



RADIO WORLD

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troops are posted at Canadian Forces Base Suffield; the largest military base in Canada and home to United Kingdom troops training in live-fire exercises.

"We are the forces' radio, TV and online broadcaster for U.K. troops," said Nicky Ness, director of Forces Broadcasting & Entertainment. "We provide entertainment, information and connectivity for the British military community: not just in Britain, but wherever they happen to be in the world. We also champion the armed forces community to the world at large because we believe that fundamentally supports their morale and welfare as well."

(continued on page 4)

Lt. Norman Spires checks the equipment in the Army Broadcasting Service station in Milan, 1945.



Forces Broadcast Collection



BFBS Brize Norton presenter/reporter Alex Gill interviews RAF personnel at RAF Brize Norton.

Crown Copyright

BY JAMES CARELESS

SUFFIELD, ALBERTA — Drive to Suffield — just east of where the Canadian Rocky Mountains rise up — tune the car radio to CKBF on 104.1 FM, and you can enjoy the latest in contemporary

British pop radio (music and witty talk) with a military twist. This is because you're tuned into BFBS [British Forces Broadcasting Service] Canada, one of the radio stations operated by Britain's Forces Network to serve U.K. troops anywhere in the world. In this case, the



B3, the Mobile Broadcasting Unit in Italy, on the way to Milan.

Forces Broadcast Collection

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CONTENT

Managing Director, Content Paul J. McLane,
paul.mclane@futurenet.com, 703-852-4628

Senior Content Producer — Technology Brett Moss, brett.moss@futurenet.com

Content Manager Emily M. Reigart, emily.reigart@futurenet.com

Technical Advisors Thomas R. McGinley, Doug Irwin

Technical Editor, RWEE W.C. "Cris" Alexander

Content Director — International Marguerite Clark

Contributors: Susan Ashworth, Dave Beasing, John Bisset, James Careless, Ken Deutsch, Mark Durenberger, Charles Fitch, Travis Gilmour, Donna Halper, Craig Johnston, Alan Jurison, Paul Kaminski, John Kean, Peter King, Larry Langford, Mark Lapidus, Jim Peck, Mark Persons, Stephen M. Poole, James O'Neal, Rich Rarey, Jeremy Ruck, John Schneider, Randy Stine, Jennifer Waits, Tom Vernon

Production Manager Caroline Freeland

Managing Design Director Nicole Cobban

Senior Design Director Karen Lee

ADVERTISING SALES

VP/Media Technology Group
Carmel King, carmel.king@futurenet.com, 703-852-4602

Publisher, Radio World International
Raffaella Calabrese, raffaella.calabrese@futurenet.com, +39-320-891-1938

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MANAGEMENT

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FUTURE US, INC.

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Engineering Careers on TAP

With help from NABEF and iHeartMedia, tech apprentice has a taste of the business

CAREERS

BY RACHEL TORRES

Readers of Radio World, thank you for stopping by. My name is Rachel Torres, and I am a participant in the NAB Education Foundation's 2018 Technology Apprenticeship Program.

A native of Kernersville, N.C., I started attending Forsyth Technical Community College in Winston-Salem in August 2016. I was fresh out of high school and had been taking radio broadcasting courses for the last two years at the Career Center, an extension of our county's public high school system.

My heart was set on production, and in my second-to-last-semester of college, I completed a production internship at a local radio station. During that time it dawned on me that while I loved production, I couldn't see myself doing it for the rest of my life. Something had changed.

NEW OPPORTUNITY

I had always been more interested in the science behind broadcasting. I desired a deeper understanding of the industry. That curiosity led me to enter "Broadcast Engineering Programs" into a search engine one day during class, though I figured I was grasping at straws. I had paid out of pocket for college and had managed to accumulate no debt along the way — I knew if I went back to school that would change, and I simply didn't have the time.

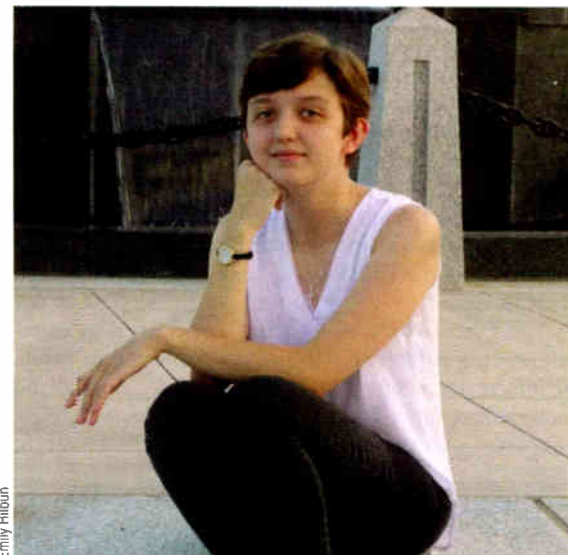
Curiosity led me to enter "Broadcast Engineering Programs" into a search engine one day during class, though I figured I was grasping at straws.

What appeared in my search results, however, said otherwise. I discovered the NABEF's Technology Apprenticeship Program, and I applied as soon as the application period opened, left afterwards with a four-month waiting period.

During that time, without knowing if I'd get into the TAP Program, I began making plans for a post-graduation career. I applied to be a P.S. Communications Operator for the city, another career path that had been on my heart for some time. During that process, however, something interesting happened.

At the end of February, I received an email: I had been accepted into the program. My course was once again diverted, but I jumped on the opportunity.

TAP kicked off in April at the NAB Technology



Emily Hillburn

Rachel Torres

Show in Las Vegas. Eight other participants and I were flown out from different corners of the United States to meet each other there for the first time. We spent a week together, learning from industry experts, getting to experience the latest innovations in broadcast technology first hand, and preparing for our final project, a live webcast we will complete in September at NAB headquarters in Washington, D.C.

In the following months, each of us were placed at a local broadcast station near our hometown. This was the beginning of our two-month paid apprenticeship in June and July. The experience allows participants to shadow supervising engineers and learn the basics of the industry in a hands-on way.

The Society of Broadcast Engineers also works with NABEF's TAP, giving participants access to study/training materials by which they can acquire their certification as a Broadcast Technologist.

As I complete my broadcast engineering apprenticeship at iHeartMedia in Greensboro, N.C., I will share with you insights from my experience, as well as how the program has helped me network, build on my skills and view my career goals with more clarity.

My apprenticeship has dropped me headfirst into the middle of the chaotic sea that is broadcast engineering, and I've loved every minute of it. I will always want to learn more. Whether or not I end up pursuing engineering as a full-time career is yet to be determined. But the skills that I have and will continue to acquire in this program are invaluable and will serve me wherever I go from here.

I hope to see you along the way. Thank you for reading, and I look forward to sharing more with you about my experience.

Next time: Impressions on the job.

Write to RW
Email radioworld@futurenet.com with "Letter to the Editor" in the subject field. Please include issue date.

BFBS

(continued from page 1)

WHAT'S ON

The radio/online content produced by the Forces Network is a mix of live local content produced at its terrestrial stations, plus network programming drawn from the BBC and commercial U.K. stations. It can be heard in the U.K. on AM/FM and DAB+; on FM in locations such as Brunei, Canada, Cyprus, the Falkland Islands, Germany, Gibraltar and Northern Ireland; on satellite in the U.K.; via the BFBS Radio app; and online through www.forces.net.

The Forces Network's content is designed to entertain the troops and help them stay connected to home; to inform them on military-centric issues through an independent news service, and to provide the troops with access to services locally through each station. In

listening to BFBS Canada, U.K. troops posted at CFB Suffield have access to a community broadcaster who speaks their language, in an accent that they recognize as being from home.

"We offer three services," said Ness. "Our main service, Forces Radio BFBS, provides popular music and news produced locally; with additional programming sent over the internet via file transfer protocol by land-line or satellite. We also offer BFBS Radio 2 for music, sport and spoken word content drawn from the BBC and commercial U.K. radio stations. Finally, Gurkha Radio offers Nepali language programs to our Gurkha troops, who remain an important part of the UK Armed Forces." The Forces Network website (www.forces.net) hosts these channels, plus a wide range of content that is available on demand.

Forces Broadcast Collection



Forces Radio BFBS's Fiona Weir and Rachel Cochrane aboard a Chinook helicopter to MOB Price in Afghanistan during Operation Herrick.



BFBS Canada Team Melissa Davies, Frank McCarthy and Stephanie Strydom (from left).

Today's Forces Radio BFBS is as polished as anything you can hear on mainstream U.K. radio. (In fact, BFBS Canada is easily as professionally produced as the commercial Canadian stations serving nearby Medicine Hat; maybe more so.)

However, the service wasn't so slick when it began testing as an experimental service in recently liberated Algeria in 1943. Spearheaded by some "switched-on colonels" who understood how central radio had become to British culture, said Ness, "British Forces Experimental Algiers" signed on Jan. 1, 1944 broadcasting Vera Lynn's iconic



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Major Peter Haigh reading the news for **FBS Jerusalem** in 1946.

“Lili Marlene” on a salvaged German AM transmitter.

“The whole thing was what we would call a ‘Heath Robinson contraption’ [Robinson being a cartoonist who drew absurdly whimsical made of odds-and-ends that somehow functioned] put together of paper clips, strands of wire, and string that saw the transmitter housed in the pigeon loft, and the ground wire connected to a drain pipe.” Ness said. “The loft was the highest point in the area, and connected to its makeshift antenna, gave our troops a real-time link to home when they needed it most.”

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Photos (3): Forces Broadcast Collection



In 1946, Sgt. Peter Buckle operates the continuity desk in Haifa, located in what was then known as Palestine.



Sgt. Tom Moffatt reading the sports news in Cairo in 1949.

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Radio Central: CHRS Asks Big Questions

California Historical Radio Society considers how to protect the past while appealing to new audiences

RADIOHISTORY

BY MIKE ADAMS

The author is professor emeritus at San Jose State University and the board chair of the California Historical Radio Society.

The California Historical Radio Society, CHRS, is building a radio history museum on Alameda Island in the San Francisco Bay.

For 10 years, our radio museum was in the abandoned studios and offices of Berkeley radio station KRE. Under our original handshake agreement, we were permitted to use the space rent-free with the option to purchase. But, alas, right in the middle of our 2015 fund drive, we were informed that someone else would buy the building including the two licensed AM transmitters operating there, paying an amount far above our bid. Within a month we were shown the door.

Immediately, CHRS President Steve Kushman of KGO(TV) contacted our major donors and asked them to remain committed while we searched for a new home. Within a frantic few months we were able to locate and buy for \$1 million the 120-year-old Pacific Telephone building in Alameda.

We are now creating a radio history experience, slowly, carefully, one exhibit at a time. We are calling it "Radio Central," because it was once the central phone exchange, and it is on Central Ave.

PLANS

CHRS is a California non-profit 501(c)(3) corporation created in 1974 to promote the research, preservation, publication and presentation of early radio and broadcasting.

In addition to the society's collections of the histories of Bay Area radio stations and personalities, we have thousands of radios and other communications devices of the 20th century, from wireless to radio to television, from crystal to vacuum tube to transistor, from headphones to loudspeakers. For radio scholars we have a complete communications library containing the histories of radio technology and programming as it was created for amateur and citizen audiences.

In addition to actual devices, we have
(continued on page 6)



This is the Pacific Telephone exchange as it was constructed in 1900.

BFBS

(continued from page 5)

CONSTANT MISSION

After the Nazis were defeated, the U.K. established British Forces Network Hamburg; a source of British content for Allied occupation troops. As the world situation changed and British Forces were deployed to conflict zones such as Cyprus, Nairobi, Aden (Yemen), Singapore, Brunei and the Falkland Islands, BFBS followed with radio stations that were either deployed on site using mobile equipment, or in local facilities either existing or purpose-built. In the same vein, as hot spots cooled, BFBS pulled out; such as happened in 1994 when BFBS Berlin closed down following German reunification and withdrawal of U.K. soldiers.

During this time, BFBS engineers improvised as necessary. This includes employing cactus needles to play 78 rpm records when steel needles ran out in Benghazi, and rebuilding their station in 1951 after a herd of elephants trampled the first one into the dust. Interesting fact, apparently cactus needles can only be used for one play each before wearing out.

In doing so, Forces Radio BFBS has stayed current with advances in broadcasting technology. This is why the service is now broadcast on DAB+ throughout the U.K. and is pioneering audio services that can be accessed by smart speakers such as Amazon Alexa and Google Home.

"We want to be wherever our listeners are," said Ness. "When 5G comes online and streaming audio to cars becomes more practical, we'll be there too." At present, Ness estimates Forces Radio BFBS' global listenership "to be in the millions"; comprised of the British military, their families, and wider communities — nationally and internationally — with an interest in the forces.



Forces Radio BFBS Presenter Gini Carlin's OB from Kabul in Helmand Province.

Although Forces Radio BFBS' distribution has changed profoundly since its initial pigeon loft station in 1943, the service's mission has not: To serve the British Armed Forces with the most entertaining, informative, and morale-building content possible, no matter where their audience is; 365 days a year.

"All of us are here to do our very best for our listeners, and based on the surveys we regularly conduct, our troops are very satisfied with what they hear on Forces Radio BFBS," said Ness. "At the end of the day, there can be no better heartfelt thought for a broadcaster than that we are serving an audience who enjoy and value what we do."

James Careless reports on the industry for Radio World from Ottawa, Ontario.

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CHRS

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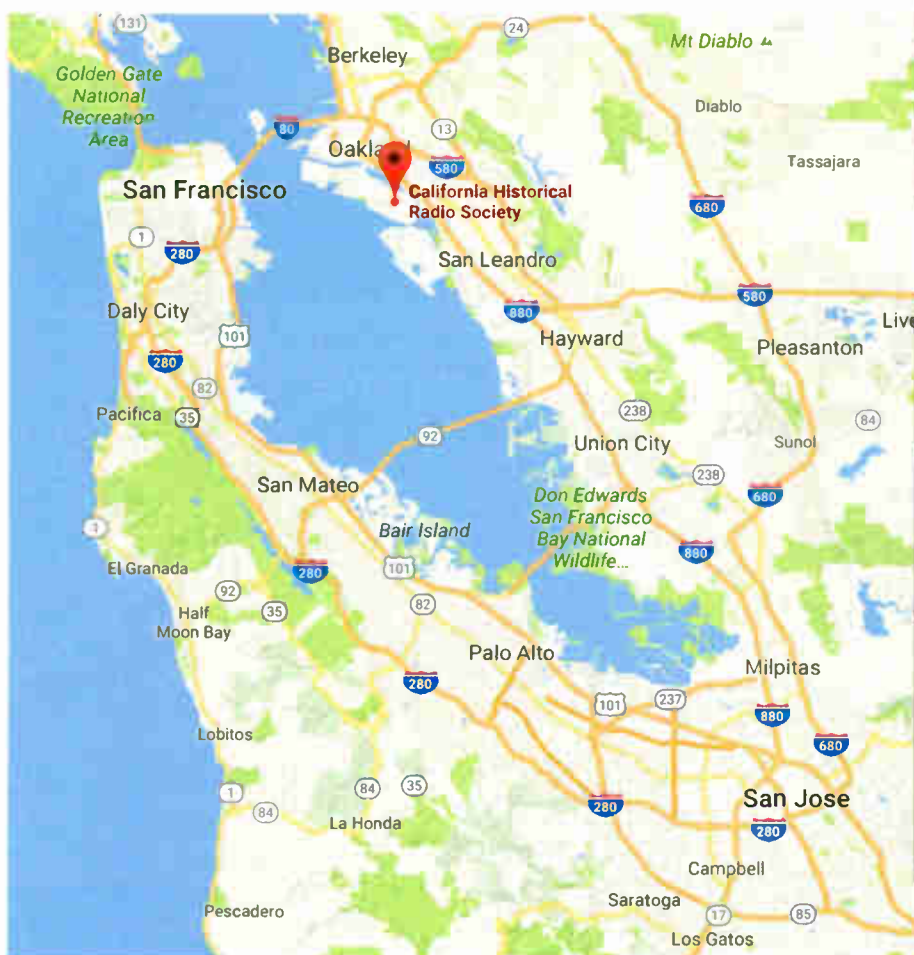
taken over the mission and archives of organizations that were “virtual,” that is, they resided in someone’s home or on the web.

The most important of these is the Bay Area Radio Museum and Broadcasting Hall of Fame, a salute to the legendary radio personalities, stations and programming in the form of air checks, photos and stories. It’s soon

a radio collecting hobby club. But now with the responsibility of museum ownership, we must broaden our audience.

Our original membership is mostly over 65, while the museum audience we seek is from high school to college to those of millennial age and beyond. As a university professor I would ask students in my communications history class this question: How many of you have radios? Several decades ago all would raise their hands in the affirma-

(continued on page 10)



The California Historical Radio Society museum is on historic Alameda Island in the San Francisco Bay.

to be a “real” room in our building. We have online the archives of The Society of Wireless Pioneers ([sowp.org](#)), and we hold the FCC-licensed amateur station W6CF. In our shop members repair radios for auction and display, and it is in this space that we teach classes in radio repair.

When we are fully built, we will have a complete radio museum featuring artifacts from early wireless to the present day, all told as stories and much of it interactive. We will have a small theatre for live presentations and a broadcast control room and studio as it was in the early years.

CHALLENGES BEFORE US

OK, we have lots of equipment. But what is our purpose, our reason to exist? CHRS began over 40 years ago as



Radio fans line up for Radio Day 2018. The original façade still exists behind the ugly concrete front. We plan to restore it back to how it looked in 1900.




Our annual Radio Day by the Bay features local broadcasters. Master of Ceremonies Stan Bunger of KCBS Radio, left, and auctioneer Dan Ashley of KGO(TV) are shown at Radio Day in July 2018.



Music from the past with Don Neeley's sextet.

More than Just an IP Codec

Introducing Record and Playback on the ViA



The screenshot shows the ViA Media application interface. At the top, it displays the time 'Jul 3 3:12 am' and signal strength indicators for 4G and Wi-Fi. The main menu includes 'Record', 'Manage Recordings', and 'Record Mix'. A track titled 'Record0042.mp3' is shown with a duration of '00:01:29' and 'Space Remaining: 14.6 GiB'. A 'Switch to Playback' button is visible. Below the screenshot is a circular graphic divided into three segments: a green top segment labeled 'Stream', a red bottom-left segment labeled 'Rec', and a blue bottom-right segment labeled 'Play'. A central icon of a music note with a square base is positioned in the center of the circle.

Record

- Select & record any input, return audio or file playback
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- Record to SD card
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Stream

Playback

- Create playlists of local & imported recordings
- Route file playback to any output or record media
- Offline Cue monitoring

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CHRS

(continued from page 8)

tive. Now when I ask the question only one or two in a class of 100 admit to owning a radio.

This is my cue to ask about their car radio, and to start a discussion about defining radio. I'll admit I listen to Bay Area radio on a smartphone app and I am a longtime subscriber to SiriusXM. It's all radio. How can our museum reach those who have never owned, never tuned a radio?

How can we educate and excite new audiences about the cultural as well as the technical importance of radio? How do we communicate the meaning of radio to a very diverse Bay Area population, now one-third white, one-third Hispanic, one-third Asian? How can we remain viable long after our older hobbyist base ages out? How can we explain in a compelling way how wireless 100 years ago relates to the wireless device currently in the hand of every man, woman and child?

Even more important, how can we serve the Bay Area broadcast community, those professionals who were the announcers, engineers and managers of the formative years of radio? We have their transmitters, control boards and microphones. We want those broadcasters and their listening audiences as museum patrons.

BY THE BAY

Our major yearly event is Radio Day by the Bay; it features an auction of vintage radios and the recreation of a radio play featuring local radio talent as the actors.

This year we presented the San Francisco-themed "Pat Novak for Hire." Our auctioneers are local broadcasters, this year KGO-7 anchor Dan Ashley. The new inductees into the Bay Area Radio Hall of Fame were introduced by author and San Francisco Chronicle radio columnist Ben Fong-Torres and Kim Wonderly of KCBS Radio. Our long time master of ceremonies is KCBS morning news personality Stan Bunger. Radio Day is successful as a fundraising event, and it introduces a citizen audience to the museum.

The California Historical Radio Society remains committed to providing a forum for exchanging ideas, publish-

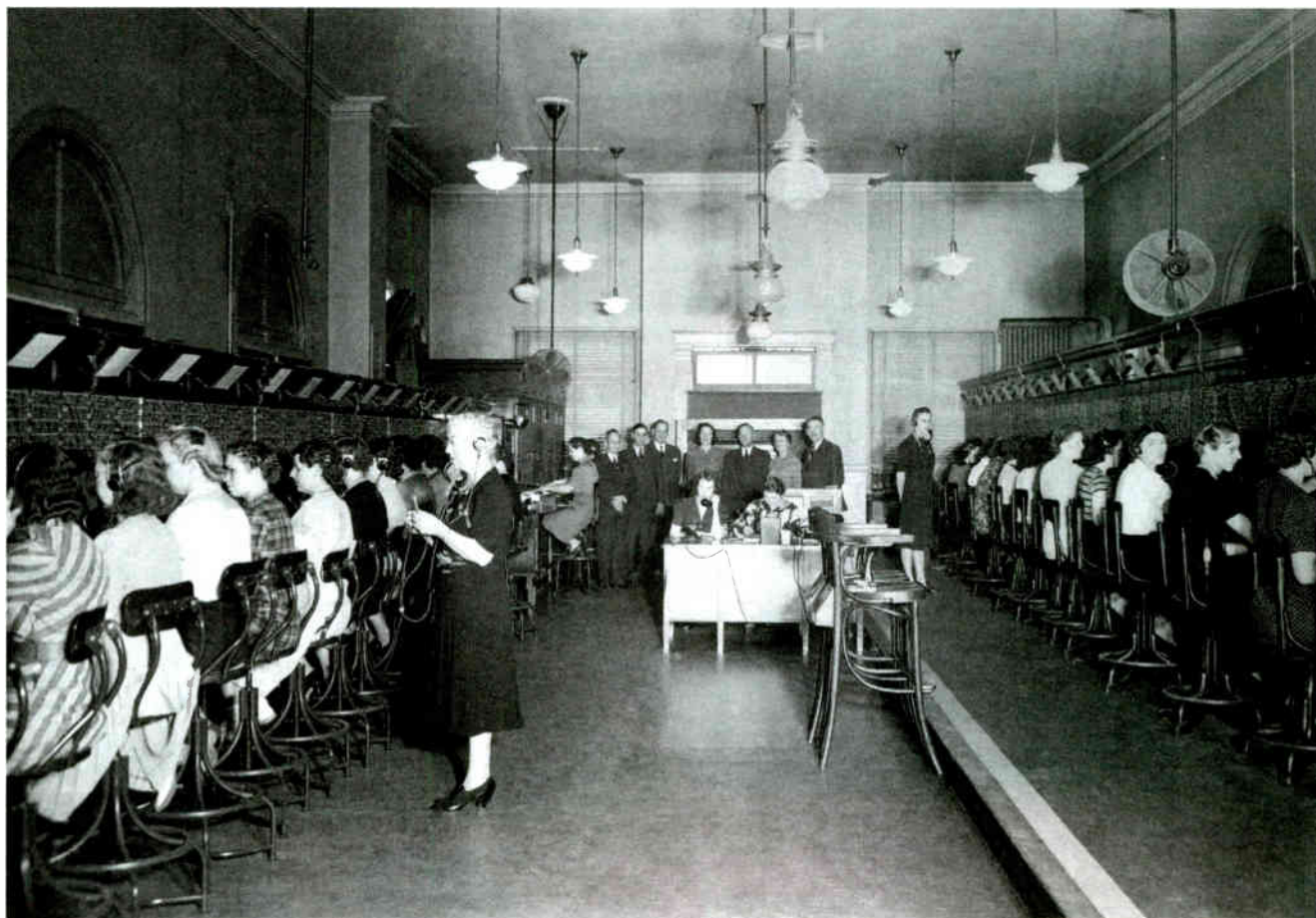
ing stories and displaying the artifacts of the history of radio and broadcasting. But we must make our knowledge and our artifacts relevant to the new audiences we seek to serve.

We are asking big questions: How do we attract to our museum the broadcast-

ers that we honor? The Bay Area SBE chapter holds their annual meeting in our museum, but announcers seem less interested. What do we do to attract them? How do we reach those of millennial age? How do we move from a static radio hardware museum to one

that speaks to the cultural importance of communications technology and programming? How do we pay for it, and how do we ensure our viability in the future? These are our challenges.

For more information visit www.californiahistoricalradio.com.



The interior in 1900, seen as an operating phone exchange. After that went out of business, the building became a church and, later, a private school.



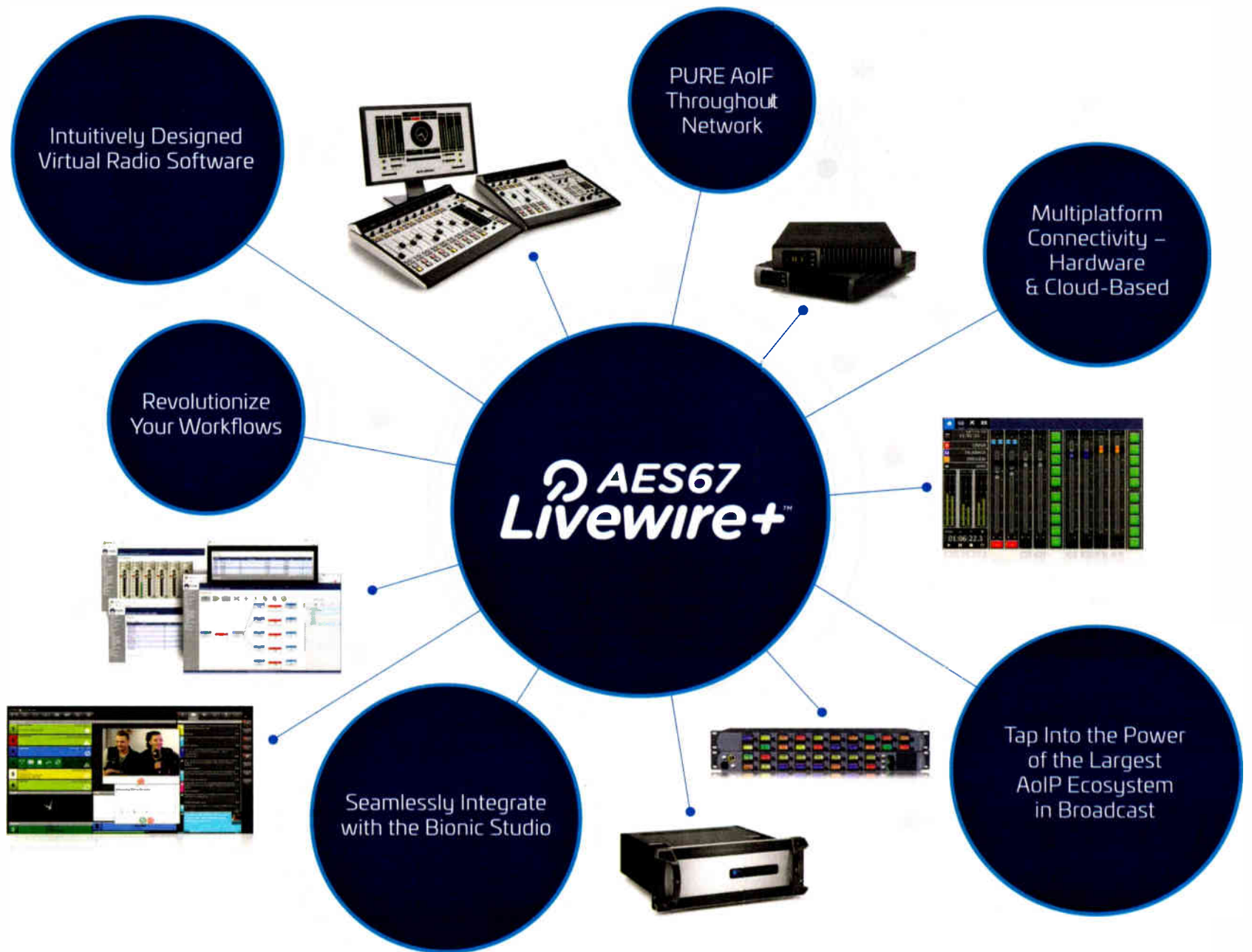
Today, the same space is filled with radios in storage. We will create our museum, studio and control room in this space.

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It Started With a Tape Recorder

And other engineers share bird deterrent and flashlight tips

WORKBENCH

by John Bisset

Email Workbench tips to johnpbisset@gmail.com

I'm getting a lot of neat stories about what motivated readers to choose a career in broadcasting.

Curt Yengst, CSRE, engineer for WAWZF(M) in Zarephath, N.J., was motivated by a tape recorder. When he was about seven or eight years old and in the second grade in the mid-1970s, one of his friends had a gadget that fascinated Curt: a tape recorder.

Just the fact that his friend had his own tape recorder was pretty remarkable to Curt. By today's standards, the thing would easily be regarded as primitive, but for a second-grader of the time, it was cutting-edge technology. It was a Panasonic, and it had a shiny silver and black case. He thought it was the coolest thing that his friend could record anything and play it back at will.

To this day, Curt still enjoys setting up a mic or two, recording, and then hitting rewind to hear what he recorded.

Curt thought, "I've got to get me one of these!" then realized, "There's no way my parents will waste good money on something like that."

Sometime after, Curt's mother dragged him to the department store for another painfully boring shopping excursion. While his mother did her shopping, Curt wandered over to the electronics department.

There in a glass display case, he saw a veritable cornucopia of portable tape recorders, including the same exact model his friend had. At the time, Curt recalls it cost about \$30, which to an eight-year-old in 1977 was roughly equivalent to the national debt.

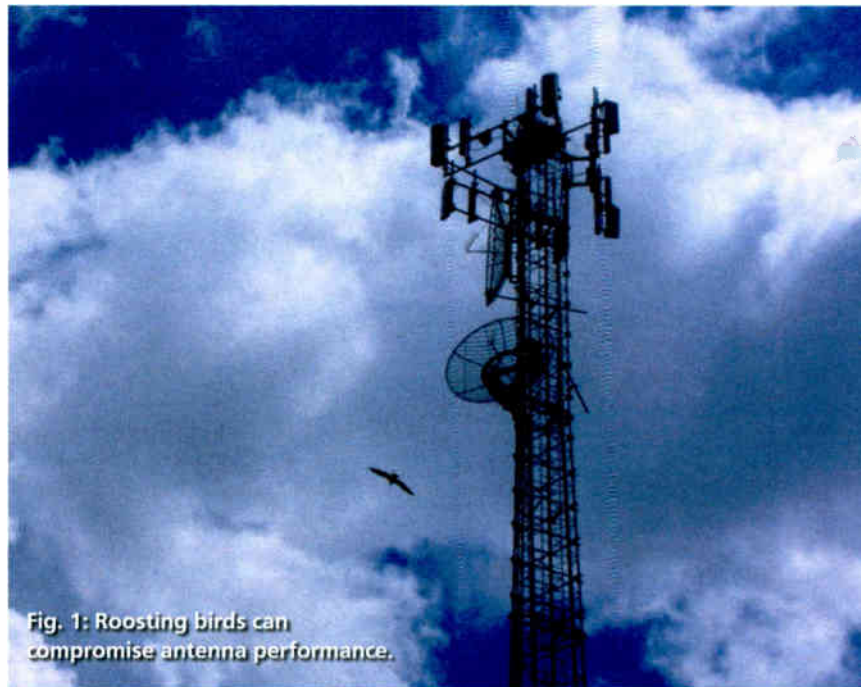


Fig. 1: Roosting birds can compromise antenna performance.

On the other end of the display, the cheapest one in the case was a small green plastic tape recorder. It cost about \$14. Even that was well out of Curt's price range. Curt knew his parents weren't going to go for it, so he decided then and there he would simply have to save up for it.

Curt remembers the night he counted his savings and discovered that he had finally saved enough to buy the tape recorder. There followed days of incessant badgering as he tried to get his mother to return to the store.

Finally, the blessed day arrived. Curt was about to part with every nickel he had to his name. He dragged his mother to the display case and tapped the glass between himself and his prize.

His mother looked at it with that look mothers get. You know the look. "Is that the one you want?"

"Uhh... yeah."

"Are you sure?"

Curt thought, was she serious? Where had she been for the last several months? Curt was practically licking the glass, and she's asking him if he's

sure it's what he wants? The pregnant pause left him surprisingly hesitant. Mothers have that power. They can ask the simplest question and have you doing some serious soul searching over what should be a relatively simple thing. After all, it was only a tape recorder.

She then asked, "Which one does your friend have?" Curt pointed to the black and silver beauty at the other end of the case. "Well, what's the matter with that one?" she persisted. Curt's reaction was: Duh! It only costs way more than what he had. Curt replied, "I only have enough for this one." What happened next left him speechless.

"Give us that one," his mother said to the clerk, who was waiting patiently behind the case the whole time.

She was pointing to the black and silver beauty! Before Curt could react, his mom said, "Give me the money you have, and I'll take care of the rest." She took her wallet out, paid for the recorder, and even bought Curt a package of blank tapes!

Curt says he would bet a lot more than \$30 that his mother had no idea that day where her "investment" would lead. That day began the journey of a lifetime, one Curt's still on, and enjoying every minute of it.

That tape recorder is long gone, and others have taken its place, and have been replaced themselves; but he still remembers the feeling of recording anything that made noise. To this day, Curt still enjoys setting up a mic or two, recording, and then hitting rewind to

hear what he captured. You're never entirely sure what you're going to get, but when it works out, it's magic.

Of course, nowadays, it's all digital. The "tape" is now a string of ones and zeroes, but the magic is still there. Curt ends his story by thanking his mom for the many years of magic the recorder provided, and for always being there.

In previous columns, we've promoted www.bird-x.com, which provides polycarbonate spikes that can be affixed to STL antenna dipoles to deter osprey or other roosting birds, as pictured in Fig. 1.

Bird Deterrent Technologies (www.bdtllc.com) has a different approach. Their Vulture Decoy provides almost instantaneous results, the company says. Birds get agitated and confused and then migrate to another property that presents a less threatening sight.

After hours of in-field, on-site evaluations, Bird Deterrent Technologies says its means tested and deployed the most realistic Vulture Bird Deterrent available.

Birds do not and will not congregate in an area where one of their own has been injured or killed. To an approaching bird, the decoy looks life-like (or lifeless), often creating a confused and agitated state. While sounding simplistic, these emotions are transferred bird-to-bird generating confusion among the approaching flock.

How can broadcasters use this device? The Vulture Bird Deterrent can be hung from a broadcast tower.

An article authored by the United States Department of Agriculture's Animal and Plant Health Inspection Service (and highlighted on the company's website) noted that suspended vulture carcasses provide a highly efficient method of controlling roosting bird activity on or around towers. Read it online at <https://tinyurl.com/yaou2y2e>.

Bird Deterrent Technologies' method is a "simplistic, yet humane approach to deterring nuisance birds," according to the company's website (<http://www.bdtllc.com/about>). They note that towers that are free of birds are not only safer to service, but have a longer in-service life as a result of being free from acidic bird droppings, the company says.

Dale McCubbins is the production director for Christian Family Radio stations, headquartered in Bowling Green, Ky. Dale adds a comment to the June 20 Workbench discussion regarding flashlights.

Something Dale uses in the basement

(continued on page 14)

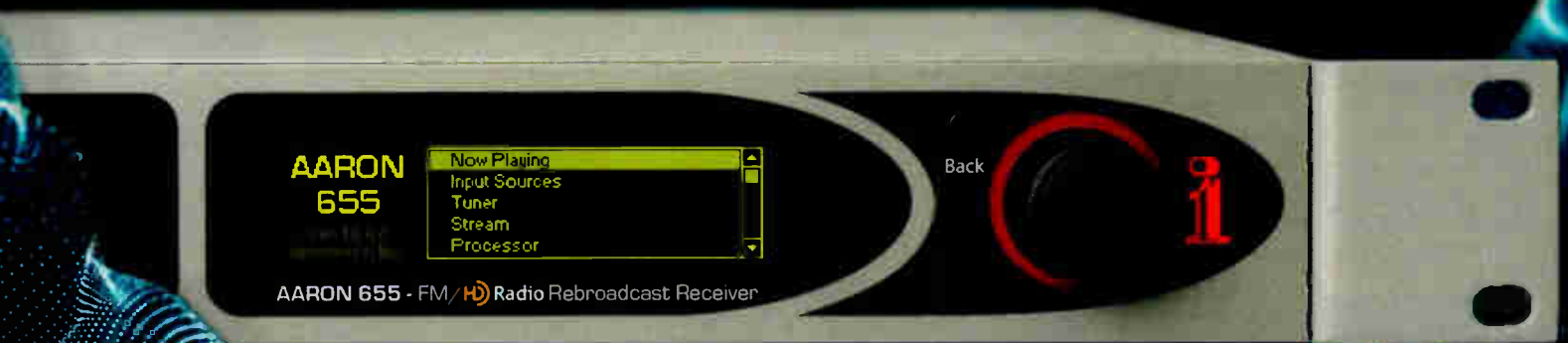
Nearly 50% of new vehicles sold will ship with HD Radio technology



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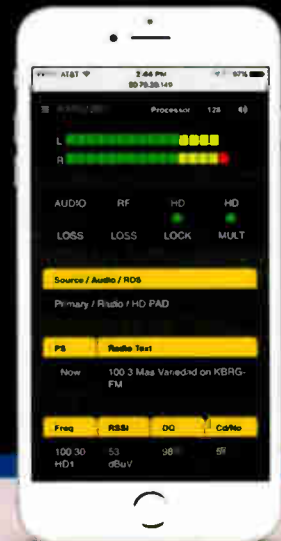
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WORKBENCH*(continued from page 12)*

of the radio station is a COB-style “light switch” flashlight. Sold under several brand names, these compact flashlights combine batteries and bright LEDs in a light-switch type enclosure. I found one such model at Walgreens, and it’s shown in Fig. 2.

Rather than a sliding brightness switch, Dale’s version employs a “light switch” mounted on the face. Depending on the model, the flashlight can provide from 100 to 200 lumens. These are semi-

portable — they have a magnet, hook-and-loop fastener or a screw-slot for hanging the light from a screw or hook.

In the basement of Ryan’s station, HVAC ductwork limits the light of the standard light sockets. Using the built-in magnet, Ryan attaches the lights directly to the HVAC ductwork.

Their portability makes these lights just as useful in the tool box as mounted on a wall. Ryan has even used these LED lamps at concert remotes after dark.

Although the product is available at hardware stores such as Ace, as well as

big box stores, you can find these flashlights on Amazon. Enter “Jollytool” in the Amazon search field.

Contribute to Workbench. You’ll help fellow engineers and qualify for SBE recertification credit. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com. Fax to (603) 472-4944.

Author John Bisset has spent 48 years in the broadcasting industry and is still learning. He handles western US Radio Sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE’s Educator of the Year Award.



Fig. 2: One version of a portable flashlight with magnetic mount.

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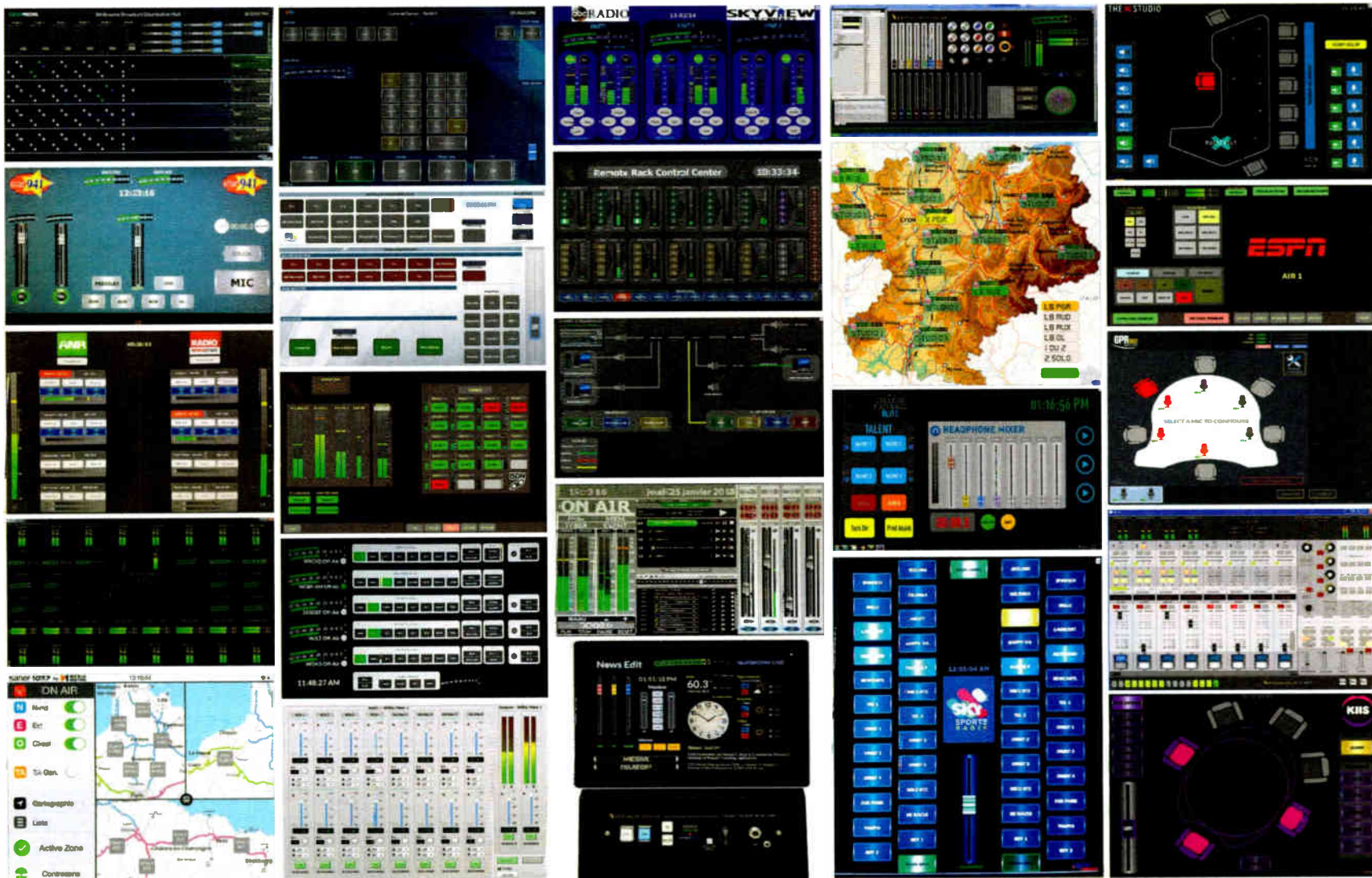
Kavi Halemane

iHeartMedia

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WHEATNET-IP INTELLIGENT NETWORK

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It's new equipment season again! Radio World's "Summer of Products" feature is all about new gear that has come onto the market in recent months, especially during spring convention season. Over the last few issues we have featured equipment that caught our eye.

New Headphones From Halter Technical



Halter Technical's HTSM1 Scene Monitor headphones are designed "fill the gap in the market for an inexpensive, quality headphone, the Scene Monitor is comfortable enough for producers, directors, script supervisors, loggers and editors to wear for an entire workday without fatigue."

Each set has both switchable silicone and leather earpads. The connecting cable is three feet long and straight with a 5.3 mm-1/8-inch connector. The drivers are 40 mm and impedance a stiff 32 ohms.

Scene Monitor is also available in 10-packs for larger staffs.

Info: www.haltertechnical.com



Radial Ships Catapult Mini TX and RX IP Network Modules

Radial Engineering is shipping its Catapult Mini TX and RX, new additions to its modular Catapult IP snake system.

The original Catapult is a four-channel audio snake for sending analog and AES digital audio signals over Cat-5 cable. Radial introduced the system in August 2016.

Building on that concept, the Catapult Mini performs the same function, with the Catapult Mini TX (transmitter) and RX (receiver) both featuring a compact steel chassis with a hardwired fan-out to four XLR connectors.

The result allows users to send balanced analog audio between any two destinations reportedly without signal loss or degradation. Many buildings are already prewired for Cat-5, allowing Catapult Minis to transmit audio between distant rooms without the need to install or supply new cabling.

All of the Radial Catapult modules are compatible with each other, and are sold individually, providing the option to mix and match as needed.

The Catapult Mini TX and RX, available for \$89.99, can be used together as a pair to create a compact four-channel audio snake, or they can be matched with other Catapult modules that include splitting capabilities or transformer isolation.

Info: www.radialeng.com



Magix Revamps Music Maker

In what it calls the "most revolutionary feature update since its first release 23 years ago," software maker Magix has released a new version of its Music Maker music creation software program for Windows.

Tops on the list of refurbishment is the power plant under the hood, the 64-bit Hybrid Audio Engine from stablemate Samplitude.

Music Maker now supports CPU multicore processing for improved editing and audio processing. In addition multiple plug-in packages have been brought in — including Ozone 8 Elements from iZotope. Music Maker also packs in hundreds of new loops and effects packages along with new onboard instruments (from strings to keys to percussion and horns).

Magix offers a free version featuring the basics (along with hundreds of loops and tools). Prices: Music Maker Plus Edition: \$59.99; Music Maker Premium Edition: \$129.99.

Info: www.magix.com



Henry Engineering Fires Up SportsCaster

Henry Engineering has developed what looks to be a handy rackmountable program audio communications control unit, the SportsCaster.

According to the company, the SportsCaster can manage announcers' mics, control and distribute headphone audio for talent, producer and camera operators and also provide an intercom for back channel communication between crew.

SportsCaster has controls for three announcers, a field reporter, two auxiliaries (e.g. a crowd mic, PA announcer, etc.), dedicated headphone outputs for the announcers, a field reporter, camera operators and producer and main program output. SportsCaster is optimized to work with Henry's Sports Pod announcer interface. In addition there are talkback and cue systems for the crew.

The company says, "SportsCaster is a compact 1 RU unit, and can be installed in a few minutes using standard cabling. It eliminates the need for multiple mixers, headphone amps, distribution systems and complicated wiring."

It is available now for \$1,295.

Info: www.henryeng.com





WHEATNET-IP INTELLIGENT NETWORK

The Future Can Bring Anything



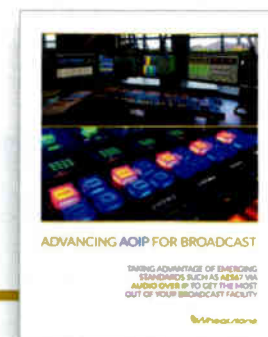
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Sennheiser Memory Mic Aimed at Mobile Journalists

Microphone and headphones specialist Sennheiser will debut a wireless designed for use by mobile journalists with their smartphones.

The Memory Mic is placed on clothing. It features a condenser capsule with an omnidirectional pattern. It is powered by a rechargeable lithium polymer battery.



Tobias von Allwoerden, senior product manager, Professional Audio, Sennheiser, said, "The benefits for the mobile journalist include audio pick-up in broadcast quality via the free Sennheiser app, one-touch synchronization of audio and video via Bluetooth, no issues at all with range, up to four hours of operating time and convenient recharging via USB."

The free app is available for Android and Apple. It ships with a USB recharging cable.

Info: www.sennheiser.com

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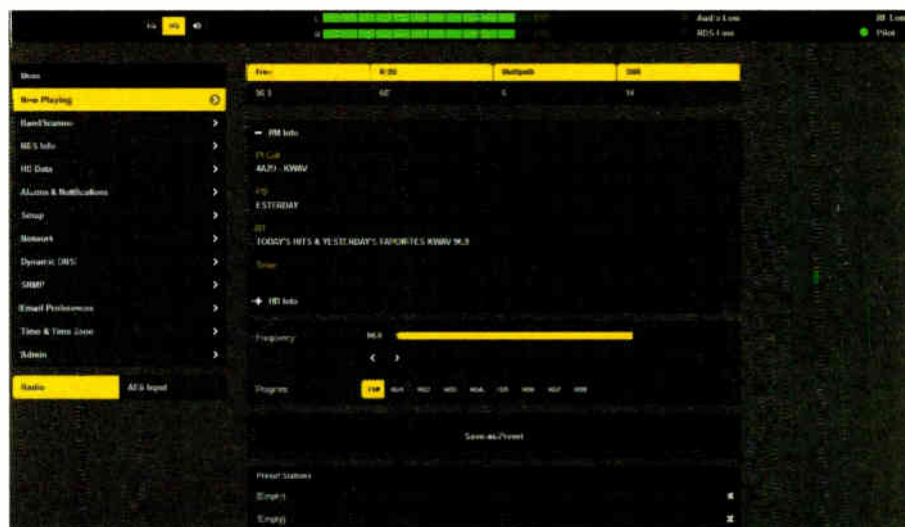
Inovonics Releases Listener Experience Update for INomini 638

Inovonics released a free firmware update that adds "Listener Experience" to its INomini 638 HD SiteStreamer, which enables users to monitor up to 30 sources of FM and HD programming over the Internet.

According to a company announcement, the new Listener Experience feature enables "users to remotely view on a single screen all of the FM and HD-Radio Channels 1-8 from channel presets on the unit" via the 638's web interface.

Inovonics says users can now select and view info from the FM channel and the HD-Radio channels that are being transmitted on one screen. This information includes call letters, RDS messaging, artist, song title, album and genre. This is in addition to remote listening via a live stream of the station.

Info: www.inovonicsbroadcast.com



WorldCast Develops New RDS Encoder

WorldCast's Audemat marque has a new RDS encoder called, simply, Audemat RDS Encoder.

Besides the expected RDS/RDBS tools (e.g. artist name, song titles, traffic

message, EAS, etc.), the encoder adds an MPX-over-AES digital audio-function. Furthermore, it can insert the encoding directly into the digital chain. In addition it is compatible with RDS2 standards.

As a WorldCast product, it is conversant with the company's ScriptEasy Apps and Manager for programming, control and management. It is fully networkable and remote controllable.

There's also an onboard tuner for immediate monitoring.

Info: www.worldcastsystems.com



Sonnet Technologies Has New Thunderbolt Peripherals

Computer peripheral specialist Sonnet Technologies is offering several new Thunderbolt 3-based peripherals.

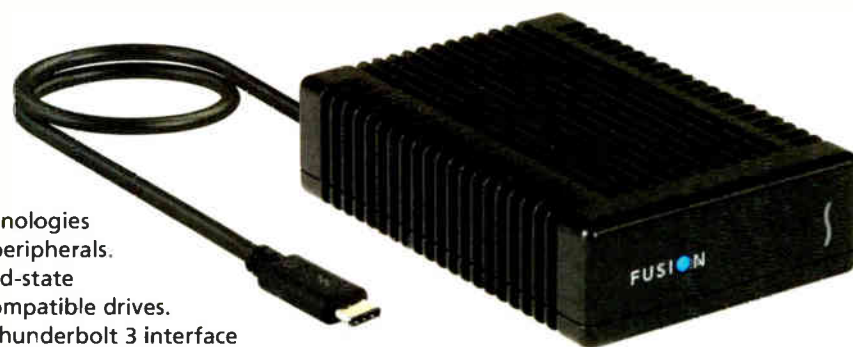
The Fusion 1 TB and 2 TB PCIe portable solid-state Flash storage drives are Windows- and Mac-compatible drives. Throughput is the 40 Gbps bandwidth of its Thunderbolt 3 interface that delivers data transfer speeds up to 2,600 Mbps.

The new eGFX BreakawayBox 650 Thunderbolt 3 to GPU card expansion system is designed to handle what the company describes as "large, power-hungry graphics cards, including the AMD Radeon RX Vega 64, Radeon Pro WX 9100, 9100 SSG and overclocked NVIDIA GeForce GTX 10 series-based cards."

Also the graphics processor front Sonnet has two complete Thunderbolt 3 solutions with graphics cards already installed — eGFX Breakaway Puck Radeon RX 560 and eGFX Breakaway Puck Radeon RX 570. These are designed for supplementing a laptop.

The Solo10G is a new Thunderbolt 3 is an external 10 Gigabit Ethernet adapter. The adapter connects Windows and Mac computers with a Thunderbolt 3 port to 10 GbE networks. A PCIe card version is the Solo 10G PCIe; which can also work in Linux systems.

Info: www.sonnettech.com



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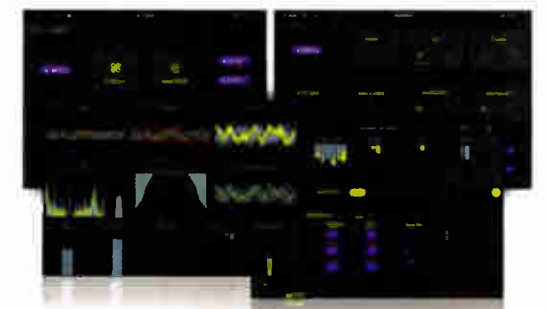
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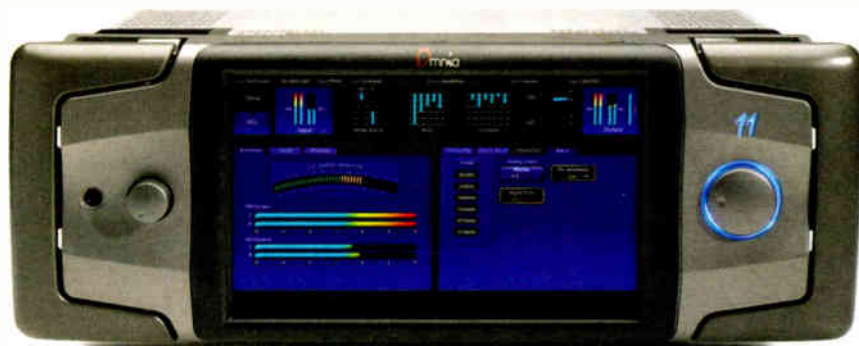
OMNIA.SST SOFTWARE



Omnia Releases Major Processor Updates

Recently the Telos Alliance's Omnia processor brand has released major software updates to its Omnia.11 (shown) and Omnia.9 processors.

The Omnia.11 v3.5 update includes the new "Pepino" clipper — the latest FM final clipper design from Frank Foti, who designed it to complement the Omnia.11's G-Force dynamics engine. Omnia explains that through research into the peak limiting mechanism and how distortion is created, the Pepino clipper system suppresses both harmonic and intermodulation distortion as the clipping function is realized. This is applied over the entire audio spectrum, and the result is cleaner audio overall, yet without compromise to the desired competitive loudness level, the company says.



New Omnia.9 v3.18.99 is a major update, making the .9 sound better than ever, the company says. New features include a major system rewrite to the audio engine, introducing a new lower-latency clipper; a new streaming engine; an integrated stream server; phase correction with mono bass; expanded SNMP features; shared processing path for AM+HD units; improved BS.412 MPX power limiter; and seamless preset switching. The update enables optional μ MPX encoding, which offers full composite MPX over a 320 kbps pipe, as well as optional Livewire+ AES67 for even more flexible I/O.

Info: www.telosalliance.com

GatesAir Launches FMXi 4g

Adding to its HD Radio, GatesAir has debuted its FMXi 4g importer/exporter.

The FMXi 4g features a software-embedded architecture that combines importer and exporter functions and provides dynamic time and audio correction (diversity delay software).



"The software intelligence built into the FMXi 4g aligns the time, levels and phase of the audio to remove undesirable artifacts and deliver a clean and engaging audience experience," GatesAir Chief Product Officer Rich Redmond said in a press release.

According to the announcement, "the proprietary algorithm inside the FMXi 4g ensures proper time alignment between analog (FM) and digital (HD Radio) signals, and improves the listener experience by removing the objectionable blending artifacts."

The removal of a standalone, computer-based importer or exporter eliminates the boot-up process and eliminates external networks, clocking and GPS references between disparate systems, which raise the possibility of packet loss and other imperfections.

Info: www.gatesair.com

Audio-Technica Heralds New Headphones

Headphone and microphone specialist Audio-Technica recently added to its broadcast-capable headphone lineup.

The ATH-M60x have a closed-back on-ear design with a compact design yet they utilize a large 45 mm driver, the company says. The drivers have rare earth magnets and copper-clad aluminum wire voice coils. Impedance is low. Cup cushions and the headband utilize memory foam for added comfort, A-T says.

The headphones come with three interchangeable cables (1.2–3-meter coiled, 3-meter straight and 1.2-meter straight — each with a 3.5 mm (1/8-inch) mini-plug), a 6.3 mm (1/4-inch) screw-on adapter. A protective carrying pouch is also included.

Info: www.audio-technica.com



Lightning Strikes Audioarts

Wheatstone says that broadcasters have asked it for a clean-performing stand-alone on-air console with a straightforward layout. The company says that the Audioarts Lightning fits the bill.

The Lightning is intended for studios that have mostly microphone or analog source inputs and where a lot of studio routing isn't required. It doesn't have the extensive A/D, D/A conversions of a typical digital board, yet users have access to editing software, Skype or other external sources through USB and Bluetooth connectivity.



The Lightning comes in 12- or 16-channel tabletop configurations and has a modular design with four-channel input panels, and a master/monitor panel with linear faders for headphone and control room level control. Faders are conductive plastic and switches are LED illuminated.

Input channels have A/B source selection, with balanced line-in for the A source and trimmable -10 dBV to $+4$ dBu line-in on B. Standard features include four stereo program buses, two auto mix-minuses for call-ins, four mic preamps with variable gain trim and switchable $+48$ V phantom power, plus built-in headphone jack and cue speaker amplifiers. Additional four-channel mic preamp cards can be fitted if needed.

USB and Bluetooth connectivity onboard is useful for playing audio directly from a PC or to output audio to edit in VoxPro or other recording software, as well as receive and record calls from Bluetooth-enabled cellphones or play cuts from MP3 players. The console also contains a patchable AES input for connecting a digital source to any fader, and built-in A/D conversion for the main program output so operators can access the program air feed as balanced analog, AES3 digital or both simultaneously.

Info: www.wheatstone.com

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When a Station Known for Music Adds a Morning Show

Case study: Sherman & Tingle on Chicago's WDRV

21ST CENTURY PD by Dave Beasing

Ever hike the steep narrow pathways just inside the rim of the Grand Canyon? That's how it felt to launch the "Sherman & Tingle" morning show on Chicago's WDRV(FM) "The Drive" on Halloween in 2016.

"We knew that there was no other route we could take, no other option," says Program Director Rob Cressman. "But it was scary as hell!"

In the face of growing competition from streaming services, satellite radio and other music sources, even the most well-built, music-centric FM brands are facing a harsh realization: Their long-term survival depends on adding more personality, contrary to their original DNA.

"In 2018, if you're not already moving in that



Rob Cressman is the program director of "The Drive."

direction, you risk total devastation," says Cressman. "There are so many other choices for music now, but they don't offer local music curation and companionship. To maximize our advantage, radio stations are racing to see who can have the best talent in mornings and every daypart. Music is still important, but it's delivered by friends you enjoy spending time with."

BUILT ON MUSIC

If there ever was a radio brand built on music, it's "The Drive."

Iconic DJs demonstrate their knowledge and love for the music.

Voiceover legend Nick Michaels, who passed away from a heart attack earlier this year, wove cinematic stories about the artists as the imaging voice of "The Drive."

Longtime morning DJ Steve Downes kept the focus



CHICAGO'S CLASSIC ROCK

on music until his retirement from "The Drive." This was followed by what Cressman calls a "failed experiment."

He knew they probably had just one more chance to "get it right"

when they hired Brian Sherman and Steve Tingle, who had first teamed up at crosstown alternative rock station Q101. When that frequency began a quick succession of ownership and format changes in 2011, they — and the whole staff — were asked to leave.

Tingle did what most radio people do in that situation. He loaded up the U-Haul and moved his family to the next opportunity — in Philadelphia, then Atlanta.

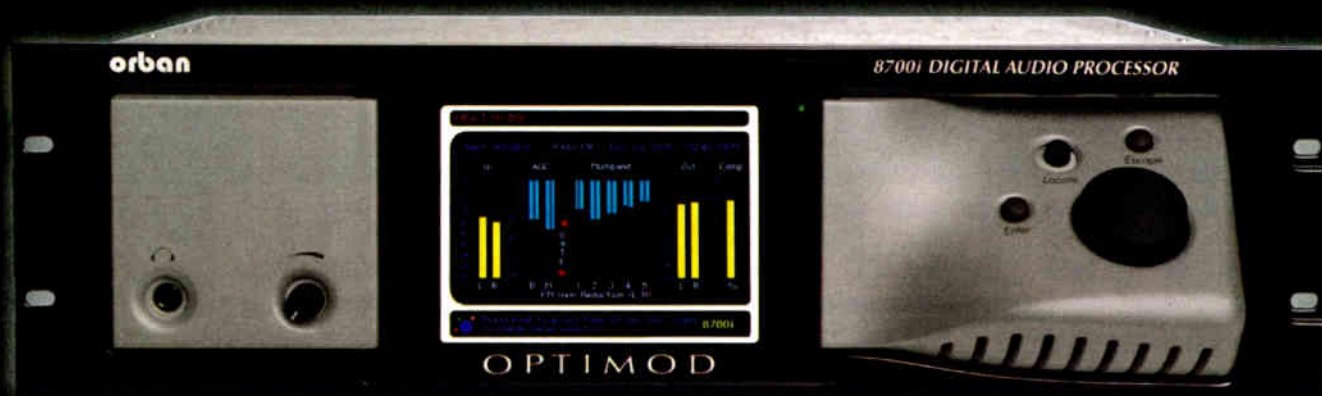
"I was with Emmis so long," Tingle wondered, "Why do so many radio people keep traveling? Why do they get fired? Then I started to understand."

Sherman didn't want that kind of life. He had offers, but "my gut feeling was not to move my whole family somewhere for a risky job that could last six months. So I remember thinking, 'Maybe I don't want to do [radio] anymore.' I think most radio people feel that way at times, but — I'm sorry to tell you — you're spoiled by working in radio. Deal with it."

He tried several non-radio jobs, including (wait for it...) driving a garbage truck. "'The Drive' was the #1 pre-set button in my truck, and I listened to [DJs] Steve

(continued on page 24)

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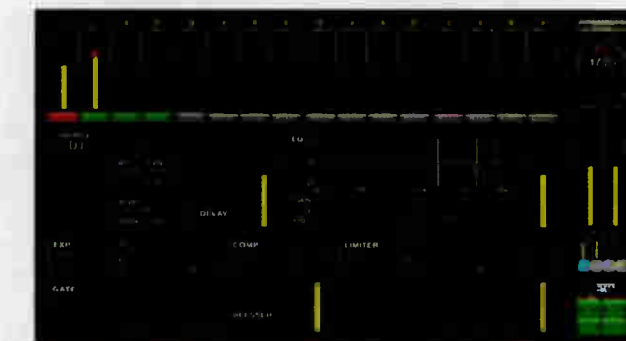
Feast your eyes on the new ruby mixing console.

Intuitive. Uncluttered. Powerful, yet so refined. Streamlined from every angle. Optimized controls: everything you need, nothing you don't. Only 5 cm (2") tall, from the bottom of its exquisitely cast side frames to the tops of its carefully chosen rotary selectors.

But great design goes beyond mere good looks. Which is why ruby is expertly crafted for both speed and accuracy — controls perfectly placed to fall naturally to hand. Premium-grade displays, faders and switches. Standards-based AES67 networking. Powerful features like AutoMix smart mixing and instant one-button switching between live and production modes. Up to 96 channels of DSP and 1,920 routing crosspoints*. The cherry on top? A customizable, context-sensitive touchscreen GUI that puts virtual control of mixer functions, playout software, studio devices, even Web feeds, social media and video, right at your operator's fingertips.

No other console is this smart. Slim, trim, and sharp as the cutting edge. Engineered and built without compromise by German craftsmen.

Sprechen Sie deutsch?



Welcome to your command cockpit. Graphical, intuitive, customizable: ruby's onscreen interface, powered by our VisTool GUI builder, is so much more than just meters and a clock. Multi-touch controls instantly give what's needed to control studio devices, tweak dynamics, adjust virtual faders, meter true loudness — even design your own custom screens. The possibilities are virtually limitless.



Who says small can't be mighty? ruby's mixing engine, Power Core, is equipped with redundant IP networking, dual-redundant power capability, and tons of built-in I/O — 384 stereo channels, standard — with room to add even more. There are dozens of DSP channels, and a built-in routing switcher, too. It's like 12 rack units of power, packed into only 1RU.

www.lawo.com

World Radio History

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This strategy can help your community, your ratings and your bottom line

PROMO POWER



Mark Lapidus

It's gotta suck to be a plastic straw manufacturer these days. Outrage against the plastic straw apparently started in 2015 with a viral video of a sea turtle getting a straw stuck up his cute little nose. This inspired "Entourage" star Adrian Grenier and his Lonely Whale Foundation to push for straws to be banned in Seattle and other cities.

What began as a small movement three years ago now has celebrities like Tom Brady speaking out against the straw. The Lonely Whale Foundation has announced a campaign sponsored by Bacardi titled, #TheFutureDoesntSuck, saying that the campaign will help eliminate 1 billion plastic straws by 2020.

I'm all in! I imagine most people will be. It's clear that plastic pollution has become an increasingly alarming issue.

DO GOOD, DO WELL

What's this got to do with radio? Well, this in-your-face campaign is a stark reminder of something that is rarely found on-air anymore. Some call it "issue advocacy." Others refer to this potent force as "cause marketing." In radio's case, it means taking a stand on an issue that an audience can get behind.

Why should radio stations be proponents of specific do-gooder missions? Mainly, because doing good for society at large is important to our mission of



serving the communities in which we live.

If that isn't enough to motivate management, there are two things that happen when cause marketing is done well.

The first is the development and/or maintenance of audience loyalty, which — inevitably and somewhat crassly, I will admit — translates into ratings and long-term survival in format.

The second (are you listening, sales managers?) is additional sponsorship dollars that are obtained outside of day-to-day spot advertising. It might not have hit you at first, but look in the first

paragraph to see what major liquor company is literally pouring investments into #TheFutureDoesntSuck.

Note that there is a vital difference between getting behind a cause and supporting a political candidate who is advocating for that initiative. It may seem subtle, but if a station explicitly promotes the election of one candidate or the defeat of another, you will be subject to federal campaign regulations.

If you feel it makes more sense to feature an on-air personality as the advocate for your cause, this also can work well. However, if this talent ever leaves your

station, it will be challenging to continue a campaign so closely tied to that personality — who could then take it to another station in your city.

CHAMPIONING YOUR OWN CAUSE

What are some issues to think about? It's hard to generalize, because there are problems that may be specific to your area.

For example, homelessness is a big issue in many cities, but perhaps nowhere bigger than in San Francisco. Could a station — or a group of stations — make fighting homelessness in the Bay Area their issue? No question. But it would indeed be challenging because the issue is so huge, and coming up with goals isn't easy.

On the other hand, there are groups already tackling the problem and maybe what they need is the media power that one big station — or a group of stations — can provide on a year-round basis.

Finding the right issue takes research and careful analysis. Take your time. The issue must connect emotionally with the vast majority of your audience.

It's supremely helpful if there is a group you can partner with, which can lend credibility to your effort and provide manpower when needed.

For radio, the most powerful issues will, of course, be local.

You must also think of the long term, looking perhaps five years out, so you have plenty of time to surpass whatever goals you set.

Let's not kid ourselves: Issue advocacy isn't for every radio station or group. But it's the way to go for those stations with a vision for themselves and their communities.

Mark Lapidus is a longtime contributor to Radio World. Email him at marklapidus1@gmail.com.

MORNING SHOW

(continued from page 22)

Downes and Bob Stroud every single day, never thinking in a million years that I might work there someday — or anywhere in radio again."

Then a suburban Chicago station reached out to offer him an on-air position, and — although they couldn't pay much — it was an opportunity to get back into the business without uprooting his family.

A SUCCESSFUL REUNION

Fast-forward two years, and to their surprise, "The Drive" started toying with the idea of bringing Tingle back to Chicago to reunite with his old friend. "It was out of nowhere, and it was a no-brainer," says Sherman. "But to fit on 'The Drive,' Steve and I had to prove to Hubbard that we'd grown up since our Q101 days. And we had."

Cressman started them off slowly, playing 10 songs

an hour. Lately, it's down to six or seven. "The plot of their show is they're suburban dads who never really wanted to grow up. They've taken that and made it bigger than life."

Not all of "The Drive's" music fanatics accepted the new show



Brian Sherman and Steve Tingle

right away, but the team's authenticity and accessibility has won over many of the cynics. They get out to public appearances like "Thirsty Thursdays" often, and they take the time to spend a few minutes with every person who shows up.

At one recent event, a 50-year-old gentleman approached to admit, "When you first came on, I thought you were terrible, that you didn't belong

on a station like 'The Drive.' Now, I can't stop listening. I'm hooked." Tingle replied with a high-five and said, "Nothing makes me happier."

Without a doubt, the listener could sense he meant it.

Since their return to Chicago, "Sherman & Tingle's" ratings started strong and just keep climbing. After driving garbage trucks and moving vans during their time apart, they could not be more grateful.

"The second time around is so much fun," says Tingle. "This does not feel like work."

Adds Sherman, "I know this sounds like a Hollywood screenplay, but it's a true story. We're living it."

Veteran programmer Dave Beasing's new company is Sound That Brands. It co-produced "Inside Trader Joe's" with Steve Goldstein of Amplifi Media. It's become the most listened-to branded podcast series of its kind. Find Dave on Twitter @davebeasing.

Know the Many Sides of Broadband Antennas

When looking into deploying this specialty tool, consider these points

BY DOUG IRWIN

There are several reasons that an FM station would participate in the build of a broadband antenna system, including:

- Construction of a new main transmitter site, where tower space is limited;
- Construction of a new auxiliary transmitter site, where space is limited;
- The desire to use a tower with limited capacity to hold additional antennas.

Of course there are many instances where the tower owner sees an advantage in providing a master antenna to accommodate all its FM clients. In this article we're going to look at "broadband" antennas provided by some well-known manufacturers, along with some examples of their use. The use of a broadband antenna might very well solve a problem for you in the future, so please read on.

MT. ASCUTNEY

Shively Labs recently constructed a semi-custom broadband antenna for VPR's Mount Ascutney site near Windsor, Vt. I spoke with Sean Edwards, RF designer and project lead, about the system.

"The unique requirement of this system is that there were two tenant stations that needed to be omnidirectional, while the third needed to be directional — with a pretty significant null towards the northeast," said Edwards.

The solution ended up being use of a six-element Shively 6014 panel antenna with modifications to its feed system — specifically, the type of feed and the power distributions. The antenna is a three-sided array, with two levels.

Each 6014 element is a crossed dipole, and each of those dipoles is fed

by 3 dB hybrid. "If there is sufficient isolation between the dipoles, you can feed the reject load port as a second input," Edwards said. The signals fed into the hybrid using the "normal" inputs radiate with right-hand circularity; the signal fed in to the "reject" port radiates in left-hand circularity.

Then the problem becomes fairly simple. "The stations that are nondirectional are fed in to each element at equal power," he said. "The station that needs to be directional is fed at full power on two [of the three] faces, and at -10 dB [in this particular case] on the third.

"In that fashion, you're able to produce both types of patterns in one antenna system."

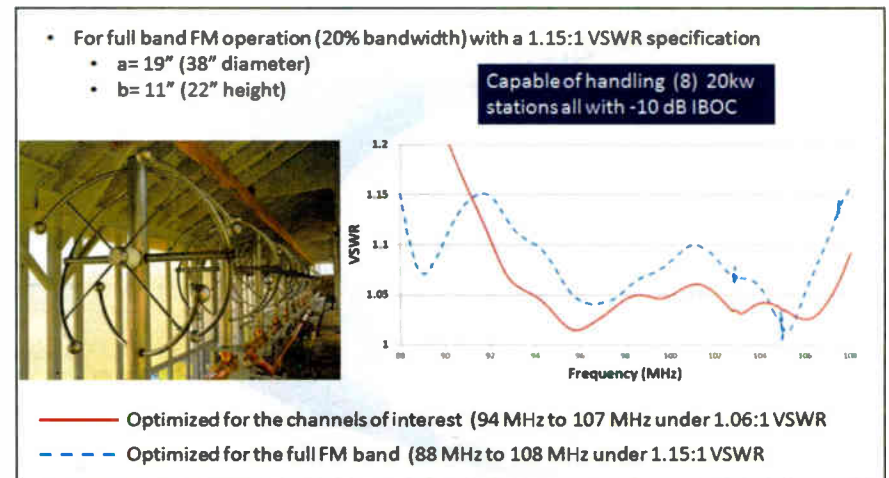
I asked Edwards about the power dividers used in the system (a diagram of which is seen as Fig. 1). The stations that are omni are all fed by way of the equal six-way power divider and equal-length cables. "We repurposed a -10 dB coupler [commonly used early

on in HD Radio implementations] and modified it to become the -13 dB coupler," he said. "The output from the -13 dB port went to a two-way power divider, and the 'through' port was fed

dates stations on 88.1 MHz (WNCH), 89.5 MHz (WVPR) and 106.1 MHz (WHDQ).

ELEMENTS

John Schadler is vice president of engineering for Dielectric. He said the



Bandwidth measurement results for DCR-U antenna for Tall Tower Ventures in Miami

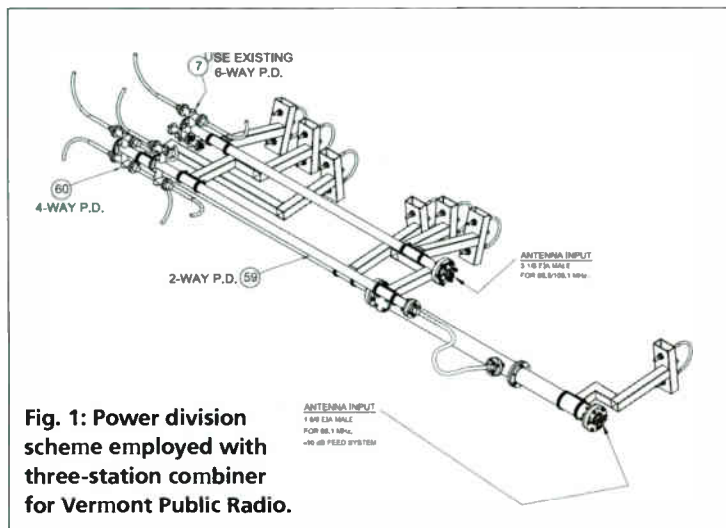


Fig. 1: Power division scheme employed with three-station combiner for Vermont Public Radio.

into a four-way power divider. The resulting power delta is -10 dB. There are other ways to do it, but that's how we approached it."

The Shively 6014 panel antenna is made for broadband applications and has the capacity to handle 15 kW per element. Its VSWR specification for the entire 20 MHz of the FM band is 1.15:1 or better. The Mount Ascutney antenna accommo-

company makes two styles of broadband antennas for the FM band.

"First is the side-mount ring style, which would use our DCR-M elements, in the lowest power version. The next step up in terms of power would make use of the DCR-S elements, followed by the highest power version, which would use the Dielectric DCR-U elements. That antenna is capable of handling eight full-power stations."

Antennas based on the Dielectric DCR-M or DCR-S elements are limited to 12 MHz of bandwidth; the DCR-U accommodates the entire 20 MHz of the FM band. The VSWR spec is 1.15:1 across the entire band.

(continued on page 26)

TRENDS IN TECHNOLOGY

ANTENNAS

(continued from page 25)

Dielectric also offers the FMVee, which consists of three circularly polarized stainless steel radiators mounted around on a structural mast, producing an omnidirectional pattern with than ± 2 dB variance in the horizontal plane (for top-mount configurations). The design of the FMVee antenna offers control of the elevation pattern by adjusting beam tilt and null fill. This antenna type also offers 20 MHz of bandwidth and can handle 10 Class C stations.

Dielectric recently provided a DCR-U-based broadband antenna to Tall Tower Ventures in Miami, and accommodates six stations ranging from 93.1

MHz to 106.7 MHz.

“In terms of its physical size, the DCR-U is very aperture-efficient. It’s 38 inches in diameter,” said Schadler. “The amount of bandwidth you can get out of an antenna is directly related to the volume. It pushes its limits as far as the volume goes.”

MT. MORRISON

Recently, ERI worked with tower site owner Bear Creek Development in the

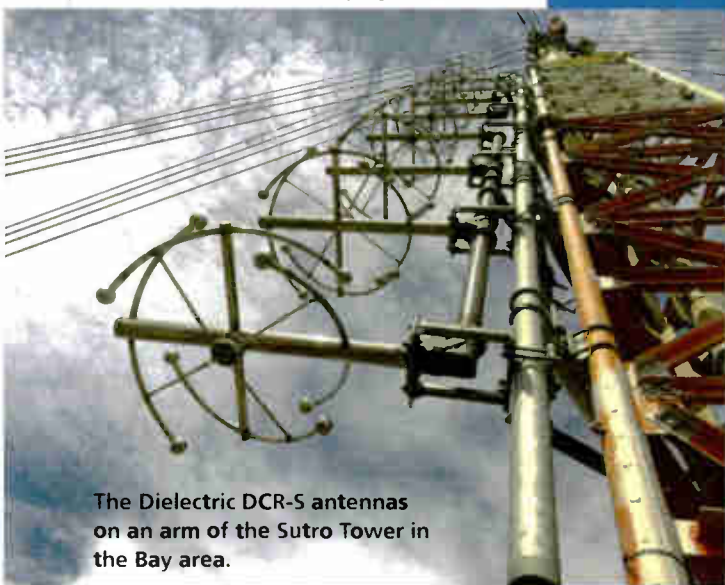
design and construction of two combined antennas, both installed at Mt. Morrison near the Red Rocks Amphitheater west of Denver.

The first of the two antennas (model 1182-6CP-DA-SP) was designed to accommodate five Denver stations: KUVU, at 89.3 MHz; KYGO at 98.5 MHz; KIMN at 100.3 MHz; KOSI at 101.1; and KXKL at 105.1 MHz. The number of stations that can share the antenna is really only limited by its

power handling capability: This antenna is designed to handle up to 125 kW of combined power and has a single 6-1/8-inch, 50 ohm, EIA flanged input.

“A system like this is designed to handle the entire FM band and generally has a VSWR specification of 1.25:1, maximum, 88.1 MHz to 107.9 MHz,” said Bill Harland, the vice president of marketing for ERI.

He added, “Directional antennas are generally more challenging with respect



The Dielectric DCR-S antennas on an arm of the Sutro Tower in the Bay area.



New Mt. Morrison five-station combined antenna by ERI.



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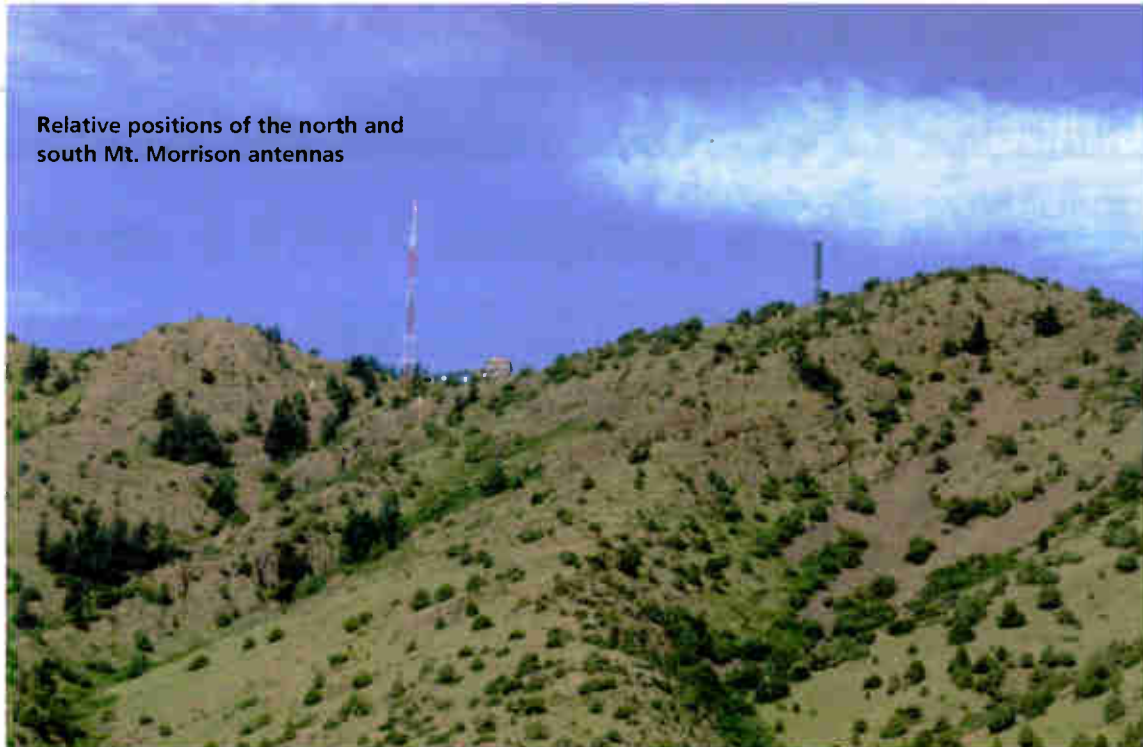
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Relative positions of the north and south Mt. Morrison antennas



to return loss performance. With field tuning the return loss is optimized with a target of a VSWR of 1.15:1 or better for the frequencies of interest.”

“The [north] antenna has a carefully design elevation pattern which minimizes RFR levels immediately below the antenna, as it is very close to the ground,” said Harland. The area surrounding the site is fenced.

The Mt. Morrison south antenna (model 1051-2CP-DA-SP) was also designed and built by ERI and located not far from the north antenna. It serves as an auxiliary site for two of Entercom’s Denver stations: KQMT at 99.5 MHz and KQKS at 107.5 MHz.

Since neither of these stations is within 800 kHz of any of the “north” antenna stations, I asked Harland why they didn’t just share one antenna after all.

“The azimuth pattern of the 1051-2CP-DA is much narrower than the directional antenna for the north site,” he wrote. “The KQMT main antenna is directional from Lookout Mountain and the directional antenna designed for the south site allowed this auxiliary facility to be licensed at higher power.”

The south antenna is a “single curtain” directional FM antenna has a special feed system to handle the nearly 30 kW combined analog and digital power

of the stations using its two-element array. The site elevation is more than 7,800 feet. “The system is optimized and field tuned for the two frequencies and the measured VSWR for each channel is substantially better than 1.10:1,” Harland said.

The use of wideband antennas (fed by the output of a combiner) is common practice making use of the evolution in antenna technology that has occurred for VHF FM, especially over the last 50 years. As the FM service gained popularity in the late 1970s, many companies invested in their FM licenses and moved them to better locations, such as Mt. Wilson (taking Los Angeles as an example), often times buying land and putting up their own building and tower. As the service matured and became more valuable, more combined antennas came in to use (a perfect example of which is the 16-station system on top of the Empire State Building). There are many good reasons for using combined antenna systems, as we have seen in this article. Keep this technology in mind as you work on your own site designs in the future.

Doug Irwin, CPBE AMD DRB, is vice president of engineering at iHeartMedia in Los Angeles and a technical advisor to Radio World.

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Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

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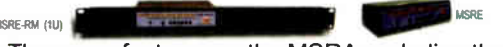
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Why C4 Class Is Critical for Small-Market Broadcasters

Stations like WLYB(FM) are a lifeline for rural towns like Livingston, Ala.

COMMENTARY

BY DAMON COLLINS

The author is owner and general manager of WLYB(FM) and president of Blackbelt Broadcasting in Livingston, Ala.

In 2013, we signed WLYB(FM) on the air in a community that didn't have radio service.

Our permit was part of an early FCC auction.

When we visited Sumter County, Ala., one of the poorest counties in the nation, we saw an opportunity to serve this community; we were willing to invest in it and take the risk.

Growth has been slow. Many small businesses struggle (and close) from month to month. Livingston doesn't have a car dealership, furniture store,



Community guests featured on WLYB(FM)'s live morning show.

promote small towns that wouldn't otherwise have a voice.

Many residents travel to communities several miles away. Our station informs listeners on commerce options that are not available elsewhere. In some cases, we share information about community services that are important to the health and well-being of our residents — services that many wouldn't know about if it weren't for our station.

Signal and reception challenges had been a hindrance for us. Tropospheric ducting, a limited signal (3.4 kW), and limited tower choices all have been issues. But a listener doesn't understand why some days they can hear us and other days they can't. We have lost a few advertisers due to signal issues. With a limited amount of business and services available, this has been devastating to our operation.

Hundreds of other stations also face this challenge. They are limited because of FCC rules that are now outdated. It is time to save many small market stations

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22	Orban	www.orban.com
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2, 15, 17, 32	Wheatstone Corporation	www.wheatstone.com

ADVERTISING CONTACTS

NORTH AMERICA:

MICHELE INDERRIEDEN
212-378-0400 x523
Fax: 301-234-6303
michele.inderrieden@futurenet.com

PETE SEMBLER
212-378-0400 x324
Fax: 650-238-0263
peter.sembler@futurenet.com

EUROPE, MIDDLE EAST & AFRICA:

RAFFAELLA CALABRESE
+39-320-891-1938
Fax: +39-02-700-436-999
raffaella.calabrese@futurenet.com

VYTAS URBONAS
212-378-0400 x533
Fax: 630-786-3385
vytas.urbonas@futurenet.com

My station will not bump a translator off the air, interfere with any LPFMs or take revenue or market share from my competition.

hospital or many other businesses that are vital to a community.

Nearby York, Ala., has a hospital that has been on the brink of closure. The local grocery store closed over a year ago, and you'll find only one fast food restaurant. With the exception of an insurance agency and a hardware store, downtown business is nonexistent.

Rural internet service is poor. Radio is still a primary source of community information.

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and implement the C4 class.

My station will not bump a translator off the air, interfere with any LPFMs or take revenue or market share from my competition. What it would do is allow us to serve all of our surrounding communities — and yes, serve the public interest.

Many Class A stations are at a crossroads. The proposed C4 Class will allow many stations to continue serving small communities, where radio is still a vital part of everyday life.

The proposed Class C4 is a critical lifeline for our station.

The FCC is accepting comments on the FM Class C4 proposal, MB Docket No. 18-184, through Aug. 13, and reply comments to Sept. 10.



Write to RW

Email radioworld@futurenet.com with "Letter to the Editor" in the subject field. Please include issue date.

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