide" is published by McGraw-Hill.

Past Wired for Sound columns are archived at radioworld.com.

The Periodic Table

hydrogen 1 H 1.0079																	helium 2 He 4.0026
lithium 3 Li 6.941	beryllium 4 Be 9.0122											boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	neon 10 Ne 20.180
sodium 11 Na 22.990	magnesium 12 Mg 24.305											aluminium 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	argon 18 Ar 39.948
potassium 19 K 39.098	calcium 20 Ca 40.078	scandium 21 Sc 44.956	titanium 22 Ti 47.867	vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80
rubidium 37 Rb 85.468	strontium 38 Sr 87.62	yttrium 39 Y 88.906	zirconium 40 Zr 91.224	niobium 41 Nb 92.906	molybdenum 42 Mo 95.94	technetium 43 Tc [98]	ruthenium 44 Ru 101.07	rhodium 45 Rh 102.91	palladium 46 Pd 106.42	silver 47 Ag 107.87	cadmium 48 Cd 112.41	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	xenon 54 Xe 131.29
caesium 55 Cs 132.91	barium 56 Ba 137.33	57-70 *	lutetium 71 Lu 174.97	hafnium 72 Hf 178.49	tantalum 73 Ta 180.95	tungsten 74 W 183.84	rhenium 75 Re 186.21	osmium 76 Os 190.23	iridium 77 Ir 192.22	platinum 78 Pt 195.08	gold 79 Au 196.97	mercury 80 Hg 200.59	thallium 81 Tl 204.38	lead 82 Pb 207.2	bismuth 83 Bi 208.98	polonium 84 Po [209]	astatine 85 At [210]	radon 86 Rn [222]
francium 87 Fr [223]	radium 88 Ra [226]	89-102 * *	lawrencium 103 Lr [262]	rutherfordium 104 Rf [261]	dubnium 105 Db [262]	seaborgium 106 Sg [266]	bohrium 107 Bh [264]	hassium 108 Hs [269]	meitnerium 109 Mt [268]	ununnilium 110 Uun [271]	unununium 111 Uuu [272]	ununbium 112 Uub [277]		ununquadium 114 Uuq [289]				

* Lanthanide series	lanthanum 57 La 138.91	cerium 58 Ce 140.12	praseodymium 59 Pr 140.91	neodymium 60 Nd 144.24	promethium 61 Pm [145]	samarium 62 Sm 150.36	europium 63 Eu 151.96	gadolinium 64 Gd 157.25	terbium 65 Tb 158.93	dysprosium 66 Dy 162.50	holmium 67 Ho 164.93	erbium 68 Er 167.26	thulium 69 Tm 168.93	ytterbium 70 Yb 173.04
* * Actinide series	actinium 89 Ac [227]	thorium 90 Th 232.04	protactinium 91 Pa 231.04	uranium 92 U 238.03	neptunium 93 Np [237]	plutonium 94 Pu [244]	americium 95 Am [243]	curium 96 Cm [247]	berkelium 97 Bk [247]	californium 98 Cf [251]	einsteinium 99 Es [252]	fermium 100 Fm [257]	mendelevium 101 Md [258]	nobelium 102 No [259]

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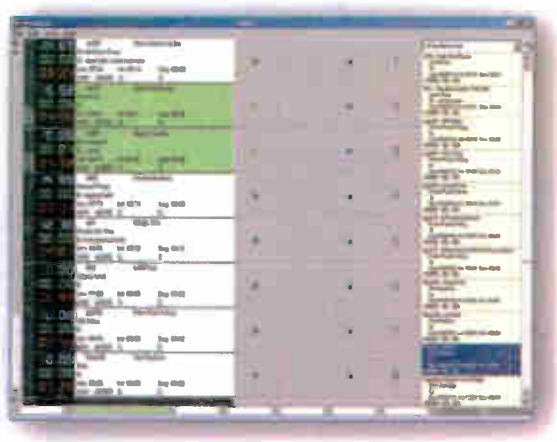

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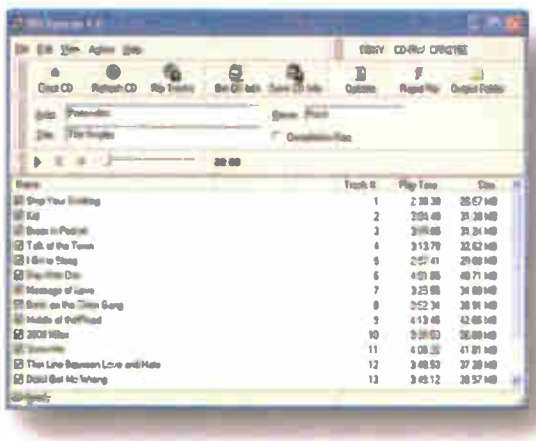

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ROOTS OF RADIO

Goat Gland Man Has Enduring Appeal

Though His Remains Are Safely Entombed in Memphis, Dr. Brinkley's Legend Lives on

by James E. O'Neal

In looking back at the last century from our 2008 perspective, two of the most interesting decades were The Roaring Twenties and the Great Depression. These 20 years witnessed an upheaval in the status quo of social structures, medicine, the arts and physical sciences.

The 1920s gave us broadcasting as we know it today, and during the next decade it matured into the great empire that became part of virtually everyone's daily existence.

Many stories are intertwined with radio from that period, but one of the most interesting and long-running is that of a small-town "doctor" who become a multimillionaire when most of the country was caught up in a crashed stock market and bread lines. He also routinely thumbed his nose at regulatory bodies including the Federal Radio Commission and its successor, the FCC.

That individual was John Romulus Brinkley.

When millions were out of work, Brinkley made millions. He boasted an elaborate mansion with herds of exotic animals roaming the grounds, a fleet of customized Cadillacs, sailing vessels, airplanes and a radio station that was 10 times more powerful than anything U.S. laws allowed.

Brinkley was not a radio scientist or an engineer. Neither was he an artist nor a performer in the strictest sense. He uttered his last words into a radio microphone some 70 years ago and has been dead for almost that long.

Yet his name is irrevocably intertwined with broadcasting. A certain radio law is referred to as the "Brinkley Act" and his actions influenced radio treaties. He spawned a genre of broadcasting that continued for decades. And the roots of a large electronics firm still in business just may have been nurtured by his quest for a louder voice.

Though his mortal remains are safely entombed in a Memphis cemetery, the spirit of J.R. Brinkley — a.k.a. Doctor Brinkley, or just plain "Doctor"— refuses to die. Perhaps this could be linked with the commodity he peddled to thousands of men and women: the promise of eternal youth, as least as far as sexual performance went.

Authors and historians manage to keep Brinkley alive in their writings. With some degree of regularity a new book or article surfaces about the king of the medical quacks.

Pope Brock is author of the latest book, published by Crown earlier this year. "Charlatan: America's Most Dangerous Huckster, the Man Who Pursued Him, and the Age of Flimflam" now will be released in paperback come January.

'America's most dangerous huckster'

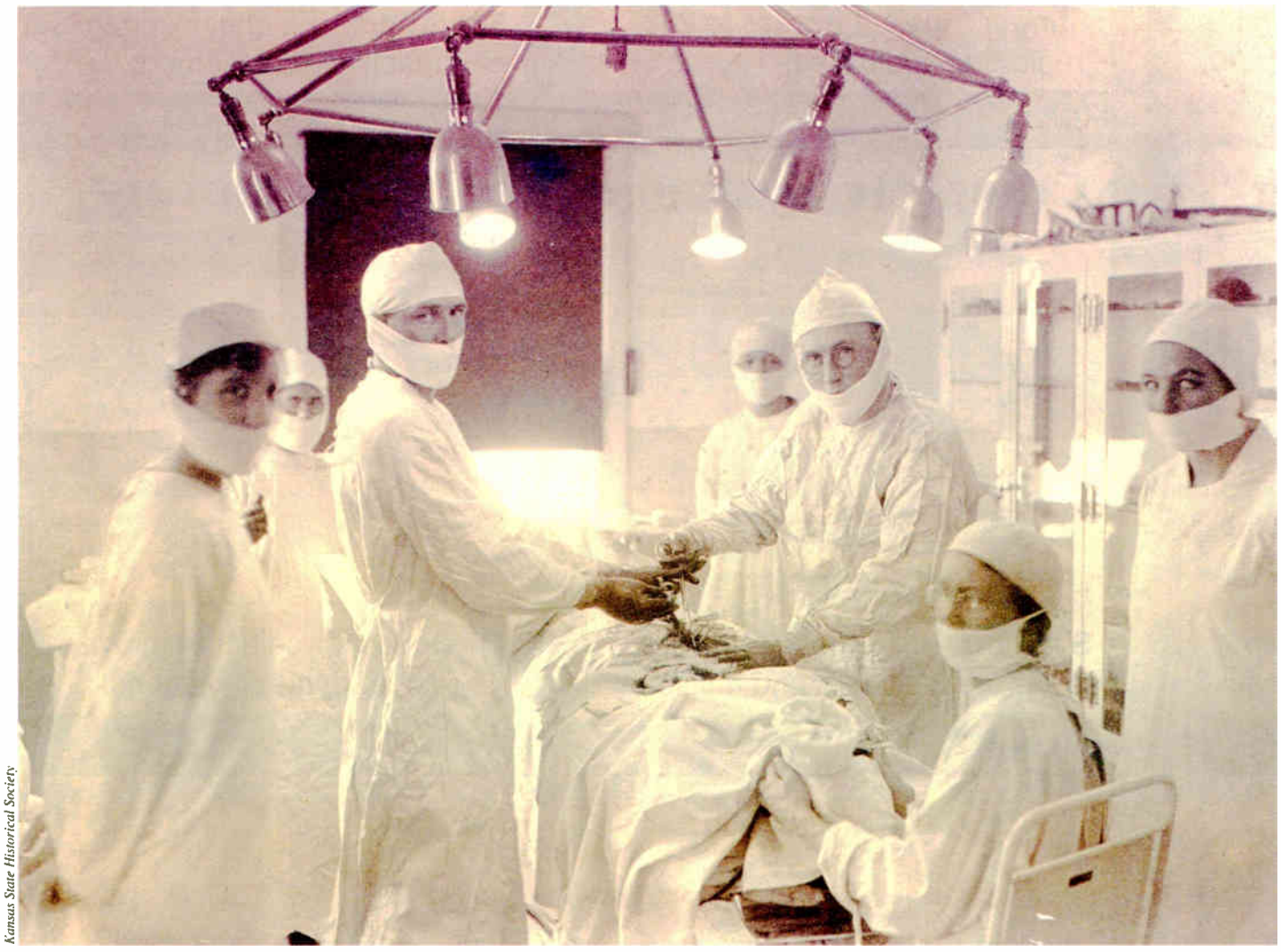
Brock's book takes a slightly different tack in his treatment of Brinkley, referring to him as America's most dangerous huckster and describing the events that toppled Brinkley's mighty empire and ended his infamous nightly broadcasts.

Along with most of the great and powerful, there is usually a detractor or two, someone who sees it as their duty, perhaps their "manifest destiny," to level the playing field and right wrongs in the name of law and order, or perhaps just plain old common decency.

Brinkley's was Dr. Morris Fishbein, who studied medicine in the same city and about the same time as Brinkley, and whose "hands-on" medical experience was much less than that of "Doctor." After only a year, Fishbein chucked his medical training to become a journalist.

Brock's book can best be described as an account of the "cat and mouse" game played out between these men.

Is "Charlatan" of interest to contemporary broadcasters?



Kansas State Historical Society

Who was that masked man?

Brinkley's story is also wrapped up in that of technical innovator James O. Weldon.

The answer is a resounding "yes," even though Brock doesn't spend that much time on Brinkley's broadcasting activities, and there are some slight inaccuracies in what he does describe. However, as Brinkley's fame, fortune and legacy were very much wrapped around broadcasting, "Charlatan" certainly is worth reading.

Brinkley was born dirt poor in a small North Carolina town, but he had ambition and intelligence. He chose medicine as his ticket and eventually found his way to a Chicago medical school, but dropped out before completing the program.

Kansas State Historical Society

John R. Brinkley was fascinated by radio broadcasting and built one of the largest medium-wave stations in the world.

He then drifted for some time, dabbling in the fine art of flimflam and practicing "electro-medicine" before meeting and marrying the love of his life, Minnie Jones, daughter of a "real" doctor. Brinkley eventually (and after a sum of money was exchanged) obtained a medical degree of sorts from a questionable Kansas City school and in 1917 settled down in the small Kansas town of Milford to try to eke out a living.

Doctor's practice generated little income until one day when he saw a patient complaining of (ahem) erectile dysfunction. Viagra hadn't been invented, and the conversation between patient and doctor turned to the sexual prowess of goats.

Eventually, Doctor was talked into transplanting testicular tissue from a goat into the non-performing patient. The ED spell somehow was broken and the patent praised Brinkley's operation for returning joy to relationships.

KHJ: A religious experience

Word spread (perhaps aided by ads in Sunday supplements) and soon men were arriving in Milford by the trainload for Doctor's $750 goat gland operation.

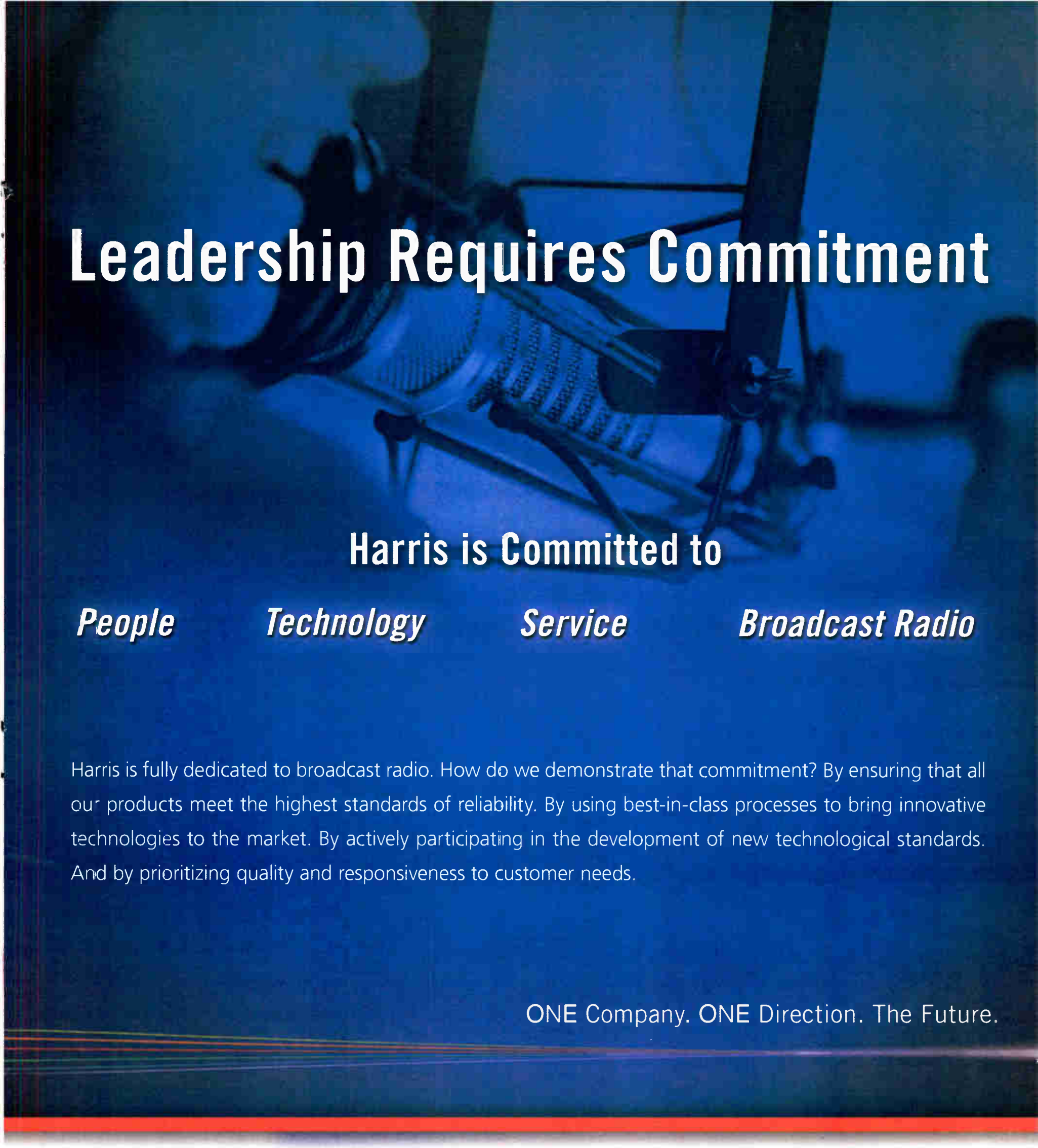
In early 1922, Brinkley was invited out to California by Harry Chandler, owner of the Los Angeles Times, to minister to the needs of an editor and others who were in dire need of having goat glands installed.

It was here that Brinkley got his first close look at a radio station, the newspaper's fledgling KHJ. Brock describes this as "a religious experience" for Brinkley. After his return to Kansas, he wasted no time in obtaining a broadcasting license. He was assigned the call letters KFKB and hired a young radio engineer, James O. Weldon, to get him on the air.

Once this was done, Brinkley, between live musical numbers, pitched medical advice and pandered for a chain of affiliated drug stores that he'd set up to peddle overpriced prefab prescriptions.

Fishbein, by now editor of the Journal of the American Medical Association (JAMA) and with a special interest in exposing medical quackery, got wind of Brinkley and this "Medical Question Box" show.

See 'CHARLATAN', page 22 ▶



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'Charlatan'

▶ Continued from page 20

Radio's reach made Doctor even more successful in luring the hopeful into Milford for his particular brand of elective surgery. The townspeople loved Brinkley; Doctor was good about spreading around the money that his business brought into Milford.

Fishbein was incensed and dedicated himself to put Doctor out of business. Eventually he succeeded, with Brinkley losing both his radio and Kansas medical licenses.

However, unknown to Fishbein, Brinkley possessed a trump card.

Move to Texas

During the hearings and appeals, Doctor secretly negotiated an agreement to build a 75 kW radio transmitter on Mexican soil, just across the border from Del Rio, Texas.

He was assigned the call XER and Weldon soon relocated his consulting business to the border town. Brinkley already had a license to practice medicine in Texas and was quick to tell the Federal Radio Commission back in Washington that he didn't need their stinkin' license to operate XER.

For nearly a decade, Doctor lured people into his Del Rio hospital, had Weldon construct bigger and bigger transmitters for his use and made mountains of money. (In addition to performing surgery, Brinkley sold time on XER for $1,700 per hour).

Fishbein was livid, as was the U.S. government and many American broadcasters. For a time, Brinkley parked XER at 735 kilocycles, enabling him to take out two U.S. stations at the same time. If that weren't enough, Brinkley had Weldon construct a reflector for his tophat antenna. There was no point in wasting precious RF in Mexico where few could afford the gringo's operations.

However, international politics being what they were (and with some bribes spread around), there was little that could be done to silence Doctor. The citizens of Del Rio were benefitting from the influx of cash that Brinkley's business brought with it and were not about to take a scalpel to the golden goat gland man.

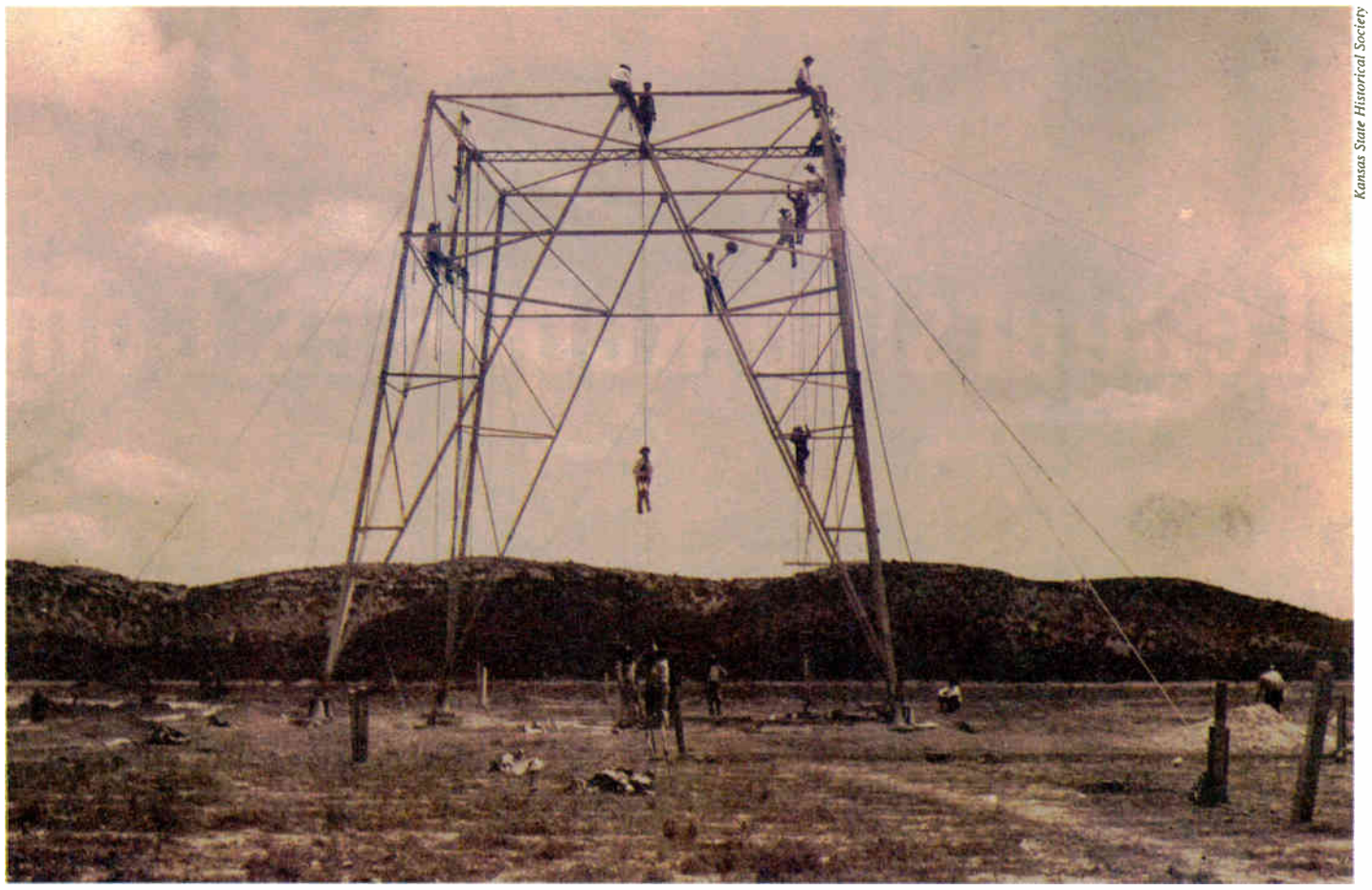
1 million watts ERP

Ultimately, Weldon constructed a 500,000 Watt transmitter exclusively for Brinkley's use. With the reflector's 3 dB boost, in effect this gave Doctor a megawatt signal.

In an attempt to muzzle Brinkley, a bill was passed to prohibit transmission of programs intended for American audiences from an American studio to a transmitter located on foreign soil, the so-called "Brinkley Act." He wasn't called out by name, and he sidestepped the legislation by fine-tuning the art of transcription recording. Nothing in the law said American *recordings* couldn't be aired on foreign stations.

Brinkley enjoyed broadcasting (and money) so much that he prepared a backup plan for staying on the air should he fall from grace with Mexican politicos. He owned a 172 foot yacht and in the event of another doomsday, Weldon would be paid to install a suitable transmitter and Doctor could continue to broadcast unmolested from international waters.

The need for the radioboat never materialized, for in 1938 Fishbein hit upon a way to take Brinkley down for good. He did this by publishing an article about "medical charlatans" in a relatively obscure little magazine. Of course, Brinkley was included among the quacks Fishbein singled out.



Kansas State Historical Society

Brinkley's border blaster XER (later XERA) was located in Villa Acuña, Coahuila, Mexico, and used a flat-top antenna supported by large self-supporting 300-foot towers. Construction of one of the towers is shown. A worker appears to be hanging in space while another waves at the camera. Work on the station began in 1931.

This XERA QSL card was issued near the end of Brinkley's involvement with radio, as it indicates that the station was operating with half a million watts and was located at 960 kHz. This frequency move took place in 1940.

The big fall

Brinkley took Fishbein's bait, bringing a libel suit against the JAMA editor.

He apparently was unaware of what goes on in a libel trial and soon found his life, store-bought medical diploma and questionable career spread out under a microscope before a Texas jury. Brinkley lost and could now officially be labeled a quack. Business fell off drastically and malpractice suits followed, quickly reducing Doctor to pauper status.

At about the same time, the Mexican government silenced Brinkley's border blaster, then identified as XERA.

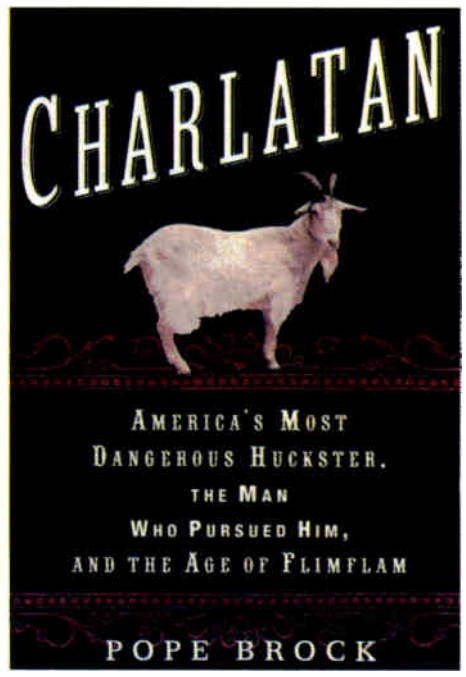
It was dismantled, with pieces carted off to Mexico City and rebuilt as a rather puny 200 kilowatter. Brinkley's health failed and he died in 1942.

Weldon moved east to build several big U.S. stations, and during WWII was named to direct engineering activities for what became the Voice of America. After the war, he relocated to Dallas and established Continental Electronics. The company specialized in high-power transmitters constructed around Bill Doherty's high-efficiency amplifier — the same configuration he'd used in Brinkley's 500,000 Watt rig.

Over the years, some of the inequities that existed in frequency assignments for North America stations were sorted out through international treaties, with Mexico finally getting her fair share of "clears."

Brinkley's nefarious transborder broadcasting activities spawned a number of imitators, giving rise to a generation or so of preacher-creatures and radio hucksters of all sorts. Good came out of the "XE" stations too, as they provided exposure for some now legendary country and western entertainers, and later rhythm and blues artists. And of course they provided a big career boost for Robert Smith, a.k.a. Wolfman Jack.

Brock's book covers a good bit of this and his detective work provides a look at some aspects of Brinkley's life that haven't been previously reported.



Pope Brock's 2008 book is newly out in paperback.

He points out that if the truth be known, Brinkley wasn't the only or even the first of the practitioners who promised eternal sexual youth through "gland" transplants. Contemporaries hawked monkey glands and even human testicles (obtained from young death row inmates).

Fishbein certainly knew about these practitioners too, but wasn't that aggressive in trying to snap his jaws around them. They didn't have radio stations.

The author wishes to acknowledge the contribution of information about James O. Weldon from both Kathy Stewart at Continental Electronics and James Weldon, the son of James O. Weldon.

James E. O'Neal is the technology editor for TV Technology magazine and a Radio World contributor. His past articles have delved into topics such as the closure of the VOA shortwave station at Delano, Calif., and the reputed 1906 Christmas Eve broadcast by Reginald Fessenden.

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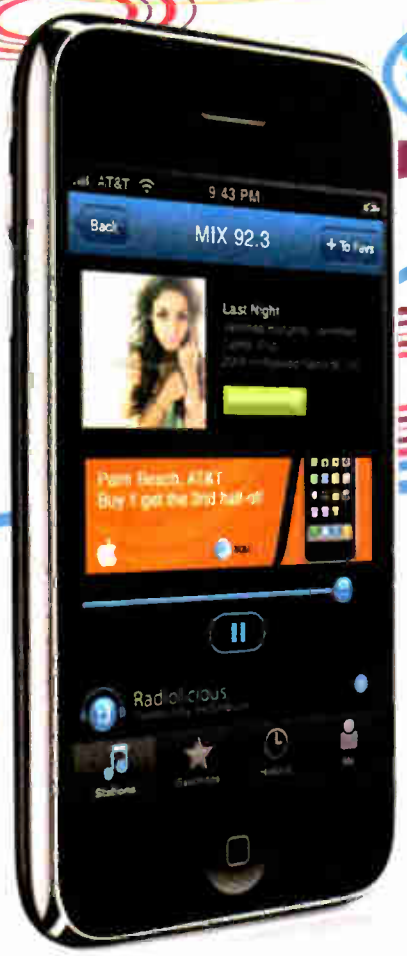

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Gigs in Your Pocket
Page 28

PRODUCT EVALUATION

SuprEsser Clarifies the Radio Stars

New Sonnox SuprEsser Plug-In Eliminates Annoying Sibilance

by Steve Levine
Producer
BBC Radio

For almost three years I have been involved with "The Record Producers," an ongoing BBC Radio 2 and 6 music documentary series.

The program features interviews with a range of hit-making producers including Hugh Padgham (Sting, XTC, Phil Collins); Trevor Horn (Seal, Pet Shop Boys), Tony Visconti (David Bowie, The Moody Blues) and Jam & Lewis (Michael Jackson, Mary J. Blige, Usher).

Just recently, I completed the 13th episode, an in-depth interview with Brian Wilson, a dear friend with whom I have worked with on a number of recording projects over the years.

To ensure optimum sound quality for these interviews, I have been working with a variety of Sonnox Oxford Plug-Ins, which have proved valuable in improving the sound quality and intelligibility of our interviews. Early this year Sonnox introduced the SuprEsser, to "clean up extraneous sibilance." I have found that tool particularly helpful in many instances.

For those unfamiliar with Sonnox, it was formerly a part of Sony. Based in Oxford, England and known as Sony Oxford, it was responsible for the development of a number of digital audio products, including the legendary Sony OXF-R3 "Oxford" digital console. In April of 2007 Sonnox was spun off from Sony and became independent (retaining a number of key personnel and engineering talent).

Photo by Hank Linderman

Brian Wilson, left, with Steve Levine following the recording of a segment for the BBC Radio 2 & 6 series 'The Record Producers.'

The essential element of my production process is to capture my location recordings as cleanly and as dry as possible using a Korg MR-1000 mobile recorder. Consequently, in editing the interviews, there are several opportunities to engage the plug-ins.

For basic edits I focus on the Oxford EQ. This is a five-band fully parametric EQ with LF and HF filters. It includes four different sounding EQ types; fully expanded HF response; a novel coefficient generation and intelligent processing design which surpasses analog EQ in sound quality and artistic freedom. I use it primarily to make minor adjustments, e.g. when the interview subject moves closer to or farther from the mic.

If I discover a more complex problem, I engage the Oxford Dynamics plug-in, or other methods for "acoustic surgery." For example, if the original recording location was compromised by background noise, I try to reduce as much of that intrusive sound as possible. I find Dynamics greatly benefits my edits and final mix. If the background noise changes over an edit, it can distract the listener from the subjects point. I use a few methods for this process, starting with the Oxford Expander, to try to push the background noise down a little bit.

Occasionally I use the sidechain in the Dynamics compressor to reduce a specific background noise. For example, if the room is boomy, I can boost that frequency in the same way I would de-ess, and the compressor can pull it back. It is really a great tool for that.

Once I am satisfied with the basic sound, I will use the EQ for a touch of brightness and midrange. Also, with interviews, I tend to roll out a bit of the low end as well, for the rumble..

The Oxford SuprEsser plug-in available in RTAS, AU and VST iterations; it is a highly-featured professional de-esser and a dynamic EQ. It offers a basic mode for quick fixes, and an advanced mode for increased functionality and fine-tuning. I learned about it soon after it was introduced, and have found a number of ways of working with it.

A good illustration is a problem we encountered at the beginning of an interview on a recent show. The subject started chatting to me straight away, while the main recording rig was being set up.

See SUPRESSER, page 28 ▶

Product Capsule:
Sonnox SuprEssor Plug-in

Thumbs Up
- ✓ Powerful processing engine for glitch-free performance
- ✓ GUI allows for precise work
- ✓ Available in several popular plug-in formats

Thumbs Down
- ✓ None

PRICE: $315

CONTACT: www.sonnoxplugins.com

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PRODUCT EVALUATION

Put a Couple of Gigs in Your Pocket

New Olympus LS-10 Recorder Takes Field Audio by the Hand

by Carl Lindemann

Building on its experience in developing solid-state business/dictation recorders, Olympus recently entered the pro audio/ENG market by introducing the LS-10 Linear PCM Recorder. While the field of such units is getting crowded, the LS-10 is on the short list of those that fit the bill for a variety of radio uses.

Sizing it up

LS-10 strikes a nice balance between small and too small. It fits nicely in the hand. The aluminum and high impact plastic construction has some heft.

The backlit LCD screen is large enough to not cause eye-strain. The unit's form factor also allows for human-sized buttons, switches and control knobs. Also, it has analog controls for more than just the basics and includes a number of useful functions such as the low-cut filter/auto gain (300 Hz) — controls that might be relegated to the hassle of menu-driven manipulation as a sacrifice for greater miniaturization. Alas, it is not quite big enough for XLR connectors, just the usual pocket-sized 1/8-inch mini jacks.

The layout of the LS-10 is logical and intuitive, reminiscent of Olympus' business recorders.

The top features the backlit screen flanked with the built-in and 90 degree angled stereo mics. The middle has stop and record buttons separated by a peak level indicator. The multi-function control dial (for playback and maneuvering menu items) sits over a row of four buttons. These give access to the menu, various playback options and instant access to the list of recordings. One of the buttons is user-programmable, a terrific feature that allows you to place the menu-driven item of your choice (e.g., toggling between manual and automatic recording levels) up top.

The left side has a 1/8-inch headphone jack, volume level control, SD/SDHC memory card slot, USB 2.0 port and power switch. The right side has 1/8-inch line-in and mic jacks, a manual record level dial control, a high/low mic sensitivity switch and the low-cut filter switch. The bottom/back has the battery compartment for two AA cells, the baby stereo speakers and a tripod/mic stand adapter. A remote control jack and AC power connect are at either ends on the top/bottom sides.

The menu options open with recording selections — uncompressed PCM in six levels from high-density 24-bit/96 kHz to standard 16-bit/44.1 kHz; MP3 in 128 kbps, 256 kbps and 320 kbps; and Windows Media Audio (WMA) in 64 kbps, 128 kbps and 160 kbps.

Using the internal 2 GB memory, this allows for recording times of one hour for the highest PCM resolution, 24-bit/96 kHz to nearly 70 hours with the highly compressed WMA at 64 kbps. Adding a relatively inexpensive SD memory card can add considerably to that, if needed.

Other recording menu items include microphone levels and effects. The "zoom" mic options alter the characteristics of the internal mic from omni to a tighter ("zoom") cardioid pattern. The

See LS-10, page 30 ▶

Product Capsule:
Olympus LS-10 Handheld Recorder

Thumbs Up
- ✓ Rugged
- ✓ Good size
- ✓ Nice selection of analog controls
- ✓ Simple operation

Thumbs Down
- ✓ Sensitive to handling noise
- ✓ 'P' pops an issue especially with automatic level controls
- ✓ No mono recording option

PRICE: $399

CONTACT: *Olympus at (888) 553-4448 or visit* www.olympusamerica.com

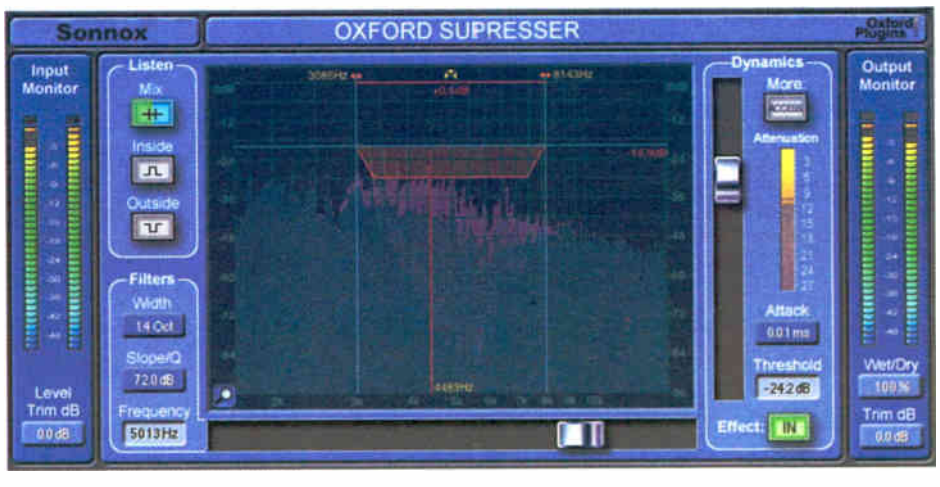
SuprEsser

▶ Continued from page 26

Luckily, we were running a little handheld recorder that captured the first few moments of the interview.

Rescued

Interestingly, there were some great comments in those first few seconds, so I needed to keep those. The SuprEsser was fantastic for getting rid of the horrible room sound that the microphone had picked up, since it was one of those built-in recorders with the mic on top. Because the SuprEsser has a graphic display, I could really narrow in on the problematic frequency.



We resolved the problem efficiently just by boosting the room frequency (around 400 Hz) to find where it was, then literally sucking it out.

I have been using SuprEsser quite a bit. It is powerful; it's also helpful in that it allows you to listen to either the full mix, the "inside" output of the band-pass filter alone or the "outside" output of the band-reject filter.

In music production I tend to A/B between the four EQ types but I am partial to Type 1. Of the four, it has the most flexible control ranges. I particularly like the fact that the cut and boost curves are exactly the same. The Oxford is an extremely powerful EQ, and I use it on many different things because each type has unique characteristics. If I have a really broad curve they can easily emulate the "aggressive" tone of an API or Neve. Actually, the curve responses on the Type 1 EQ are very much like those of an SSL 4000 E console.

The EQ can also be used for a subtle high-fidelity enhancement similar to the sound of the GML 8200 equalizer. The analogy of a painter selecting a range of colors from his palette and a sound engineer working with a variety of technical options to enhance the nuances of his audio is valid.

I have found a considerable difference in my overall plug-in approach between my music production and radio work. When I'm working with bands, I run in traditional multitrack mixer form, with 64 discrete digital outputs going into 64 of the 96 digital inputs on my Yamaha DM 2000 console. However, when I am doing my radio program, I mix internally because I am dealing with a smaller number of sources. Sonnox Oxford plug-ins have made my editorial work considerably easier.

Steve Levine is a Grammy Award-winning pop music and radio program producer. He was one of the first producers to buy a digital multitrack. His credits include The Beach Boys, Ziggy Marley, Stevie Wonder and three multi-platinum records for Culture Club.

PRODUCT GUIDE

Mayah Goes Up to 11

Mayah Communications launched a new family of diminutive codecs, the C11.

Consisting of 14 models of half-rack width codecs, all support G.711/G.722, MPEG Layer II, MPEG-4 HE-ACC v2, AAC ELD, PCM specs and are fully functional with audio-over-IP activity (EBU N/ACIP). Models vary by interface and/or application.

Options include apt-X and Enhanced apt-X (Eapt-X), POTS, Ethernet, ISDN, 3G/UMTS wireless and ASI (Asynchronous Serial Interface) interfaces. The units are stackable and can be powered in a group of up to eight by an optional 19-inch rackmounted power supply.

For more information, contact Mayah Communications at (360) 618-1474 or visit www.mayah.com.

Classic Neumann — Digital Version

For that really great classic recording sound, in a modern package, Neumann has ported another of its legendary microphones to digital. The TLM 103 is now available as the TLM 103 D, the newest member of Neumann's Solution D digital microphone family.

"This ensures that the legendary Neumann sound is captured unchanged on the user's hard disk, with optimal quality," said Robb Blumenreder of Sennheiser, Neumann's U.S. distributor.

The TLM 103 D is not an emulation (a mic with a built-in imitating EQ/response curve) but basically a TLM 103 (large diaphragm, cardioid pattern) with a 24-bit/192 kHz digital converter built into its base. Available in nickel or black finishes, the shipping package includes elastic suspension mount and an AES-S/PDIF connection kit.

For more information, contact Neumann USA at (860) 434-5220 or visit www.neumannusa.com.

Furman Fixes Power Problems

Furman calls its new line of power conditioners the Classic series. Well, only time will tell whether these rackmountable units become "classic" but they're off to a good start with features such as Linear Filtering Technology (scrubbing messy current), Series Multi-Stage Protection (surge protection) and Extreme Voltage Shutdown (overvoltage protection).

Each unit also features front-panel LED rack lights and a BNC connector on the rear for another light. All units also have nine outlets with wall-wart spacing.

Individual models differ in features offered. Three models are 15-amp rated and two are 20-amp rated. The PL-8C (15 A) is the basic model. The PL-PLUS C (15 A) and PL-PRO C (20 A) have a tricolor LED incoming voltmeter. The PL-PLUS DMC (15 A) and the PL-PRO DMC (20 A) both have digital incoming voltmeter/ammeters. Both PRO units also feature front panel USB charging ports.

Dave Keller, senior vice president of sales and marketing for Furman and its owner Panamax, said: "Building on the innovations of its predecessors, the new Classic Series brings together superior protection and outstanding performance for instrument rigs, studio recording, professional audio, broadcasting, or anywhere zero downtime protection and maximum A/V performance are critical."

For more information, contact Furman at (877) 486-4738 or visit www.furmansound.com.

PRODUCT GUIDE

BW Broadcast DSPXmini-FM Is Special

London-based processor manufacturer BW Broadcast has developed a new version of its DSPXmini-FM processor, the DSPXmini-FM Special Edition.

New for the Special Edition are a new crossover topology, enhanced audio clippers and a revamped four-band limiter.

Also new from BW Broadcast are software upgrades to the DSPXtreme and DSPmpX processors.

For the DSPXtreme, version 1.10 adds improvements in the multiband and main clippers for added loudness and lower distortion. Also announced is that the DSPXtreme will add an upmarket version, FM+HD, which will offer HD processing and diversity delay.

As for the DSPmpX, it sees version 2.00. This upgrade improves the final clippers and adds silence switchover function.

For more information, contact BW Broadcast at 44-208-683-6780 or visit www.bwbroadcast.com.

RCS Brings More to the News

RCS Sound Software has upgraded its newsroom automation system, RCSnews.

Operating now as version 4.0, RCSnews adds an instant duplicate conflict notification when more than one author works on a file. User rights and preferences have been improved; notably featuring an enhanced contact list that can be imported from Microsoft Outlook.

The most easily seen improvement is in the Teleprompter module. A pace control has been added along with color-coding options.

The user interface also has been tweaked to improve viewing of wire lists, library options and rundowns.

For more information, contact RCS at (914) 428-4600, or visit www.rcsworks.com.

The New Baby for Genelec

The new 6010A is the smallest speaker in the Genelec family. A two-way powered speaker, the 6010A is aimed at DAW work, edit bays and even personal music players.

The 6010A has a 3/4-inch metal dome tweeter and a 3-inch woofer, with neodymium magnets in each. Genelec's Directivity Control Waveguide technology is also used. Both amplifiers are 12 W models. The aluminum enclosure utilizes Genelec's Minimum Diffraction Enclosure technology.

There are "Desktop Control" and "Bass Tilt" controls. Frequency response is said to be 74 Hz to 18 kHz. Overall size is 7.1 inches high, 4.75 inches wide and 4.5 inches deep. An Iso-Pod table stand is optional. Colors available are black, white and silver.

For more information, contact Genelec at (508) 652-0900, or visit www.genelecusua.com.

JBL Adds Control 2P To Monitor Lineup

JBL's Control family has been more associated with installation than broadcast over the last few years but that may change with the new Control 2P.

The Control 2P is a small powered two-way monitor system running as a master/slave pair. The heart of the 2P system a 5.25-inch low frequency driver and a 0.75-inch polycarbonate dome tweeter. Specs are 80 Hz–20 kHz with a top SPL of 115 dB. Power is from a 35 W amplifier. The Control 2P is solidly covered with XLR, 1/4-inch (Neutrik combo) and RCA inputs along with a stereo headphone jack (1/8-inch).

There is also a volume control, high-frequency EQ and internal peak limiter with the master speaker. The 2P is magnetically shielded and has snap-on pedestals for desktop use. Mounting brackets are also available.

For more information, contact JBL Professional at (818) 894-8850 or visit www.jblpro.com.

Telos Introduces Mixer Version of Z/IP Codec

Telos now offers the Z/IP Mixer, a portable Zephyr/IP codec with mixer built in.

Aimed at the remote broadcast user, it adds a four-channel stereo mixer, Omnia processing and a road case to the Z/IP codec, which allows users to do low-delay remotes where cell or WiFi service is available. The manufacturer promotes the Z/IP's ability to deliver reliable audio under varying network conditions.

Features of this version include digital stereo mixer with four mic/line switchable inputs; selectable Omnia AGC/limiter processing presets; two local headphone mixes to monitor send and/or receive audio; and 24-bit A/D and D/A converters.

The system works directly with high-speed mobile phone data networks via an EVDO USB modem and offers a range of transmission bit rates, from 18 kbps to 256 kbps.

It supports UMTS and certain other wireless devices; it is compatible with Telos Zephyr Xstream (in Ethernet mode) and supports SIP, G.711, G.722, MPEG Layer II.

For more information, contact Telos Systems at (216) 241-7225 or visit www.telos-systems.com.

LS-10

▶ Continued from page 28

remaining controls allow for customizing the LCD brightness, auto shutoff times and the like.

In the field

The LS-10 passed the "no brainer" test with flying stripes.

Without looking at the manual, it is obvious how to turn it on and start recording immediately. You just hit the big red "Rec" button and it starts capturing audio at whatever codec or quality it is set at with the internal mic.

If you plug in an external mic, it automatically switches to that. Going deeper to choose between automatic recording levels and setting them manually also is obvious. Even the more advanced settings should be pretty clear to someone with a limited understanding of audio tech.

The internal mic system delivers perfectly acceptable sound that is a bit harder and lacks the "warmth" of my beyerdynamic MCE58 condenser mic. Still, you can't beat the convenience of not having to bring along a mic and cables. The recorder is fine for interviews as long as you are mindful of handling noise. For gathering sound at a conference, just set it in a podium or table and it's good to go. Rubber "feet" on the bottom dampen vibration.

I ran into minor difficulties going handheld with the internal mics and the recorder set to auto levels. The mics seem prone to popping Ps; when that happens, the auto levels compound the problem by dropping levels as if a gate were being activated. As the recording recovers, you are left with a significant glitch instead of a simple popped P.

The two easy fixes are to add the funky windsocks provided in the accessory kit and to set levels manually. You may also want to give yourself some added distance from your subject and the unit.

Fortunately, menu options include the ability to turn off the consumer phantom power ("plug-in power") for cheapie electret external mics. This means you can use a good dynamic mic and not worry about contaminating recordings with the characteristic "crackle" the plug-in power adds. Testing with a venerable Electro-Voice RE11 proved that. The only menu option missing is for mono recording. With a typical mic cable, you capture on one channel only. Oh, operating time with a pair of 2700 mAh NiMH batteries was a solid 10 hours and 40 minutes with the backlighting off, just over 8 hours with it on

The LS-10 may not suit everyone's tastes or needs, but it should be right at home in most radio news operations. Any outfit that works with amateurs gathering sound will benefit from the "no brainer" operation. Pros will appreciate the light, easy-to-tote form factor and audio quality. Olympus has done an exceptional job with its first entry in the pro audio market, and we hope this is just the first of many happy returns ahead.

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RADIO SYSTEMS MILLENIUM DIGITAL

Millenium Digital gives you fantastic "bang for the buck!" Available in 6-, 12- and 18-fader sizes, Millenium Digital gives you analog and AES/EBU inputs (with built-in sample rate conversion) on every channel, 3 mixing buses with analog or digital outputs, and up to 10 fully-programmable mix-minus outputs. Choose the new Millenium Digital Network model for easy connection to Axia IP-Audio networks!

HARRIS NETWAVE

The newest console from Harris is at home in any facility! With four mixing buses, two mix-minus channels, easy-to-use talkback and telco interfaces and universal input modules for analog and digital sources, NetWave is perfect for stations in smaller markets that still want the power of a Harris console. Comes in 8-, 16- and 24-input sizes with optional networking capability and a "heads up" meter display!

ARRAKIS ARC-15

On a budget but don't want a "budget console"? Check out the new Arrakis ARC-15, with five selectable high-performance mic channels with Phantom power, dedicated phone input channel, direct PC audio input, built-in talkback capabilities and an optional 16x3 stereo switcher to help handle even the biggest jobs. Two stereo buses with mono mixdowns and both balanced and unbalanced I/O make ARC-15 a versatile, cost-effective performer!

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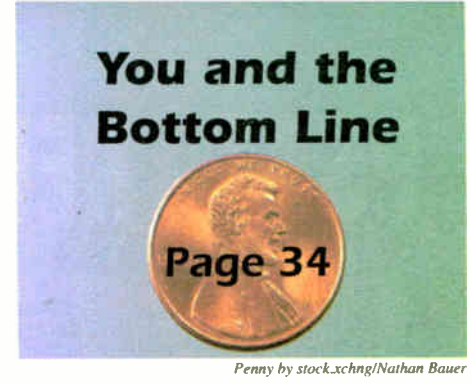


Penny by stock.xchng/Nathan Bauer

'Radio Theatre': Tales With a Message

Focus on the Family Explores the Power of 'Movies for Your Imagination'

by Ken Deutsch

When Hamlet said, "The play's the thing," he was talking about hiding a message within a dramatic work to find out if his uncle had murdered his father.

At Focus on the Family, radio dramas have a less covert purpose: to entertain and enlighten.

"Dr. James Dobson felt there was so much violence on television, that there was no safe haven for kids," said Dave Arnold, producer and host of "Focus on the Family Radio Theatre," referring to the founder and chairman of Focus on the Family.

"He recalled that as a boy, he and his family used to gather around the radio and listen to live dramas," Arnold continued.

"With that in mind, he tasked the creative department here with making a 13-week pilot series aimed toward children. The stories aired as part of our daily broadcasts of 'Focus on the Family' and we received very good feedback. As a result, 'Adventures in Odyssey,' a weekly radio drama for 8-to-12 year olds, was created.

"That was over 20 years ago and 'Odyssey' is still going strong. In 1996, 'Radio Theatre' was launched in an effort to broaden the type of stories that could be created for the entire family." Its first production was based on Dickens' "A Christmas Carol."

The driving forces behind these elaborately staged works are Arnold and Paul McCusker, the latter a director and author of several original stories.

"My background was in sound design," said Arnold. "So I wanted to experiment with telling a story in sound."

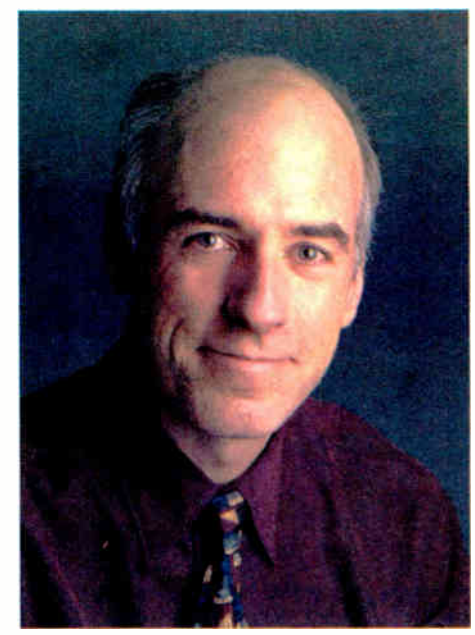

Julia McKenzie and John Rhys-Davies perform in 'Traveling Home for Christmas.'

Focus on the Family is a nationally known and wide-ranging ministry that uses syndicated radio programming, books, films, magazines, the Internet and a newsletter to extend its reach.

The organization and its founder have generated their share of controversy, and gay activists protested the organization's induction into the National Radio Hall of Fame this year.

Its stated mission: "To cooperate with the Holy Spirit in sharing the Gospel of Jesus Christ with as many people as possible by nurturing and defending the God-ordained institution of the family and promoting biblical truths worldwide."

"Odyssey" airs on approximately 2,000 facilities and is being adapted into Spanish audio and Hindi video, with plans for Mandarin Chinese audio soon as well. "Focus on the Family Radio Theatre" has been heard on some 250 radio stations and is being adapted into Turkish. "Radio Theatre" has won accolades including a George Foster Peabody Award, multiple Audie Awards and the Parent's Choice Award.


Dave Arnold

These contemporary dramas are created using budgets ranging from $40,000 to $200,000 each, depending on the scope of the particular story. The casts may be as small as 15 or more than 100.

Pictures for the ear

"All our music is custom-composed using a combination of real musicians and synthesizers," said Arnold. "We've even added choirs in a few of the stories. The sound effects are a blend of material from CD libraries and what we record ourselves. We also have a Foley room with loads of props, where we create live effects and add the basic footsteps and body movement sounds."

The "Radio Theatre" actors are recorded in London because of the quality of

See THEATRE page 33 ▶

Theatre

▶ Continued from page 32

talent Arnold is able to find there. He has traveled across the Atlantic many times to produce these sessions himself.

"It's a different approach to acting there," he said. "Those actors are familiar with radio dramas because they have recorded so many for the BBC. They are proud to just work at their craft, whether it's in film, TV, stage or radio. Everyone we've used brings something unique to the stories."

Some of those actors are Academy Award winners and nominees; they've included Paul Scofield ("A Man for All Seasons"), Ron Moody ("Oliver") and Joan Plowright ("Enchanted April").

Several have won or been nominated

FOCUS ON THE FAMILY RADIO THEATRE

for British Academy of Film and Television Arts laurels, such as Leo McKern ("Rumpole of the Bailey") and Joss Ackland ("Shadowlands"). There are a few Golden Globe nominees among the casts, such as Jenny Agutter ("The Railway Children") and John Rhys-Davies ("Lord of the Rings," "Raiders of the Lost Ark").

After the voices are recorded, post production is done primarily at the Focus on the Family studios in Colorado Springs. Anywhere from one to five new "Radio Theatre" plays are created each year, depending on the availability of suitable material. The same production team also works on the kids' series "Adventures in Odyssey" (originally known as "Odyssey USA") which is recorded Los Angeles.

"Radio Theatre" chooses to produce secular tales with a positive message, such as "The Chronicles of Narnia," "At the Back of the North Wind" and "The Secret Garden."

"More than anything, we're after a good story, and every one we've chosen has a distinct moral message," he said. "They are redemptive; they inform us as we search for meaning in our lives. The purpose of each 'Radio Theatre' is to communicate a Christian worldview without preaching, much in the way Jesus did. He told stories through parables and communicated lessons we can all learn from."

Shows are recorded using Pro Tools and backed up on a TASCAM DA-88 digital tape recorder. There is also an impressive array of other gear. But even with top talent and equipment, not everything on "Radio Theatre" goes as planned.

"We once bought 10 pounds of corn starch to plaster the floor of our Foley pit so that we could walk on it to create the sound of footfalls on snow," said Arnold.

"We didn't know at the time how bad that was for our lungs! There was another moment at the end of the biggest scene of 'The Lion, the Witch and the Wardrobe,' when we had 20 people in the studio slaying Aslan, the lion. It was a perfect take, but the DA-88 tape had run out. The engineer went pale white. Everyone in the room knew what happened. We could have used the icy stares to create a safe snow Foley pit."

Since 2006, "Radio Theatre" has been off the regular air schedule but the dramas are available as syndicated specials and individual stations can opt to run each new production.

"Amazing Grace," a recent example, was picked up by 250 stations as well as BBC Radio 7. Other offerings have been covered by Public Radio International.

All shows are also made available on CD at *www.focusonthefamily.com* under the entertainment section. The back catalog is sold on CD in bookstores through a licensed partner and Focus on the Family makes a royalty on each sale. Those sold directly by Focus on the Family are offered for a donation, as that organization is classified as tax-exempt. Downloads of each story are also available via Audible (*www.audible.com*) and soon via the Focus on the Family Web site.

Ken Deutsch says he knows all about drama; he has been married 20 years and raised a stepson.

Actors Megan Parlen and Caryne Shea work with director Dave Arnold on the recording of Radio Theatre's 'Anne of Green Gables.'

TECHNICAL MANAGEMENT

Real Savings in Radio's Real Business World

A Technical or Operations Manager Can Affect The Bottom Line in Any Number of Ways

by James G. Withers

Few things grab an owner's or a manager's attention like a "minus" sign in front of the net profit number on an income statement.

Even though the profit side of things is the purview of the sales department, there are still plenty of ways a technical or operations manager can affect the bottom line.

Consider the typical local sales process: The local A/E develops a client, pitches the client, closes the sale, produces the spot, gets client approval for the spot, writes up the insertion order, traffic enters the order, the schedule runs for a month, traffic bills the client, the bill sits on the client's desk for 30 days (or a few days less, if you are very lucky), the invoice gets paid (if you are even luckier), the sales person takes his or her 15–20 percent, and finally ... *finally* ... the check gets deposited in the station account and the money falls to the bottom line as part of the station's profit picture.

Penny by stock.xchng/Nathan Bauer

For repeat clients, this is a 60–75 day process. For new business, it can stretch to 180 days or more.

A necessary part of our business, to be sure, but it's a long time to wait for 80 cents on the buck.

However, let's say as chief engineer, you discover a better source for that $800 final amplifier tube and buy one for just $760. That month's net revenue just improved immediately! (Plus, you presumably did not pay yourself a $6 sales commission, so the entire amount drops to the bottom line).

Every dollar you can save is a dollar immediately added to the net revenue picture of the station. What GM wouldn't love you for that?

And here's the kicker: Station values are loosely based a multiple of cash flow. In fact, a well-run station might be worth as much as 12–14 times the annual EBITDA (an acronym for Earnings, Before Interest, Taxes, Depreciation and Amortization), otherwise known as BCF, or Broadcast Cash Flow.

So, if you add that one little $40 savings to the cash flow number of your station, you just added $480 to $560 in real, tangible value to the radio station.

"Fine," you might say, "but that value isn't really meaningful unless or until the station is sold."

Wrong.

Saving is earning

Banks and other lenders lend money based on the station's ability to repay. That ability is, of course, based on cash flow, so your incremental savings might partially fund an upgrade, or even an acquisition! (And I suspect that if you help your owner become a *group* owner, you might get a little something extra in the Christmas Stocking.)

So, how to get started? Well, if you look closely and have some patience, it is hard *not* to find ways in which you, as a technical manager, can save (earn) the station more money (and I am not just talking about turning off the bathroom lights, here, although that counts, too).

For example: on the subject of utilities, almost all states have deregulated electric power. Check out the station's most recent power bill for the rate you are paying and shop the service. You can always negotiate a rebate for the connection fees, and like cell phone companies, most utilities offer deep discounts for longer contracts.

If you use contract engineering services, chances are you might be paying a retainer fee. Is that absolutely necessary? Check out the average number of hours you actually use your contractor and you may find out it is cheaper to pay a straight hourly rate.

(A word of caution, though: don't pinch the penny too hard here, lest you find yourself, rather than the contractor, slogging through the mud one night to clean the electrocuted rat out of the transmitter power supply.)

Check out the spare parts inventory, as well. The days of FCC-mandated spare parts stocks are long gone, and the overnight couriers really can get you almost anything, from anywhere, overnight, so do you need to tie up an extra $1,000 hoarding all of those extra tower lamps?

At my station we used to pay a board op to come in to switch a satellite feed after a routinely scheduled (but not regularly scheduled) baseball feed. A relay panel and an extra command line on our automation system saved that expense.

Which brings up another point: Often, you will discover a way to cut expenses only to find that you have to incur a greater expense to do so.

This is not always a showstopper, for the following reasons: Operational

See PENNY, page 35 ▶

Penny

▶ Continued from page 34

expenses and capital expenses are treated differently for accounting purposes.

There are some arcane accounting rules that cover the exact circumstances, but essentially, operational expenses are those incurred in the daily running of the station. Salaries, utilities, those pesky sales commissions; operational expenses, all.

Capital expenses, on the other hand, involve purchases that expand the capital assets of the station. Transmitters, automation systems, furniture ... those types of things constitute capital items.

Buy savings

Now, here is the reason you can spend money to save money: Capital items are not reflected in the monthly income/expense statement.

It's that simple. When you buy a transmitter, not one penny of that expense shows up on the income sheet, and therefore, does not affect the all-important EBITDA calculation.

The result? The $30K transmitter line item is recorded on the balance sheet as a brand-new station asset, and because it uses less power, the monthly expense line for power at the transmitter just decreased by $100. The $1,200 annual utility savings adds $12,000 to the value of the station (the bank will love you for that), and the asset is safely tucked away on the balance sheet, where the IRS lets the owners depreciate it (and claim the tax deduction) as it wears out.

If you add that little $40 savings to the cash flow number, you just added $480 to $560 in tangible value to the station.

Now, at some point, the scales tip and the cost of "buying the savings" gets so lopsided that the project cannot be justified. But don't let that stop you from exploring the possibilities.

You might be surprised at how favorably a long-term owner will look at even a fairly large capital investment. This is particularly true if the savings are regular, predictable, and sustained.

I once, for fun, ran several quicky studies to see if it was possible to relocate two of our three FM transmitters to a common tower site. As it turned out, it was possible, and as I dug into it, this became the best idea I ever had. Combined utilities (only one "demand" charge), one tower lease (instead of two, and property taxes on a third, owned tower), one standby generator, less travel time (one site to visit instead of three) — the list just kept getting better and better. All because I got a notice one day announcing a rate increase for the other tower lease.

Get serious about saving money. Don't cut things you really need, but don't be afraid to look at every single line item on your budget (and if you do not have a budget, go spend $100 on Quickbooks and develop one immediately). You won't always hit the jackpot, but when you do, you'll have an EBITDA moment!

People News

Send news to radioworld@nbmedia.com.

James Cowan has died. He was president of **Neutrik USA** and passed away on Nov. 5 at age 52. He also held positions with Texas Instruments, Panduit Corp. and Dialight-Kulka-Smith.

Amanda Alexander has moved up to chief engineer of Crawford Broadcasting's four-station Denver cluster, replacing Ed Dulaney, who recently moved on to Rocky Mountain Radio.

Amanda Alexander

Filling her position is **Pete Chamberlain**; he comes from Entercom, where he worked in production and marketing.

APT named **Malachy O'Dolan** as field applications engineer for the Australasia region.

MySimBook, a subsidiary of Global Security Systems, announced the addition of **Doug Raines** as vice president of business development.

The **Canadian Association of Broadcasting** named **Rael Merson**, president and CEO of Rogers Broadcasting Ltd., as the 2008 recipient of the CAB's Gold Ribbon Award for Broadcast Excellence.

David Baeli joined **Radio Systems** as product specialist. He came from Broadcasters General Store, where he worked in the sales division.

Arbitron named **John Stavropoulos** as vice president of its technology group. He will be responsible for product development for the Portable People Meter, including the next generation of encoders and monitoring equipment, among other technical duties.

Crown Audio named **Matt Bush** as VP of sales; he came from sister company Harman Music Group, where he was VP of operations.

He replaces **Scott Robbins**, who was promoted to VP of sales for **Harman Professional**.

Ray Davis: 60 Years of Bluegrass

Veteran Champion of Traditional Music Is Now Heard Via HD2 Channel in D.C.

by Ken Deutsch

In 1951 Hank Williams Sr. recorded a song called "I Can't Help It." That may be a suitable theme for Ray Davis, who already had been on the radio playing country and bluegrass music for three years by that point.

Davis had left his home in Wango, Md., at age 15 to take a job at WDOV(AM) in Dover, Del. He just can't help playing and recording the type of music he loves. Now 75, he's been at it for 60 years.

"When I got the offer to leave home and take that job, my mom gave me her permission," said Davis. "In fact she drove me up there and looked the place over. Later, after I had been on the air for a while, if the mailman or anyone else would come by, she would tell him that her son was on the radio. I was making $50 a week and it was great!"

Photo courtesy Garland M. Gobble

Ray Davis at work, in a 2004 photo

By the mid-1950s, Davis had made an interesting career move, to XERF(AM), a booming 250,000-watt brokered station just over the Mexican border from Texas.

"I sold every kind of product on the air," said Davis. "You had to ad-lib copy back then and you could tell if you were doing OK by how many orders came in.

"They had a mailroom in Del Rio, Texas, where I lived. It was huge. I'd drive across the border every day to work at the station, which was in this compound with armed guards. One night when I was leaving, I found a scorpion in my car."

Long before Ronco's Vegamatic, Davis had his own unique items to peddle.

"The weirdest thing I ever pitched on the air was something called the 'Walk-Away,'" he said. "That was a concoction that claimed to cure rheumatism or something. I said on the air that it was made from the sands of the testing grounds of the atomic bomb. That product was only on for a few days."

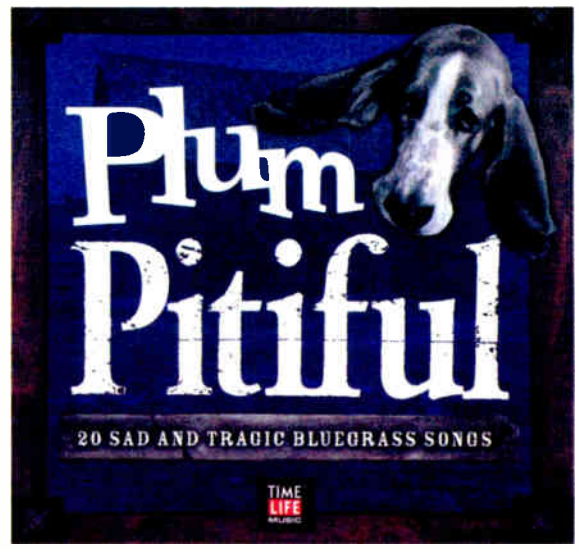
Homesick, Davis left Texas and returned east to work for several more traditional stations. For 38 years, he hosted a bluegrass program from Johnny's Used Cars for WBMD(AM) in Baltimore. In 1985 he landed his current job, one that allows him the freedom to select his own music. As anyone who has worked in radio for more than 10 minutes knows, this a rarity in contemporary radio.

"I'm heard now on the HD-2 channel of WAMU(FM), the public station of American University in Washington, D.C.," he said. "I do five live shows every week from my house, and with one recorded repeat, I'm heard six days a week. I use a Radio Systems board. Because we're on the Internet, we've gotten listener response from all over the world."

How does he feel about having been moved to the multicast not long ago?

"Well, I think I had more listeners on the main channel, but we're growing all the time. I can tell when we do fundraisers that people are listening because we get a lot of response from this area. We've just added a translator in Vienna (Reston), Va., at 105.5 FM and that ought to help."

As to HD Radio in general, "I've had people buy 'em just so they can hear my show, because I have a loyal audience. But HD Radios are real hard to find in the stores. I think the economy affects everything. People who might have gone out and gotten one might not do it now that things are so slow. HD Radio hasn't been promoted well, but I'm comfortable with it. At WAMU, we're committed to it in a big way."



Songs on Plum Pitiful span 40 years of 'basement recordings' by Ray Davis. Included is Scott Brannon's version of 'Old Shep' about Ray's dear, departed dog and studio mascot.

Davis, heard Sundays at 10 a.m. and weekdays at 3 p.m. at *www.wamu.org*, provides exposure for a musical genre that banjo player Ralph Stanley used to call mountain music but what is currently known as bluegrass.

Unlike almost any other radio personality in the business, Ray Davis records much of what he plays on the air in his own studio.

All together now, 1-2-3

One of the features on his radio show is "Basement Tapes." That is an accurate name because Davis' personal studio actually is in his basement, a room that has been the recording home for some of the biggest names in bluegrass.

"When I started, bluegrass was a form of country music, the poor man's country music," he said. "But it was what I liked. You had people like Bill Monroe, The Stanleys, Don Reno and Red Smiley. They all recorded in my basement.

"The studio isn't big enough, but I make it work.

See DAVIS, page 38 ▶

Dear Ray

The following is a sampling of comments sent to Ray Davis on the occasion of his 60th anniversary on the air.

"Congratulations on your 60 year ride on the airwaves. I might be one of a very few that has been with you the whole time. As a five-year-old I listened with my parents on WBMD and also heard you with an outside antenna when you were 'south of the border.' Keep the bluegrass coming for another 60 years and I'll try to ride along."

"Your 60th anniversary is a milestone few obtain, and the class you have shown is beyond reproach. I too, enjoy all your 'Plum Pitifuls' and the spirituals. Every time your show comes on I listen religiously. You are so kind with the listeners who lose their loved ones who are steady listeners. Thank you for your compassion and especially, for your kind words when I lost my wife."

"You have no idea how much your shows mean to our family. We've been listening to bluegrass on WAMU since moving here in 1995. Our kids have grown up with you and when you moved to HD, we ran to get the right radio so our Sunday would be the same as ever. Your show has introduced us, and thousands of other people. to so many amazing artists. Thank you for continuing the tradition with your broadcasts. We love your stories."

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Food Fight! Promotions in Good Taste

Feed Someone Well and They'll Remember You Forever

by Mark Lapidus

I'm not sure if coming home and finding no dinner has anything to do with this article, but I suspect my growling stomach has reminded me of a few ways to have fun and generate profits from food promotions on the radio and online.

From giving away candy to selling certificates for restaurants, you've got quite a menu to choose from when it comes to engaging your listeners' imagination and palate.

Is there a radio personality in your market who has a sandwich named after him? While it may be old fashioned, it's still cool to have a sandwich, salad or dessert named in honor of a celebrity.

And that's the key: When a restaurant names a dish after you, it's not just because you're a radio personality; you are a celebrity who transcends the medium.

How do you make this happen for someone on your staff? For starters, they do already have to be wildly popular. If you have that level of personality on staff, find out where they like to eat and determine if they know the manager or owner. If they already have that personal relationship, often the next step to getting that name on the menu is a simple conversation between you and the decision maker. When needed, offer reciprocal promotion. They name the sandwich after your morning guy; you run promos about a special on the sandwich for a few weeks, with a portion of the proceeds going to a charity.

Next, let's move on to a free lunch.

If you're not giving away a free lunch to an office at least once a week, you're missing out on a great opportunity to make new friends and influence potential listeners.

Even if you don't have a lunchtime on-air feature where this would fit perfectly, you can still air a contest during which listeners e-mail you reasons their office deserves to be your Free Lunch Office of the Week. You'll get lots of humorous reasons you can read on-air and post on the Web. It's important that one of your DJs arrive with the food to thank that specific office for listening.

Feed someone well and they'll remember you forever.

Lollipop by iStockphoto.com

Tasty

It's fairly common these days to see radio stations selling discounted restaurant certificates via their Web sites.

Here's how it works: The establishment gives you certificates for free, then you sell them for half-price to the consumer. The restaurant gets free on-air and online promotion and new customers.

Want a new twist? Turn this into Half-Price Club, where members pay a reduced monthly fee and receive dinner for two at a different place each month (12 times a year). Inevitably when you run this program you will have leftovers (pardon the pun), which can be used for club members.

Canned food drives are one my favorite promotions because of the simplicity of execution and the benefit of collecting something that is vital to needy citizens. Whether you're trying to fill up an entire truck, van, studio or store, be sure to set a goal you feel is attainable and then keep your audience up-to-date during the process.

Contact the nearest food bank before you begin collection as they likely have other avenues to help you pre-promote the drive and reach beyond your usual audience.

It's not that expensive to give away someone's weight in candy as a prize right before a holiday (Halloween, Thanksgiving, Christmas, New Year's), but I've heard it done only once.


PROMO POWER
BY MARK LAPIDUS

Copy: "We'd like to give you your weight in gold, but the stock market took its toll all around this year ... so, how about a sweet year instead? WXXX awards your weight in candy! Enter at our Web site and tell us the sweetest thing anyone has ever done for you. In fact, if we think it's that sweet, you and your sweet friend both win!"

Arthur Carlson once said, "As God is my witness, I thought turkeys can fly!" They may not fly, but they do roll. If you've never tried bowling with turkeys at your local bowling alley, you haven't really bowled for fun. The admission fee goes to a soup kitchen and your Turkey Bowl gets the attention you crave.

As for cravings ... oops, it was *my* night to cook dinner.

The author is president of Lapidus Media. Contact him at marklapidus@verizon.net.

People News

Eric Power was appointed manager of mechanical and PCB design by **Broadcast Electronics**. He's been with the company for six years; before that he was a product designer for Dielectric and worked for Glenayre as manager of physical design. **Rick Voepel** joined BE as repair supervisor and **Doug Koehn** as RF training manager. Voepel comes from Movius Corp., formerly Glenayre. Koehn has worked in radio operations and was a tech writer and lecturer with Harris.


Eric Power of BE

Prometheus Radio Project received the Parker Award from the **Office of Communication of the United Church of Christ** and the **Telecommunications Research and Action Center.** Prometheus was recognized for campaigns to help communities win broadcast licenses and build and operat LPFM stations.


Bunk Robinson, BroadView

Dielectric Communications hired **Roger Cote** as vice president of sales and marketing. He's former VP of operations at a telco antenna system manufacturer; he has worked as director of engineering; plant manager; and product development, quality assurance and consumer relations manager for technology companies.

Dielectric created an Engineering Development Program and made several postings in engineering and customer service. **Jim Chadwick** and **Gary Hazard** will contribute to design, development and testing of antennas, transmission line and RF combiner systems; Chadwick also will work with sales on the development of pattern analysis and other technical data for customer applications.

Mohammad Adeel has joined Dielectric as EDP engineer. New to the customer service team are **Robert Lothrop Jr.** and **Ruby Phillips.**

BroadView Software named **Bunk Robinson** as radio sales director. He has held management positions at WideOrbit and Wicks Broadcast Solutions and is a former GM at Salt Lake City's KUER(FM) and KLUB(AM)/KISN(FM).

Harry Larkin has died. He was a long-time broadcast equipment salesman who opened the Philadelphia branch of RF Specialties in 1992. According to the company's Web site, Larkin had four decades of broadcast experience; at one time he was vice president of LPB, working in sales, marketing, product design and applications. He also held positions at Belar Electronic Labs and Northeast Broadcast Labs.

Davis

▶ Continued from page 36

I have the best fiddle player around, a guy named Mike Cleveland. My wife Nona cooks us a meal upstairs, and everyone has a good time. I usually pick the material to record and I know what I want for my radio show. I also know how I want it to sound."

In recording studios today, each instrument can be recorded separately, and many of those instruments are synthesized. But that is not the way it goes down in Ray's basement.

"The secret? Know what you're looking for," he said. "I have to feel it or I'm not satisfied. I'm not bragging, but I know what my audience wants and I try to give it to them. I use a Mackie board for recording, and while it's 24-channel, the trick is to record everybody at once. I very rarely overdub because I want the music to have a live feel to it. I've always done it that way, even back before there was stereo."

Davis is aware of current recording techniques but believes he gets a more natural sound with everyone in the same cramped recording studio, pickin' and grinnin' at the same time.

"There is just a better chemistry this way. If everyone is in the song together, they feel it and it shows up on the record," he said.

Various Basement Tapes are available on CD as premiums for new members of WAMU.

When it comes to bluegrass music, Ray Davis is not only preserving a part of Americana, he is creating it.


Ray Davis in Baltimore, 1951

As a side note, turns out it was Radio World Editor in Chief Paul McLane who sold Davis the Radio Systems board that is used to create Davis' shows, years before McLane joined the staff of this publication.

"And you can tell Paul for me that it's a great board and it's still workin' fine," said Davis.

Learn more about Ray Davis at *http://bluegrasscountry.org/programs/the-ray-davis-show.*

Products & Services SHOWCASE

RADIO IT MANAGEMENT

Power to the Presenter Is the Point

Good Business Visuals Are Important Even in an Audio-Based Medium

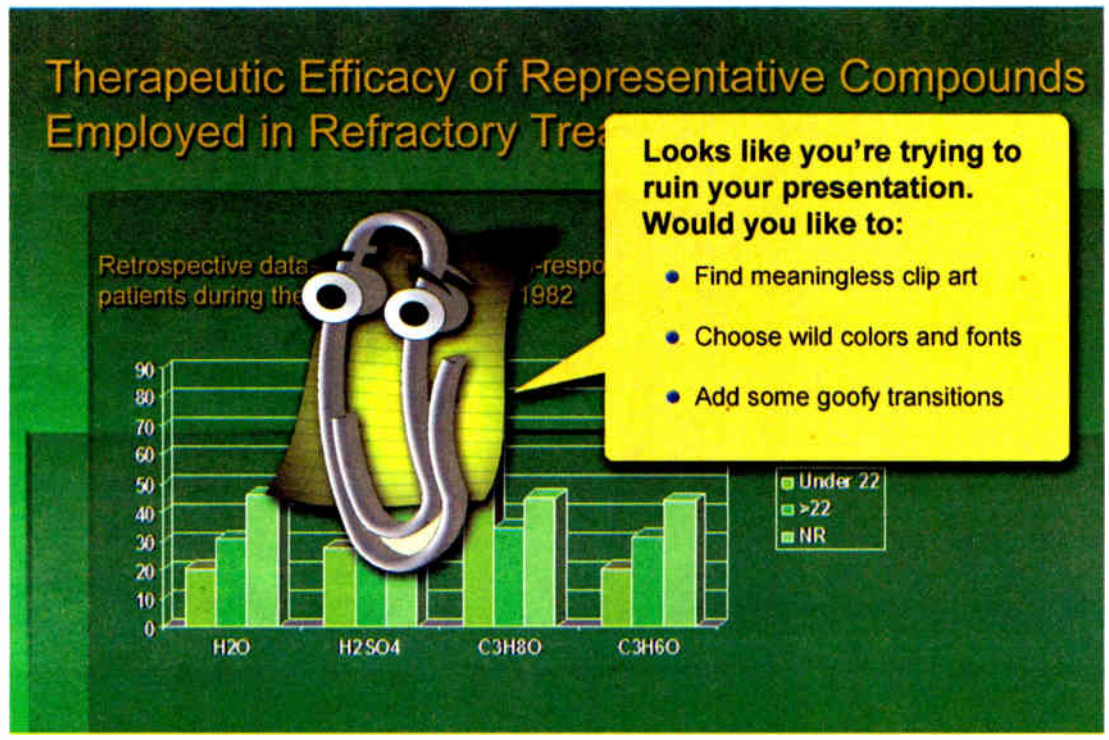
by Walter Schoenknecht

You probably missed the anniversary last year; I know I nearly did. If you'd known, you could have sent a card, or had a little party to commemorate the event. Best of all, you could have created a PowerPoint presentation … in honor of the 20th anniversary of PowerPoint.

It seems hard to believe, but yes, there was a time before PowerPoint — a time when "slides" were actually, well, slides — little pictures on pieces of polyester film.

Back in those Neanderthal times, anything more elaborate than an overhead transparency needed a graphic artist's talents for typography and design, followed by a visit to the Forox camera operator and his pin-registered rig. A dip in the soup, then off to the glass mounts; it took a small village to get a slide show together.

PDP-11 minicomputers were harnessed early on to try their virtual hands at graphical tasks, but the resulting GE Genigraphics system did little to liberate the presenting public, as it required a $300,000 workstation, skilled operators for slide creation and a service bureau for imaging the results. With the advent of personal computing, though, it wasn't long before a bright fellow — one Robert Gaskins, to be precise — found a way to harness the microprocessor and empower individuals to create their own presentation materials.



Show business obsession

Gaskins had no idea of the trouble he'd caused. Writing in a past issue of Communications of the ACM, he ruefully noted the wild abandon with which normally staid presenters began to dress up their slides.

"With no constraints from physical media," he wrote, "presenters had no limitation and increasingly no firm intuition as to what was appropriate."

This disinhibition effect has remained a hallmark of the PowerPoint experience. Colorful templates and royalty-free clip art collections have, in Gaskins' eyes, blunted the impact of factual content by making it seem like promotional fluff.

In our experience, a few perceptive presenters have been careful to note this boundary; one prominent medical researcher told us, long ago, that his slides needed to be either white-on-black or black-on-white. Anything flashier would clearly signal to the audience that he was in the pocket of Big Pharma. He was, arguably, the last of his breed.

There are some who feel that cognition ends when the PowerPoint cheesecake begins.

What's more, few stop to think about the amount of employee effort lost in the compulsive pursuit of animated bullet points and Venetian blind wipes, energy which presumably could have been used to add revenue to the corporation's bottom line.

One CEO who did, in fact, notice this problem was Sun Microsystems' founder and president, Scott McNealy. In a now-legendary speech, McNealy recalled seeing that a substantial percentage of Sun's disk storage space was taken up by his workers' PowerPoint creations.

"It freaks me out just to think about it," McNealy said. "Do you know how many person-centuries that is? Of clip-art manipulations? I banned PowerPoint from our company."

In the wrong hands, McNealy felt, PowerPoint could become less a "personal productivity tool" than a non-productive "activity generator."

All-purpose solution

Twenty years later, on a purely practical level, the medium has become more than the message; it has become a platform, a transport method for images which need not have been composed and created within PowerPoint.

For instance, I've pointed more than a few local nonprofits toward PowerPoint as a down-market solution for their digital signage needs: It's inexpensive, compared to virtually any digital signage software package; it will run unattended, employing automated timings, moving graphical elements and even multimedia elements; and, best of all, it's familiar — easily programmed by anyone who's been exposed to Microsoft products. Today, you'll find digital signage delivered via the PowerPoint platform in schools, church lobbies and exhibit kiosks.

The ubiquity and accessibility of PowerPoint have given it a host of other uses as well.

I routinely receive faux-storyboards from corporate clients done up in the familiar "handout" layout; and we often use a fully-composed slide set as the basis for creating more suitable television graphics, especially for complex medical topics. Most curious of all, we occasionally receive e-mails with multiple PowerPoint presentations attached — each containing a single still picture. Seems that for many people, PowerPoint is the one wrapper that springs to mind when it comes to transporting digital images.

Out of control

There are some who feel that cognition ends when the PowerPoint cheesecake begins.

Gaskins, for one, believes that clearer, more restrained visuals deliver better impact. "Most contemporary presentations should return to formats nearly as spare as the old overhead transparencies," he wrote.

That's the reasoned voice of an engineer, researcher and computer scientist speaking; to an organized mind, excessive decoration is clearly pointless, wasteful and potentially harmful to the message.

Gaskins isn't alone. There are plenty of us out there banging the drum for clearer, more easily understood visuals. Still, the man who dreamed of giving graphical power to the masses may still, alas, be dreaming — especially when he says, "The only solution is for presenters to develop a better sense of what is appropriate." Good luck with that.

Walter Schoenknecht is a contributor to TV Technology, a sister publication to Radio World. He is a partner at Midnight Media Group Inc., a New York-area digital production facility. Reach him via e-mail at walter@mmgi.tv.

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Experienced radio station manager, engineer, and announcer seeks new opportunity. With more than 30 years experience I can do almost anything given the chance. Willing to relocate. Please send your job opening details to: stuzeneu@gmail.com.

Extremely dedicated, driven and energetic. Creative with good show prep/people skills. Notable production ability. Visionary, catches on quickly/flexible. BMI songwriter/composer. Kevin Hardy, 817-412-4343.

Fresh voice, strong show prep, content, and delivery. Multi-Media/Music experience, and knowledge. Extremely technical. Management, promotions and sales abilities. Very reliable. Thalya, 469-765-6537 or Bwill068@yahoo.com.

Good digital/production ability. Strong delivery sports, news, on-air and prep. Well rounded, and catches on quickly. Enthusiastic, and personable, plus promotional/marketing experience. Alex, 817-301-2543. razorback132@yahoo.com.

Loyal, dedicated, committed talent seeking on-air, copywriting, or board-operation position. Conversational voice, quick wit, and good show prep. Willing to relocate. Call Justin, 817-444-5317.

Motivated by media. Outstanding personality, self-sufficient and ready to work at your station. Great communication skills, creative copywriting and strong production ability. K-Jay kjaysemail@yahoo.com; 817-204-4339

Reliable, strong newsriting, and delivery. Solid digital editing, and copy skills. Thorough show prep. Vast sports knowledge. Highly organized, and detailed. Russell, 580-704-0767, russ_major@verizon.net.

Very quick on the fly broadcaster. Considerably outgoing, and engaging. Humorous and comedic persona. Music knowledge, extremely technical. Good show prep. Adaptable. Sam, 214-384-5049 or samsawyers87@yahoo.com.

Creativo, dinamico, espontaneo en busca de una oportunidad como locator o en el medio de comunicacion. Experiencia en voiceovers,/al aire/producciones, y copy. Javier, 210-857-2532. javiboy4676@yahoo.com.

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 949-916-6255 mitchellrakoff@yahoo.com.

TRANSMITTERS/EXCITERS/TRANSLATORS, cont.

WANT TO SELL

Harris DX-50, very clean, was on IBOC, lw hrs, 720 KHz, plus have 60kW dummy load, $60K. Bob, 802-236-1629.

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

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

WANT TO BUY

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

EMPLOYMENT

HELP WANTED

LeSEA Broadcasting's World Harvest Radio in South Bend, Indiana is seeking a full-time Shortwave Account Executive.

leseabroadcastingnetwork

World Harvest Radio reaches the world with their programming through the use of five shortwave stations covering South America, Central America, North America, Asia, Australia, and Africa. These five 24-hour shortwave stations offer Christian teaching, evangelical and informational programs; as well as news and Christian music.

The Shortwave Account Executive will build business by identifying and selling prospects and maintaining relationships with clients. Some duties will include selling program time to churches, Christian organizations and agencies on a National level.

Some skill requirements include being highly motivated, mature, well-organized, positive attitude and the ability to work independently. Good computer skills are a must.

Previous successful sales experience with broadcast media knowledge and/or a Bachelor's degree in Marketing or business related field is preferred. The desired candidate should have experience selling radio programming to local, national and direct accounts. Bilingual English/Spanish is preferred. Knowledge of Shortwave Radio will be a plus.

This is a full time sales position that offers a base salary plus commission. LeSEA offers a comprehensive health care program and retirement benefits. Qualified candidates please send resume along with cover letter in confidence to the Shortwave Sales Manager at **shortwavesales@lesea.com** or fax to 574-291-9043.

MORRIS

Morris Communications Company, owner of Salina Media Group in Salina, KS has an opening for a **Chief Engineer** for its 6 station cluster.

You'll be in charge of the technical operations for 4 FM and 2 AM stations in Salina and Abilene, KS. This is a hands-on position and we require a great deal of experience with AM directional, AM and FM transmitters, compliance, maintenance, projects, and hard disk automation. We have high standards for our products and we don't cut corners. We need you to be able to fix something permanently, quickly and economically. We run the best stations in the region and we'll give you all the resources you need to get the job done.

We're looking for a pro with at least 5 years of experience as a Chief Engineer who has an extensive background in AM and FM transmitter facilities maintenance. SBE certification is preferred, but not required. We offer a competitive salary, great benefits and 401(k).

E-mail your resume to **jay.white@morris.com.** Morris Communications Company, LLC is an Equal Opportunity Employer.

Regional New England radio group seeks a Chief Engineer. We offer excellent facilities and an outstanding quality of life. From the outdoors to the arts we have it all. Proper candidate should have RF (AF) and IT experience. FCC and SBE certifications a plus.

Please send resume in confidence to:
Engineer9261@yahoo.com

No background calls will be made without your consent.

TUBES & COMPONENTS

South Central Radio Group in Evansville, IN is looking for a Chief Engineer overseeing 6 radio stations. Excellent facility remodeled with new studio build out in 2006. Will have responsibility for two studio locations, four transmitter sites and six remote vehicles. Will work with existing engineering and IT staff. SCRG is a privately owned broadcast company with a 60 year tradition in Evansville. Respond in confidence to General Manager, Tim Huelsing at tim@sccradio.com. No phone calls please. BS in Engineering required. SCRG is an equal opportunity employer.

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GUEST COMMENTARY

A Single-Lobe Solution?

by Lee Granlund

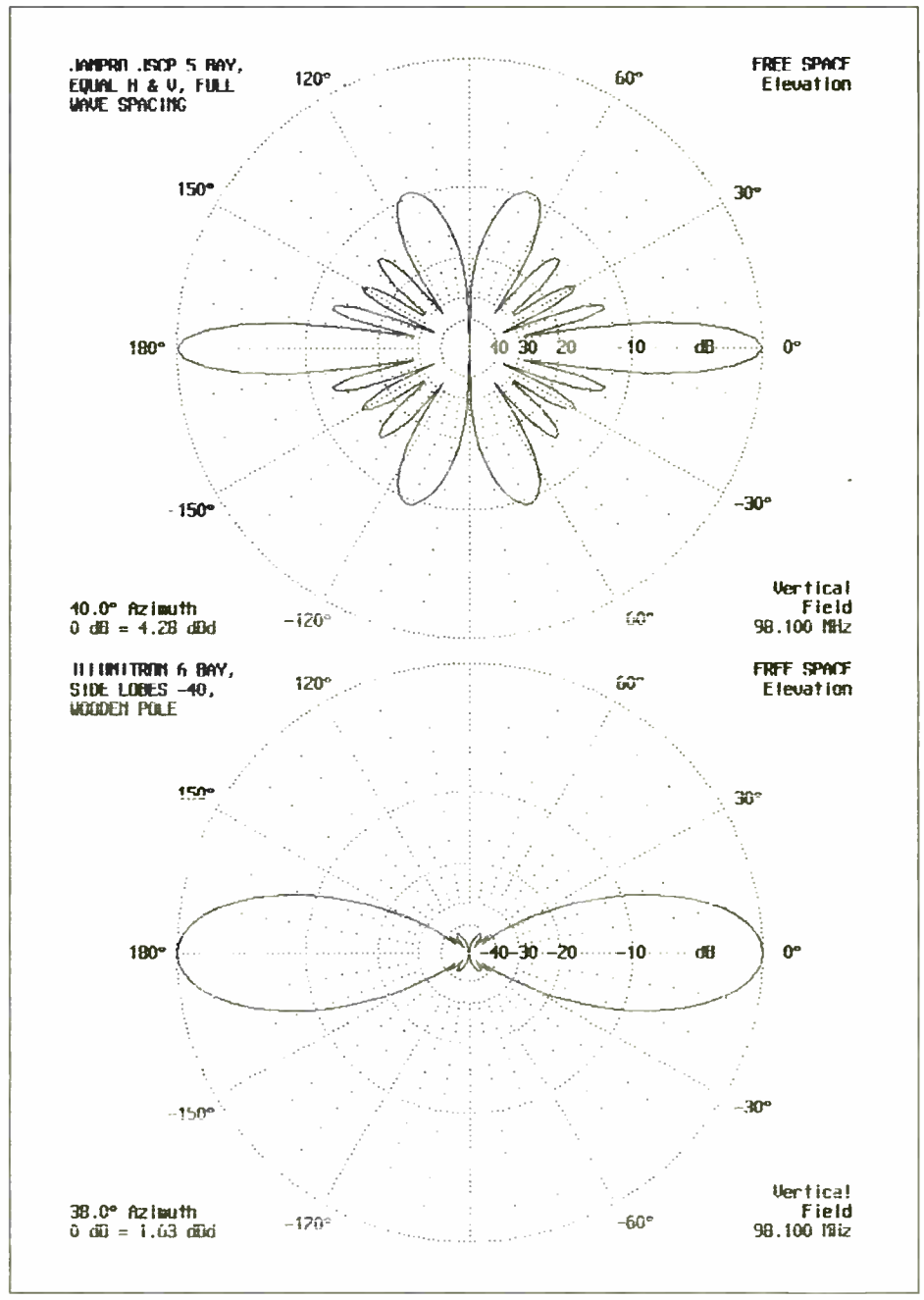
With great appreciation to Leslie Stimson, Bert Goldman, Marty Hadfield and other contributors for the excellent article (Aug. 1) updating the proposed power increase for the digital portion of FM IBOC signal format, I fully support the need for caution and further research before such a step is approved, for these reasons:

1. Tests documented at present show results with only the "test signal" increased by 10 dB, with all co-channel and adjacent digital signals remaining at –20 dB, or often as "analog only" stations. It is reasonable to assume that much of the observed coverage improvement will vanish when all co- and adjacent signals are IBOC running at the higher digital power level. Additional tests are needed.

2. Similarly, interference to "analog only" stations was observed when only one station made the proposed digital power increase. What happens when several co-channel and adjacent stations make the same digital power increase? Again, more tests are needed.

3. The proposed digital power increase assumes that most digital reception problems are due to insufficient power in the digital portion of the IBOC signal. In reality, the increased digital power tends to mask the symptoms; however, it does not resolve the underlying cause of the reception problems. If all co-channel and adjacent stations make the same increase, these symptoms may return.

4. I have devoted much of my 50-year career to the field of FM signal propagation, coverage improvement and antenna system design. As in the case of analog FM radio, field intensity measurements on most stations disclose large variations in signal strength (often +/– 10 dB) over distances of 10 feet or less. (The primary cause of this problem is multipath, often the product of a transmitting antenna with multiple lobes and nulls in the elevation pattern.) As a result, an analog FM signal will have a "picket fence" effect from noise or interfering signals at each low point in signal level, even though average signal strength may be 60 or 70 dBu. An IBOC digital signal may suffer similar



Elevation pattern of SWR Illumitron (bottom) and a more traditional FM antenna.

See GRANLUND, page 46 ▶

GUEST COMMENTARY

For HD Radio, These Are Exciting Times

Peeking Behind the Curtain, Advancements Are Abundantly Clear — and Significant

by Jeff Jury

Much has been written about the pace of the HD Radio rollout. Broadcasters have justifiably asked about the selection of radios at retail and whether more products are coming to market for consumers.

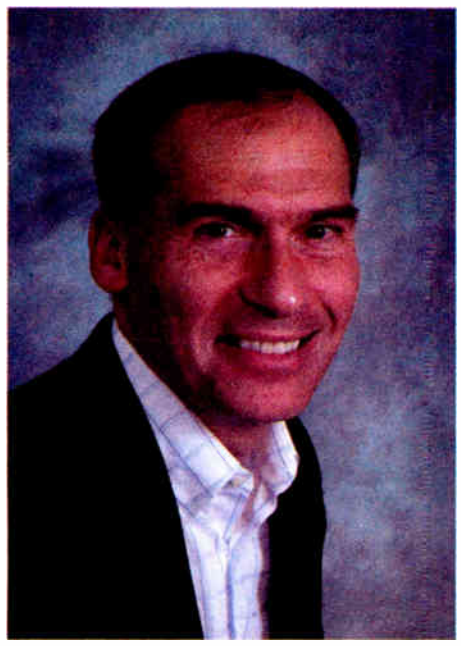
Most people only see the tip of the iceberg when they notice a radio on the shelves at stores like Best Buy or available online. What they don't see is the growing pipeline behind the scene, the dramatic growth in manufacturers developing products and the increasing number of innovative products under development.

All of this goes on around the globe, with product developers from Germany, China, Korea, Japan and here in the United States all driving forward.

Over the past few years, we have witnessed a dramatic growth in the number of manufacturing plants that are certified to build HD Radio receivers, the number of design houses working on new products and the volume of key components being brought to market to meet the increasing demand for HD Radio receiver products by consumers.

While it may not be apparent yet to the average consumer, HD Radio technology reached several major milestones in early October.

As of then, 1.5 million HD Radio chips had been shipped, and 1 million



Jeff Jury

HD Radio modules manufactured using these chips. IBiquity Digital has certified 100 different models of HD Radio products from a wide range of brands serving the U.S. market.

These are all important milestones that demonstrate the growth of the HD Radio market, reflecting the steady increase in product development and, ultimately, retail sales of HD Radio receivers.

It has been very gratifying to see an entire ecosystem of manufacturers, parts and software developers spring up around HD Radio technology. These advancements are the results of years of work designed to continuously bring new and innovative HD Radio products to market.

I've recently returned from Asia, where we hosted our sixth HD Radio Development Forum and partner expo in Shenzhen, China. Shenzhen is the current center of radio receiver development around the world. The forum attracted 50 different companies (roughly 250 managers) from radio component and receiver manufacturers.

The meetings included training sessions and a 25-vendor HD Radio exhibition. IC and module suppliers, test unit manufacturers, reference platform designers and software design houses were among the companies demonstrating their HD Radio solutions and services.

There is a high level of enthusiasm in the product development sector for the potential of HD Radio technology. This is a good time to bring that excitement back to our colleagues in broadcasting.

Here's a brief update on where the HD Radio product development ecosystem stands.

At retail

In the past two years, the number of HD Radio models available at retail has significantly increased.

Currently, there are 84 different HD Radio models available for sale at retail (see *www.hdradio.com*). They include 14 automotive in-dash radios with built-in HD Radio technology, 11 automotive converter boxes for connecting to HD Radio Ready in-dash receivers, two plug-and-play auto/home products, 36 AVR home receivers or tuners, 14 table top radios, six iPod docks and one cordless product.

The list of receiver manufacturers currently building product for retail has expanded tremendously over the past two years. The brands offering HD Radio products include almost every big name in consumer electronics today: Alpine, Cambridge SoundWorks, Coby, Denon, Dual, Insignia, Integra, iLuv, JBL, Jensen, JVC, Kenwood, LG, Marantz, Niles, Onkyo, Peripheral, Pioneer, Polk, Radiosophy, Rotel, Sangean, Sony, Visteon, Yamaha, and the list continues to grow.

Products are now available at national retailers Apple Stores, Best Buy, BJ's, Circuit City, Costco, JC Penny, RadioShack, Sony Style, Target and Walmart; regional retailers 6th Ave Electronics, ABC Warehouse, Abt, Al & Eds, Bjorn's, Brandsmart, Car Toys, Fry's, Harvey, J&R, Ken Cranes and Mickey Shore; online retailers Amazon, Buy.com, Crutchfield, eBay, Onecall, Overstock, Shopzilla, Staples and many other outlets.

In total, HD Radio products are now available at some 14,000 stores and online retailers across the nation.

In vehicles

HD Radio technology has made great inroads in the automotive sector.

Factory-installed HD Radio technology is available in BMW, Hyundai, Mercedes, Mini and Volvo vehicles; dealer-installed HD Radio technology is available on Ford, Lincoln and Mercury vehicles; and Audio, Ford, Jaguar, Lincoln, Mercury, Scion and most recently Audi have announced that HD Radio technology will be a factory-installed feature in the near future.

Under development

At the Shenzhen Forum, iBiquity released an HD Radio reference design for portable products. The HD Radio reference platform is being offered at no cost to receiver licensees, who will use it to develop low-cost, battery-powered portable products.

As we all know, HD Radio technology means more than just audio. It also enables a range of advanced services. Several of these are now a reality.

Most of us at this point have heard about iTunes Tagging. But increasingly traffic services are gaining momentum, such as the HD-TMC/MSN DirectHD Traffic Services, and soon the MSN DirectHD product offering.

Chip sets and parts manufacturers are offering more and more new products to receiver manufactures that increase the capabilities of HD Radio receivers and decrease their cost, size and energy consumption.

Both Samsung Electro-Mechanics and LG Innotek have introduced next-generation modules for receiver manufacturers using new chipsets from Samsung and SiPort, respectively. Both modules offer lower power, lower cost and smaller footprints than their first generation predecessors for mobile, tabletop and aftermarket automotive applications.

LG's new line of modules will offer

See JURY, page 46 ▶

◆READER'S FORUM◆

Oh, for Live, Seat-of-the-Pants Radio!

Stephen Winzenburg's commentary "The Lost Art of Backtiming" (Sept. 24 letters) was like a jab in the ribs. I've been thinking about the same thing recently.

Short of finding instrumentals that are all the same length and dead-rolling them in the automation, I know of no other way to pull this off. Even then, there will be the odd time or two that only the final 10 seconds of a song will play.

Oh, for live, seat-of-the-pants radio! I used to begin to work on timing about a quarter hour away so I could time the amount of talk and music to end up with a vocal going into the ID and network news. One time, at KBBQ in Burbank, (late '60s) I played Marty Robbins "Feleena" (over 8:00 long), a KBBQ Two-Timer jingle and "The Shortest Song in the World" by Kenny Price — which was all of :18 seconds — the ID and then hit the network for the news. Got raised eyebrows from the PD Bill Ward for that one.

At one station, we had a clock in the control room that had the bad habit of syncing right before the hour. The second hand would swing around from wherever it was to the top of the hour and sit there until exactly :00. That was a nightmare. We had to guess when to hit the ID and open the pot for the news.

I've been trying to figure a way to get more accurate times with our BSI software, but there's just enough float when voice-tracking to make make for a sloppy top of the hour. I'd love suggestions from your readers (other than "go back to live radio," which I'd do in a heartbeat given the opportunity).

I disagree with Winzenburg on one point, though. I doubt the listener admired the DJ for his or her timing. It was one of those things we jocks prided ourselves in but that the audience (unless things went horribly wrong) never noticed.

Steve Hafen
General Manager
KVIP(AM/FM), KMWR(FM)
Very Inspiring Programs
Redding, Calif.

The Lost Art

I read with nostalgia and amusement the guest commentary by Stephen Winzenburg.

Since I have a 40+ year background in commercial radio and production I would suggest that the scope of the article should be expanded and retitled "The Lost Art of Broadcasting."

As radio wallows in the cesspool created by consolidation and corporate greed, listeners have become numb to such now-common things as long periods of dead air, multiple spots running at the same time (do the clients get billed for these?) and other production gaffes that would have been cardinal sins in the days when somebody was at the station and actually paying attention to what was going out over the air.

These errors are obvious to even the most casual listener and convey the message: Nobody here cares.

As long as radio is run by bean counters instead of broadcasters don't expect things to improve. Sure, the radio apologists will say this doesn't happen anymore. But it does. We've all heard it. Frequently. Horror stories within the industry abound.

Backtiming is one of the more subtle production nuances, to expect it to come back anytime soon is foolhardy. As long as we continue to be bombarded by computer-controlled garbled audio, voice tracks running on top of each other, dead air and tone bursts, even the most basic production values are a thing of the past. How sad to hear what the once-proud art of broadcasting has become. It's no wonder listenership has declined. It's the listener's way of saying "If you don't care, neither do we."

I think I got out at the right time.

James Viele
Youngstown, Ohio

Radio World
Vol. 32, No. 30 December 3, 2008

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Next Issue of Engineering Extra December 10, 2008
Next Issue of Radio World December 17, 2008

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Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 810 Seventh Avenue, 27th Floor, New York, NY 10019. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853. REPRINTS: For reprints call or write Caroline Freeland, 5285 Shawnee Rd., Ste. 100, Alexandria, VA 22312-2334; (703) 852-4600; Fax: (703) 852-4583, Copyright 2008 by NewBay Media, LLC.

—Printed in the USA—

NewBay Media

The Season for Giving

Support the Broadcasters Foundation of America

In lieu of our regular editorial, Radio World today shares this space with the Broadcasters Foundation of America, which has begun its annual fund drive.

The following letter to the industry was distributed by President Philip Lombardo and Vice Chairman Stu Olds.

Dear Colleague:

Over the years you've been very generous to the Broadcasters Foundation of America and we're hopeful we can count on your support during these difficult and uncertain economic times. We need you now more than ever.

Thanks to you, our national charitable Foundation has been a "Foul-Weather Friend" to hundreds of present and former broadcasters.

As you know, many support our Mission by attending our golf events, the Golden Mike dinner at the Waldorf each year and the "Angels" Campaign for corporate contributors. But the *Endowment Fund*, where your contributions are held in perpetuity remains the most vital and essential element which underpins and sustains our humanitarian work among the less fortunate in our profession.

Nationwide reach

In the last few years, your Broadcasters Foundation has dispensed over $2.9 million to 387 recipients in 33 states since it grew as a labor of love and necessity out of the original Broadcast Pioneers, founded by the legendary H.M. Kaltenborn and guided carefully over the years by Lowell Thomas, Ward Quaal, Ed McLaughlin and Jim Delmonico.

We provide emergency assistance to the less fortunate in our broadcasting family, restoring dignity and bringing life's necessities to many retired colleagues and those who have run afoul of the turbulent cyclical winds of today's uncertain economic climate.

Some had illustrious careers and did quite well until, through no fault of their own, they were overtaken in the prime of their lives by a sudden catastrophic illness for which their families were ill-prepared. Many were without health insurance or government assistance of any kind. All were hurting, several forgotten and some almost destitute.

We've assisted widows struggling to hold shattered families together following the untimely death of a spouse from a devastating disease. And, working with state associations, the Foundation was there to help fellow broadcasters and their families get back up following the devastation of natural disasters like Katrina, Ike and the California wildfires.

All this was made possible by *your* generosity. One of our recipients recently sent this note to our national headquarters in Greenwich. It should have properly gone to you and our other benefactors:

"When my family and I were really up against it after my stroke (down and out is more like it!) and then with my wife's debilitating illness ... the Foundation not only provided assistance with those monthly grants, you gave us back our dignity and something even more precious — you gave us hope ... and things are now much improved or at least manageable. God bless. Yours is a noble work."

Finally, one of our other prominent *contributors* (you know the name of this legendary broadcaster) recently e-mailed:

"Life — and our profession — has been very good to me and mine. I've taken a lot from this business. Sure, I worked hard for it, but with a little luck thrown in, I guess, I've done well. But until you got that marvelous Foundation up and running ... there was really no way to 'give back' ..."

So by now you know the story of our charitable Mission and you're also very aware of the existence of the unique Foundation you help sustain.

We're thus hopeful you will continue — or even increase — your participation in that work.

As in the past, all major Gifts to the Endowment Fund are acknowledged in our Annual Report which is widely distributed to several thousand active broadcasters all across the nation.

You have *their* thanks — and also the heartfelt gratitude of countless fellow broadcasters struggling in the heartland with illness, loneliness and misfortune.

Individual and *Corporate* contributions are fully deductible and may be made to the *Endowment Fund* of the Broadcasters Foundation of America, a certified and registered 501(c)3 Public Charity:

Please send whatever you can ... to our national office in Greenwich c/o our new President Jim Thompson.

The Broadcasters Foundation of America
Endowment Fund
Seven Lincoln Ave.
Greenwich, CT 06830
(203) 862-8577
broadcastersfoundation.org

Granlund

▶ Continued from page 44

problems from wide signal strength variations, in addition to severe changes in digital to analog ratio.

5. I have resolved these problems for many FM stations through use of a single-lobe antenna designed to minimize multipath and resulting field intensity variations. Many of these stations report a signal quality and coverage improvement similar to that of a power increase of approximately 8 dB, although no increase in average power or field intensity is observed. (Please note that FM receivers respond to minimum signal level, rather than average or predicted value.)

6. In view of the above, it is logical that a single-lobe FM antenna, such as the SWR Illumitron-HD, can resolve most FM IBOC signal and coverage problems, perhaps better than the proposed 10 dB increase in digital power level, and without the huge costs and logistics problems of the increase.

This method has additional benefits, including increased analog coverage and reduced interference to all co-channel and adjacent channel stations. (We should remember that more than half of all FM stations are analog only, and reducing interference to them is very good PR for all of us!)

The author, a former engineering executive for several broadcast owners, is a consultant in signal quality improvement and antenna system design. Clients include SWR Inc., manufacturer of the Illumitron line.

Jury

▶ Continued from page 45

variations for home audio-video receivers with built-in AM and FM connectors, miniaturized modules for delivery of broadcast audio and data services on Personal Navigation Devices (PNDs), automotive navigation systems, Personal Media Players (PMPs) and other consumer electronic platforms.

Manufacturers also continue to work on lowering costs for the automotive market.

Texas Instruments and NXP are both bringing to market their second-generation HD Radio chip set solutions for the OEM car market and will soon be joined by the first chip from ST Microelectronics. Wistron NeWeb Corp. (WNC), a low-cost module developer, announced it has developed a next-generation OEM automotive-grade HD Radio module, designed to specifically meet the automotive industry's reliability and performance standards.

These are exciting times for all involved with HD Radio technology. There is an amazing range of companies all participating in the HD Radio receiver market. This is great news for the rollout of the HD Radio system.

From North America, to Asia and through Europe, the development of HD Radio product is a 24/7 effort. Much of this activity is on the other side of the world, but it is all designed to meet the growing need of the audience here in the U.S. Each new product effort increases the choice available to consumers, and increases the potential listenership for each HD Radio station.

The author is COO of iBiquity Digital Corp.

StudioHub+ Inside

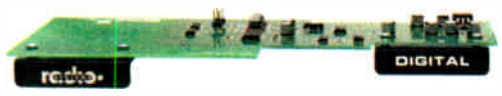
Plug and play your next installation with Radio Systems Millenium Broadcast Consoles now with StudioHub+ inside — the Broadcast Wiring Standard!

ANALOG Two inputs per channel with fully agile - mic thru line sensitivity on every input • Soft touch, LED lit ultra-wear rubber keypads • Two stereo program buses with TEL mix minus bus output • Up to four additional mix-minus outputs available • Full metering and monitor section • Up/down clock/timer with master sync capability • Complete GPI channel remote control provided for all A & B inputs • Available in 6 / 12 / 18 / 24 channel frame sizes

DIGITAL AES/EBU or analog on any input channel • Mic thru line sensitivity on every analog input • Soft touch, LED lit ultra-wear rubber keypads • Two stereo program buses with TEL mix minus bus output • Ten fully programmable mix-minus outputs — standard • All outputs provided in analog and digital simultaneously • LED VU or PPM metering and full monitor section • Up/down clock/timer with master sync capability • Complete GPI channel remote control provided for all A & B inputs • Available in 6 / 12 / 18 / 24 channel frame sizes

NETWORK Six IP audio Livewire channels with LCD selectors • Local input channels with two inputs per channel / analog or digital / mic thru line • Soft touch, LED lit ultra-wear rubber keypads • Two stereo program buses with TEL mix minus bus output • Ten fully programmable mix-minus outputs – standard • All outputs provided in analog and digital simultaneously • Full metering and monitoring • Up/down clock/timer with master sync capability • Complete GPI channel remote control provided for all A & B inputs • Available in 6 / 12 / 18 / 24 channel frame sizes

ANALOG is good. There are over 4000 analog Millenium consoles in service today and we continue to manufacture and ship analog consoles every day. That's because these boards are inexpensive, sound great (with specifications that rival and exceed many digital designs) and have enough features for many small and medium market applications. For more demanding applications, our analog consoles optionally can be equipped with additional mix-minus outputs, distributed output busses and redundant supplies making them even more capable and still a great value.



Going DIGITAL is a process. Radio Systems eliminates some of the stress with our NO CHARGE Digital upgrade program. For the life of your console we will swap any analog plug-in card for a digital one (or vice-versa) allowing you to gradually transition your studio to digital. You can even start out all analog and convert one channel at a time as digital arrives in your facility. But from day one your Millenium Digital console will out-put pristine digital audio to feed your air-chain processor and produce up to ten fully configurable mix-minus feeds.

At Radio Systems, our NETWORK is IP Audio by Livewire®. We've adopted this proven multi-channel standard from Axia® and installed it in our digital consoles. But we left local inputs as well to create the perfect hybrid of stand-alone and network capabilities. This way Millenium Network consoles easily mix local studio sources and connect to all Livewire enabled devices using standard Ethernet switches.

StudioHub+® is the glue of our entire console line. Use our award-winning CAT-5 wiring system to simply and quickly plug any source into any console channel. Or, easily configure custom talent panels and even interstudio tie line connections. And its value doesn't end after the installation is over. RJ-45 connectors allow new sources to be added at any time and makes trouble shooting easy.

Livewire is a registered trademark of TLS Corp.
StudioHub+ is a registered trademark of Radio Systems, Inc.

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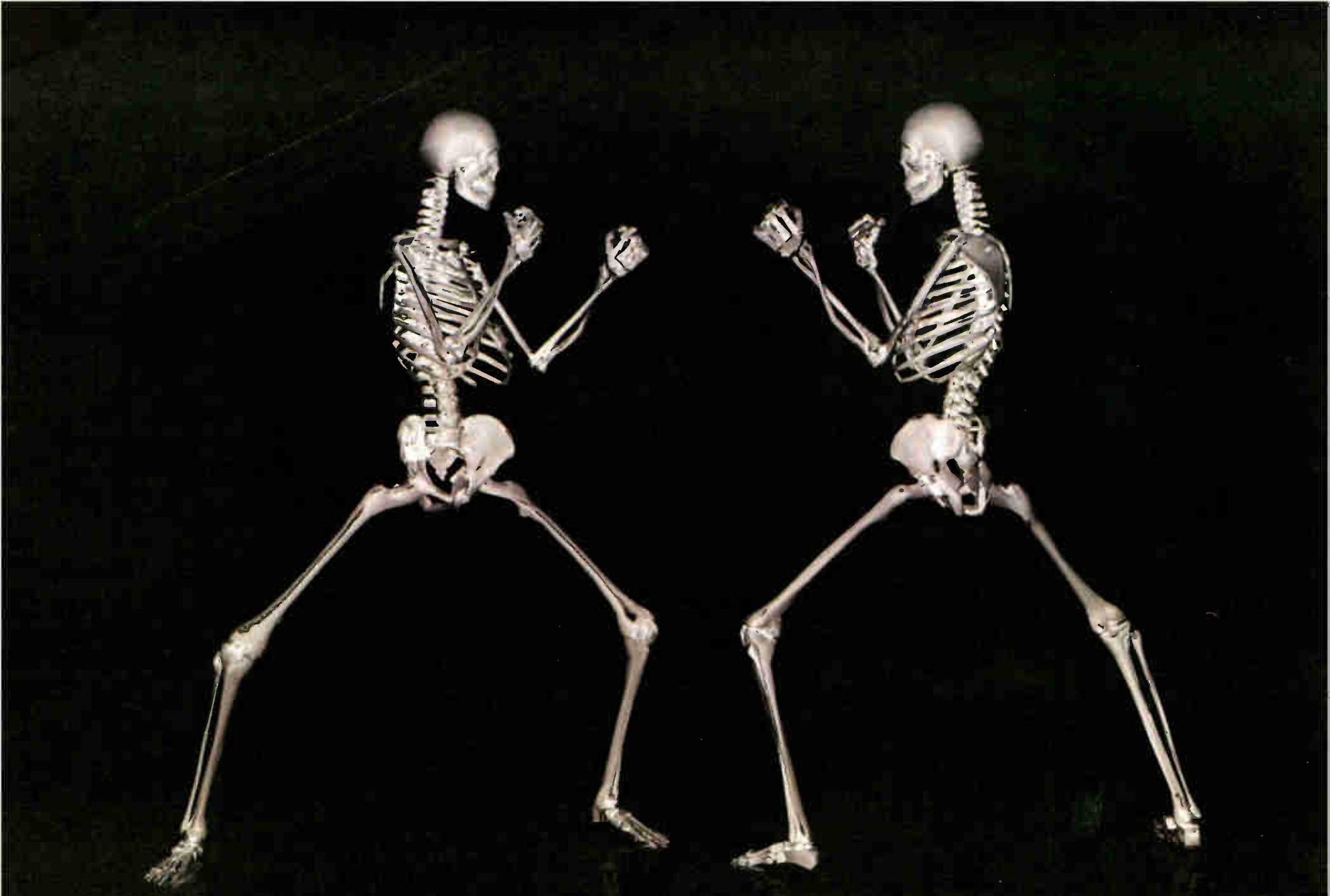

While the two usual suspects slugged it out in the loudness war, we quietly developed the ultimate weapon for the REAL challenge:

WINNING THE RATINGS WAR

Basic loudness is simply not the draw it was in the last century. Today, with so many options for audio delivery, getting and keeping listeners means you need to SOUND GREAT across all media. That's why we developed VORSIS – to deliver clean compelling audio that cuts through the muck without fatiguing those all-important ears.

With Vorsis, we rethought the whole process – developing new tools to let your station deliver the best possible sound to each and every one of those 20th century radios, not to mention the great new standard and hi-def radios being produced in THIS century.

With Vorsis, you're never stuck with your processor's signature sound. You have a full toolset to create your own magnificent sonic signature – one your listeners can key into just by scanning the dial. For the first time, you have the capabilities of bringing true fidelity to FM, AM, and HD/DAB radio.

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

WHEATSTONE

VORSIS®

Radio has evolved. Your sound should too.™

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