

RADIO WORLD

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Name: Jason McKenna, 38
Company/Title: CBS Radio Boston, Director of IT and Engineering (FM Stations)
City: Boston, Mass.

"The goal for all of us on the technical side of broadcasting is to create the best possible user experience, regardless of the platform in which you choose to consume the product by."

Younger Engineers Defy Common Wisdom

We begin a series featuring engineers and technical managers in their 20s and 30s

BY EMILY M. REIGART

The U.S. radio broadcast industry has long embraced the sagacity of engineering elders and treasured their technical advice and memories.

But it also often laments a lack of younger blood. According to common wisdom, radio engineering heads are mostly gray; and when those retire, who will keep the industry humming?

Radio World here begins a series of articles about engineers under 40 who are helping to answer that question. We're looking for candidates for future stories; email ereigart@nbmedia.com.

and the broadcast industry seemed like a great fit for me, especially with an interest in Boston sports. I now work as the director of IT and engineering for four FM stations, including 98.5 The Sports Hub, which is the flagship station for the Boston Bruins, Boston Celtics and New England Patriots.

What is the most important industry trend for broadcast engineering and how might it affect the profession?

McKenna: The biggest trend that affects broadcast engineers and IT personnel is the change in how the product is delivered. A product that was once a single FM station over the air may now be an FM, HD2 and HD3 station, each with a stream, podcasts for each show

and various peripheral streams for professional sports. The goal for all of us on the technical side of broadcasting is to create the best possible user experience, regardless of the platform in which you choose to consume the product by.

What advice would you give to younger engineers?

McKenna: Sharpen your IT skills and think outside of the box. There is some great new technology available in the broadcast industry, but it is fun to look at all of it and think of how you can make it even better. I enjoy looking at a challenge and trying to come up with a creative, cost-effective solution using technology that is available today or working with industry technology leaders to design or change an existing product to fit our needs.

What's the most important thing
(continued on page 8)

How did you get into this field?

Jason McKenna: I have always had an interest in technology and behind the scenes broadcast operations. I graduated from the L.C. Smith College of Engineering and Computer Science and received a minor from the Newhouse School of Communications at Syracuse University. Working in engineering, IT



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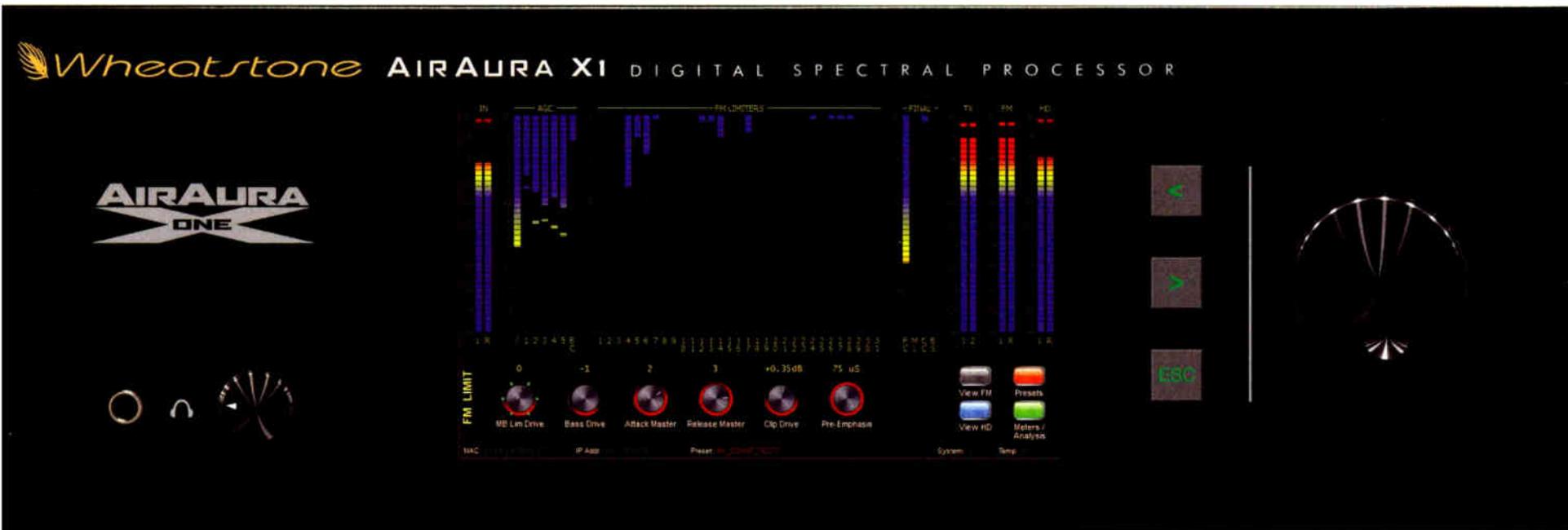
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SUBSCRIPTIONS

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

CORPORATE

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ADVERTISING SALES REPRESENTATIVES

US REGIONAL & CANADA: John Casey, jcasey@nbmedia.com
 T: 212-378-0400, ext. 512 | F: 330-247-1288
 US REGIONAL: Michele Inderrieden, minderrieden@nbmedia.com
 T: 212-378-0400, ext. 523 | F: 301-234-6303
 EUROPE, AFRICA & MIDDLE EAST:
 Raffaella Calabrese, rcalabrese@nbmedia.com
 T: +39-320-891-1938 | F: +39-02-700-436-999
 LATIN AMERICA: Susana Saibene, susana.saibene@gmail.com
 T: +34-607-31-40-71
 JAPAN: Eiji Yoshikawa, callers@world.odn.ne.jp
 T: +81-3-3327-5759 | F: +81-3-3322-7933
 ASIA-PACIFIC: Wengong Wang, wgw@imaschina.com
 T: +86-755-83862930/40/50 | F: +86-755-83862920
 CLASSIFIEDS: Michele Inderrieden, minderrieden@nbmedia.com
 T: 212-378-0400, ext. 523 | F: 301-234-6303
 LIST RENTAL: 914-925-2449, danny.grubert@lakegroupmedia.com

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MW in Decline as Many European Broadcasters Shut Off Transmitters

High operating costs combined with concerns over audio quality and interference are blamed

BY JAMES CARELESS

LONDON — On March 27, 2011, an era ended in British broadcasting when the BBC World Service shut down its 648 kHz medium-wave 500 kW service to Europe and its other medium-wave services to Russia. With the end of its MW broadcasts from the Orfordness transmitting station on England's east coast, BBCWS ceased to be available to European listeners over the air. Now these listeners have to listen to the BBCWS on DAB, online and via satellite television.

MOMENTUM

"Since then, the World Service has shut down its 1323 kHz MW service to the Eastern Mediterranean from Cyprus," said Nigel Fry, the BBCWS' head of distribution. "Listeners to BBCWS English in Israel, much of Lebanon, Cyprus, and Turkey now have to get us via satellite and the Internet, though our Arabic MW services continue."

The BBCWS is not alone in its actions. "During the last 10 years many state broadcasters in Europe have closed their medium-wave transmitters down," said Ydun Rtiz, webmaster of the listener-written MW site www.mediumwave.info. "So have Norway, Sweden, Finland, Netherlands and Denmark. What is left is some private-owned radio stations." Ireland's RTÉ closed its last MW transmitter in 2012.

The closure of European MW stations gained momentum in 2015, when a number of broadcasters silenced their services. "The most famous was Luxembourg on 1440 kHz, a radio powerhouse for decades in Europe, which silenced at midnight Dec. 31, 2015," Triz said. "Germany closed down the frequencies 549, 756, 1269, 1422 kHz at the same time. All France Info and France Bleu MW stations were silenced too."

GOING DARK

There are a number of reasons why European MW stations are going dark — and the most important reason is money. Despite the superior geographic coverage offered by MW signals compared to line-of-sight FM and DAB — especially at night, when MW signals can travel over the horizon by skipping off the ionosphere — the sheer cost of powering megawatt MW transmitters has driven many cash-strapped broadcasters to focus on lower-power, lower-cost FM/

DAB transmission instead. (Given that no transmitters are required, online radio is even cheaper for broadcasters.)

Certainly money was the reason that the BBCWS shut down 648. "We have had to make some difficult decisions about the distribution of BBC World Service radio around the world, as a result of the Spending Review settlement that BBC World Service received at the end of 2010," said the 2011 BBCWS news release that announced the MW cuts.

James Cridland, writing on the All Access Music Group website, shutting down France Inter's MW service saved the broadcaster \$1.5 million in operating costs. "In the Netherlands ... explosives brought down the last AM mast at Lopik, a radio transmitter that until last year broadcast public and commercial radio," wrote Cridland. "Other AM masts have also been closed in the country. The NPO, the public service broadcaster, claims that savings for them alone are \$1.3 million a year."

In addition to money woes, many European broadcasters have abandoned MW due to declining listenership on the radio band. "It is not a low-cost project



Radio Luxembourg (1440 kHz) Display at the 1958 Brussels World Fair.

"For years the BBC World Service has had to deal with year-upon-year reductions to our budget," said Fry. "Shutting down 648 was the best option we could come up with, in the circumstances."

The same is true for the BBCWS' decision not to build a new transmitter site to keep 1323 kHz on the air, following the closure of the Cyprus multi-transmitter farm from which 1323 broadcast. "We cannot identify a financially viable method by which to continue medium-wave radio," said BBCWS Director Fran Unsworth in 2015, when the shutdown was announced. "It is for this reason that we have decided to end these transmissions."

According to "radio futurologist"

to run MW transmitters, and many listeners, especially the younger ones, even don't have radios [that] can receive a MW signal," said Rtiz.

"The European broadcasters don't feel that they have much of a listener base for medium-wave," agreed Thomas Wither- spoon, editor of the all-band radio listening website, The SWLing Post (www.swling.com/blog). "They especially see younger listeners using their mobile phones to listen to online audio, rather than listening to broadcast radio."

MW LOYALISTS

The standard answer from broadcasters closing their MW sites is for listeners

(continued on page 6)

Mike & Mike: The Power of Sports Chemistry

Sports talk's "odd couple" combine humor and savvy in creating compelling radio every morning

Golic was there first.

In 1999, while Mike Golic and ESPN were seeking a replacement for his radio show co-host Tony Bruno on their year-old syndicated morning program, they brought in another Mike from the TV side of ESPN, just to fill in.

Golic's wife Christine sensed the chemistry between Mike Greenberg and her husband right away.

"He opened up with a joke," Golic recalled. "I was heavier then. We got on the air and he said, 'When we stand next to one another, we look like the number 10,' because he's so thin and I'm so fat. I laughed, because I don't care. We went on for 15 minutes and it went really well; and at [the] break, I called my wife, and her exact quote was, 'He sounds kind of geeky, but he's the one.'"

The hosts of ESPN Radio's weekday morning show "Mike & Mike" — known to fans as Golic and Greeny — were inducted into the NAB Broadcasting Hall of Fame this month. Their sports-oriented show, which turned 16 last month, is available on ESPN Radio and on ESPN affiliates; it is simulcast on ESPN2 and distributed on other platforms.

Golic excelled in Notre Dame football, played in the NFL for nine years and began his broadcast career in Philadelphia. He joined ESPN in 1995 as a studio analyst on "NFL 2Night" and later on "NFL Live," and worked as color commentator for Arena Football League and ESPN/ABC college football games.

Greenberg attended the Medill School of Journalism at Northwestern University; worked in Chicago sports journalism, including a stint at WMAQ Radio; and joined ESPN in 1996 as an anchor for the launch of ESPNEWS. He later anchored "SportsCenter" for years.

The two have co-authored a book, acted in motion pictures and appeared many times on "Late Night with David Letterman." Greenberg has danced with Anna Trebunskaya; Golic has parodied Kim Kardashian by posting a *#GolicButtPhoto*, which was exactly what it sounds like. They visited the George Bush White House to announce a T-ball game and co-hosted a promotion in which 500 couples applied for the chance to be married on the show.

But it is their relationship that seems to make the biggest impression.

Greenberg has said that when his daughter was in nursery school and the teacher asked what her parents did for work, Nikki stood and said, "My

mommy has conference calls and my daddy talks to Golic."

The two Mikes are self-deprecating and relatable. Their show is built around the balance between Golic's insights as a retired professional athlete and Greenberg's skillful interview questions from a "man in the seats" perspective. Layered on top, the two play on the carica-

cessful people, talented people, sports people and just admire them; I wonder how they do what they do. I wonder what they're thinking. ... I think some people just accept, 'Oh boy he's a great player.' I'm genuinely curious about what makes him that way, what's driving him, what is going on in his head at the time."

He cites two other influences. Greenberg considers Howard Stern "the master at hosting a talk show and keeping everything moving and remaining in

FROM THE EDITOR

Paul McLane



we'll have a pretty good idea of a rough draft of what the show is going to be," Golic said. "A lot of times it writes itself."

Social media is an important element of the show, which has 1.2 million Twitter followers, and both hosts have their own popular feeds.

On one recent broadcast, "Mike and



Mike Greenberg and Mike Golic are morning staples for America's sports talk listeners.

tures of Golic, 53, as a dumb D-lineman who loves food and the Fighting Irish, while Greenberg, 48, is a brainy metrosexual who indulges in \$400 haircuts and hand sanitizers.

"One thing my dad taught me at an early age is always be yourself," Golic said. "That is me. I do love doughnuts. I love a plate of bacon. If I never have to put on another dress shirt in my life, I'll be happy as all get-out."

The NAB Broadcasting Hall of Fame is a club that includes Vin Scully, Jack Buck and Mel Allen; but mention those sports broadcasters to Mike Greenberg and he'll point instead to another inductee as a more relevant inspiration: Larry King, whom he idolizes.

Greeny is emphatic in describing "Mike & Mike" as a talk show. "To be a good talk show host, you have to have a natural curiosity. I don't look at suc-

cessful people, talented people, sports people and just admire them; I wonder how they do what they do. I wonder what they're thinking. ... I think some people just accept, 'Oh boy he's a great player.' I'm genuinely curious about what makes him that way, what's driving him, what is going on in his head at the time."

LIVING THE JOB

Watching sports of course is part of the job; and the hours can be tough, even after 16-and-a-half years of morning drive.

"People always ask if you get used to it, and the answer is no," says Greenberg, who rises at 3:45 a.m. "You never get used to that alarm going off."

Golic gets up at 4:15 each morning, looks at highlights, then watches more games in compressed format at work. After the show, tomorrow's story ideas are developed throughout the day in an email chain involving 40-odd people. The guys watch more sports at night.

"Before I even go to bed tonight,

Mike" riffed on news that Dos Equis beer would replace the actor who portrays "The Most Interesting Man in the World." The hosts asked their listeners to suggest replacements from the world of sports. Sample reply: "Usain Bolt. He is so fast, light travels at the speed of him."

"I started hosting talk shows at a time when we were soliciting faxes from our listeners," Greenberg said. "Life is like a train and it never stops moving. If you don't keep chasing it, it's just going to get away from you. ... In this day and age, social media is a huge part of that brand building."

Golic's voice comes through clearly in his tweets (on watching "The Bachelor": "I'm about to throw myself down the steps. My God, make the crying women stop") though he considers himself horrible at it. "If I was pay-

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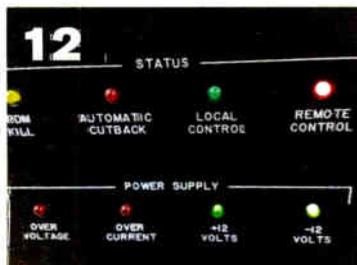
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ing somebody to do my tweets, they'd be fired."

He is struck by the intimacy the show fosters. Listeners tell him they first tuned in at age 10 and are now graduating college, or "You're always in the car when we're driving our kids to school" or "We feel like we know you and we never met you."

"I'm very happy that listeners and viewers have kind of embraced us, because we're both very, very strong family people," he said. "They've allowed our family to grow up on air with them. That's been a lot of fun —

bringing my kids on to sign their letters of intent [to attend Notre Dame], and Greeny's first kid, Nicole, being born the first year of our show." Both have lost their fathers during the run of the show; both have invited their wives onto the program.

JUST GETTING STARTED

Golic's broadcast career has coincided with a remarkable change in the role of the athlete-broadcaster.

"You have former players who do everything from doing games, doing studio shows, doing radio shows, to blogging, writing for magazines. It's unbelievable the opportunities now for athletes. People always ask us, 'How do you get into this business?' Greeny says, 'Play nine years in the NFL and you're going to get a chance.'"

Neither expected the show to have the run it has. "Greeny did this show thinking it would last a couple of years and that would be it — it would be some experience on the radio and he'd go back to doing 'SportsCenter.'"

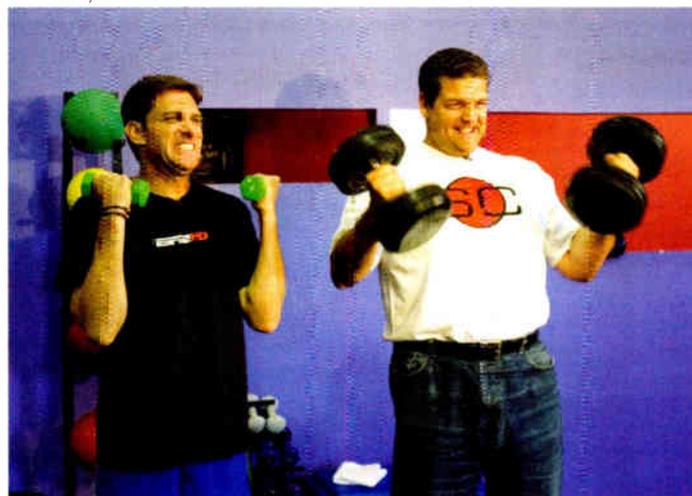
But Golic says there's no question about how he wishes to be remembered.

"A football player. Without question. No hesitation at all. On my tombstone I'd rather it be, 'Was a ballplayer at Notre Dame and in the NFL for nine years.' Absolutely. Maybe I just don't want to be associated with Greeny on my tombstone."

Greenberg says he feels like he's just getting started in his career. "This is all that I ever wanted to be. My mother will tell you that when I was five, I would sit down in front [of the TV] and I would announce the football games. If I'm going to be remembered at all — beyond, hopefully, as a good husband and a good father and a good son — it would be to say that I was a good talk show host."

He is a believer in the power of radio, though he acknowledges the business has changed from the days when he

ESPN Photo by John Arden



This photo of the boys working out in 2006 captures part of their on-air personas.

could walk into the station owner's office to receive his holiday bonus. He says radio is a vital and indispensable medium that will never be replaced because of its immediacy.

"In fact, in some ways I think that radio, if the people who are in charge of the business play it right, has a chance to emerge even more important than ever. It's one thing to listen to music on your phone; but it's another thing entirely to try to hear good, insightful

analysis of what's going on in culture or anywhere, whether it be sports, or politics or entertainment or whatever it is you're interested in.

"Radio remains the most efficient and immediate medium for delivery of that, and it's portable. ... From the standpoint of those of us whose job it is to create the content, I feel like we are as relevant as we've ever been, and I don't see any reason to think that's going to change."

About being inducted into the NAB Broadcasting Hall of Fame, Greenberg said, "I am a radio person. I love the media. I love the business. This is the greatest honor that

I've ever received. This is all I've ever wanted to do; and for someone to say that you've done it that well is about the best compliment you could ever possibly pay me."

Golic used the words "stunned" and "incredibly honored," then added: "I don't even know what to say. I almost want to drug-test the people that put us in."

A version of this story appeared in the NAB Show Daily News and is copyright NAB.



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MW

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not to worry: They have other options to hear content such as FM, DAB, satellite television and online/mobile audio streaming.

This is true in itself, which is why the BBC considered closing down its U.K. MW stations in a bid to stay within its shrinking budget. However, when the corporation tested the waters in 2012 by replacing live content on four MW stations with pre-recorded messages directing listeners to tune in on FM, DAB or online, the public's opposition was swift and vocal.

"Hundreds of outraged listeners contacted the Liverpool-based station (BBC Radio Merseyside) to complain," reported The Guardian newspaper. "The close-down in the three other areas — Nottingham, Kent and Hereford & Worcester — was said to be less problematic, however."

Apparently BBC management got the message. Today the BBC's U.K. radio service remains on MW, as well as FM and DAB. No specific plan for closing down its MW stations has been announced, although "the BBC is slowly closing AM repeaters for their local radio stations," Cridland wrote.

The issues surrounding MW transmission — the power and equipment costs, the lower-quality monophonic audio and the interference that can degrade MW broadcasts — doesn't



NXP Semiconductors and AIR demonstrated the NXP chip in a DRM-fitted car radio at the BES Expo in February.

change one key fact, said Nigel Fry. "Broadcasters still have full control of the MW band," he declared, "unlike other higher bands that are being eyed by wireless telephone carriers and other non-broadcast interests." This means that MW is a radio-owned resource that is worth defending, by finding a way to revive its use for the 21st century.

Such a way forward exists, according to MW enthusiasts; namely the Digital Radio Mondiale digital transmission standard, which allows interference-free, FM-quality audio to be transmitted to digital receivers via MW. In fact, DRM has been approved for much of the world for many years, with many broadcasters (including the BBC) offering limited DRM services over MW in parts of the world.

GOOD NEWS

The reason DRM has not supplanted analog MW is due to a lack of both regular DRM radio services and low-cost DRM radio receivers. But thanks to All India Radio's nationwide DRM over MW rollout in a bid to improve services to 1.2 billion Indians — including up to four stereo services per broadcast channel, text messaging, digital program guides and still images — this potential MW savior could be finally coming into its own. By the end of 2014, 72 of 143 AIR transmitters were scheduled to be "digitized" to carry DRM as well as analog MW broadcasts. AIR plans to switch entirely from analog to DRM in 2017, both on MW and AIR's shortwave broadcasts.

"With the advent of Indian DRM

broadcasting will come affordable DRM receivers," said Fry. "This, in turn, could attract such affordable radios coming to Europe, giving broadcasters here a reason to launch MW DRM channels." He added that what really is needed to succeed in Europe is a multi-format world digital radio, one that can seamlessly receive DAB, DRM and U.S. HD Radio broadcasts on an affordable, easy-to-use platform.

For MW backers and enthusiasts, the arrival of DRM in India may seem like the first really good news for MW in decades. Whether its deployment there will spur MW's worldwide revival remains to be seen, but having the backing of the 1.2 billion Indian market can't hurt.

As of press time, the Indian-made Avion AV-DR-1401 DRM/AM/FM stereo receiver with 3/5-inch LCD display and remote control was being sold on Amazon.in for 18,000 rupees (\$270). According to Fry, "This compares favorably to the first DAB radios."

NXP Semiconductors also announced in February that it had completed testing and field trials of a new chip and software for DRM receivers in India. The NXP chip is used in DRM-fitted car infotainment receivers on a recently launched passenger vehicle in the country. All India Radio and NXP collaborated with both the automotive industry and the DRM Consortium for the new chip.

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

NEWSROUNDUP

STATION HACKS: Law enforcement and the FCC were investigating an incident in which IP routers were accessed improperly and used to broadcast an explicit podcast for several hours. The hacks affected audio streams of a station in Texas, two in Colorado and a national syndicator. Audio was commandeered through access of a Barix Streaming Client, an HTTP-based streaming software option that runs on Barix hardware, the company said. Barix advised stations to set unique, complicated passwords and establish a virtual private network to protect equipment. Devices should be secured behind firewalls and not openly connected to the Internet. Barix said its devices with STL firmware or a cloud service in place would be difficult to hijack and reconfigure to play a podcast stream. The company also advised use of services that can be used to further establish secure network connections for audio over IP transport. "According to our research there are thousands of Barix devices (and devices of practically all competitors as well) exposing their web configuration to the public internet," Barix Chairman Johannes Rietschel said. "Many of them are not password-protected or use default passwords. This clearly is an open invitation to hijack the equipment."

AM CONCERNS: Seeking to put the brakes on some of the FCC's AM ideas, a newly formed

group of station owners urged the commission to consider carefully how it handles revitalization efforts. They believe the FCC has not devoted sufficient study or solicited enough comments over certain issues being considered. The AM Radio Preservation Alliance includes the country's largest companies — iHeartMedia, CBS, Cumulus, Alpha Media — and many other big and familiar names: Bonneville, Cox, Entercom, Family Stations, Grand Ole Opry (WSM), Greater Media, Hearst, Hubbard, NRG, Scripps, Townsquare, Tyler Media and Tribune. They said the commission must take "only those steps that truly would revitalize the AM band," and raised concern over two particular issues: the proposal to reduce or eliminate interference protections for Class A AM stations, and the proposal to decrease daytime protections for Class B, C and D AM stations. (See NAB's filed comments about AM revitalization on page 28, and look for more coverage of industry comments in our next issue.)

AM AND PEP: Al Kenyon urged the commission not to reduce co-channel nighttime skywave protection for Class A AM stations. Kenyon, a FEMA IPAWS official and veteran broadcast engineer, filed comments as an individual. He told the FCC that Class A Primary Entry Point stations are a unique resource and that a proposal to reduce co-channel nighttime skywave protection will significantly reduce available nighttime reach of the

Class As in the PEP system. The broadcast portion of PEP consists of 25 Class A stations, 36 Class B stations and 12 FM stations. Increasing authorized noise and interference levels on Class A channels will cause significant service reductions to the Class A PEP stations, Kenyon believes, while offering limited interference-free service gains for stations that might benefit.

NEW OWNER AT BE: Broadcast Electronics has a new owner. IIC Acquisitions, founded by BE Vice President of Engineering Brian Lindemann, "has acquired all outstanding units and increased ownership in Broadcast Electronics to 100 percent,"

**Broadcast Electronics**

the Illinois-based manufacturer announced. IIC had previously owned shares but acquired the outstanding equity positions, including those owned by private equity firm First City Crestone. Terms were not announced. BE President/CEO Tom Beck remains in his role. Lindemann has been with BE for more than seven years. He has a background in design and development of high-tech communication products; he holds eight patents and specializes in waveform generation with an emphasis on hardware/software co-design. According to a 2008 Radio World story, he held earlier stints at several firms, including Rockwell Collins and Honeywell.

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UNDER 40

(continued from page 1)

that you've learned from an industry mentor?

McKenna: I am fortunate to have had the opportunity to work with quite a few mentors over the years, many which have been in the industry for decades. It's hard to say what is the most important thing that I have learned. Working with a great team, where each member is a valuable contributor is very important. The job can be a lot work but also a lot of fun ... I laugh sometimes because I may start the day working on an audio server, then meet about a facility build-out, and end the day working at a Boston Celtics game — all in a day's work.

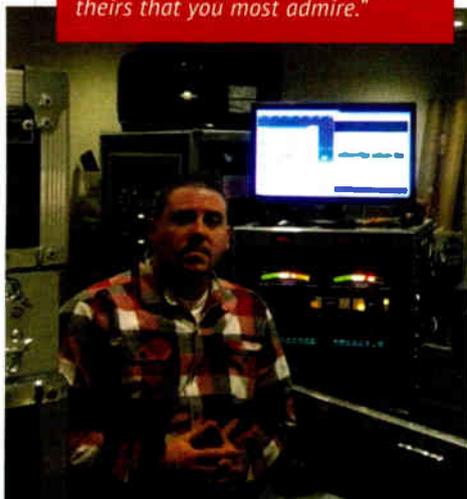
How did you get into the field of radio/broadcast engineering?

Zachary Akey: My career started as a maintenance technician in the U.S. Army. From there, I served as a communications engineering technician for a government HF program. After that I went to college and interned with an FM talk and loved all aspects of radio. When an engineering position opened up, I applied and was able to leverage my previous public sector experience and familiarity of the broadcast operation from my internship.

How do you think your age affects your approach to your job? Or do you think it doesn't?

Name: Zachary Akey, 32
Company/Title: Westwood One; Director, Broadcast Engineering and IT
City: Washington, D.C.
Certifications/memberships: SBE member

"Surround yourself with other broadcasters — not just engineers. Spend time with those you respect, and try to emulate the traits of theirs that you most admire."



Name: Kelsey Black, 35
Company/Title: Scripps Media Inc. Boise, Chief Engineer — Radio
City: Boise, Idaho
Certifications/memberships: SBE member, FCC Amateur General License

"I see the structure of my job now and in the future as still being very fluid, compared to those who may have only had a studio and transmitter group under their responsibility."

Akey: As a millennial, I am comfortable moving quickly to implement cutting edge technology. Further, I am always eager to leverage technology to improve staff workflow and increase efficiency and productivity. I think that there are elements in previous generations who take an "if it ain't broke, don't fix it" approach, whereas perhaps due to being younger, I feel that there will likely always be room for improvement.

What do you see as the most important industry trend affecting broadcast engineering today? How might it affect the profession?

Akey: Clearly the most important trend in the broadcast and greater media industry is an attempt to determine effective content delivery platforms; whether web streaming, podcasting, a smartphone app or traditional high-power RF, as content producers we are simply trying to reach (and keep) our audience in the most convenient way for them.

As far as how it affects the profession, I have two takes: 1) from the perspective of the engineer, it means you need to stay on top of technologies evolving at an exponential rate; 2) from an industry perspective, I think it's a huge benefit to everyone agile enough to stay in the game. There is a fine line between becoming an old media dinosaur, and the very real risk of being ahead of your time (broadcast.com, anyone?).

What advice would you give to other young engineers or to aspiring engineers?

Akey: Surround yourself with other broadcasters — not just engineers. Spend time with those you respect, and try to emulate the traits of theirs that you most admire. Technology chops are an obvious must have, but you will go much further than the transmitter if you actively work on your interpersonal skills and business acumen.

What's an important thing that you've learned from an industry mentor?

Akey: Check your ego at the door, best idea wins, and play to your team's strengths.

How did you get into the field of radio/broadcast engineering?

Kelsey Black: In high school my family was operating a two-screen movie theater in Willcox, Ariz., and I was the projectionist/technician. My mother was the general manager. She purchased some airtime for spots at the local AM/FM combo station. I was very excited, and I installed Cool Edit Pro on my home computer, produced a couple spots and took them to the radio station. The radio station happened to be hiring for a full-time traffic manager position, and I was hired on the spot.

How do you think your age affects your approach to your job?

Black: I see the structure of my job now and in the future as still being very fluid, compared to those who may have only had a studio and transmitter group under their responsibility. I have many additional developing and new technologies to incorporate and grow our media platform into. There are many of my senior peers who adapt well and embrace new technologies, and I feel that maintaining that same ability to actively search for, develop and adapt to new technologies is essential to remaining relevant into the future.

What's the most important industry trend affecting broadcast engineering today?

Black: I hope that with the inevitable

decrease of the engineering talent pool size due to "aging-out" and the rush of young talent into the IT specialties, the balance of value to operations will return to the broadcast engineering side out of the shortage of quality engineering talent available. This would lead to improved average rate of pay in the engineering field, and entice new talent into the broadcast engineering field.

What advice would you give to other young engineers or to aspiring engineers?

Black: Broadcast engineering isn't a perfect fit for everyone. But for those who have already found that it is "in their blood," "wired like that" or "bitten by the bug," I encourage you to dive deep and broad into your skillsets. Broadcast engineering demands a wide variety of skills that you won't learn in just one discipline.

What's an important thing that you've learned from an industry mentor?

Black: Don't get "I can't" stuck in your head. If someone can do it, then you can learn what is needed to get to where you also can. Equally dangerous is overconfidence. Sometimes the largest challenge is in learning to recognize how much it is you don't really know about something.

How did you get into radio/broadcast engineering?

Alex Brewster: My grandfather is a
(continued on page 10)

Name: Alex Brewster, 27
Company/Title: Broadcast technician, Comtek Service Inc.
City: Olympia, Wash.
Certifications/memberships: SBE member, Amateur Radio Operator, Comtrain Tower Climbing and Rescue certification

"One of the most important and interesting trends is the integration of IP-based equipment over the last several years."



HIGH CAPACITY EVENT STUDIO TRANSMITTER LINKS



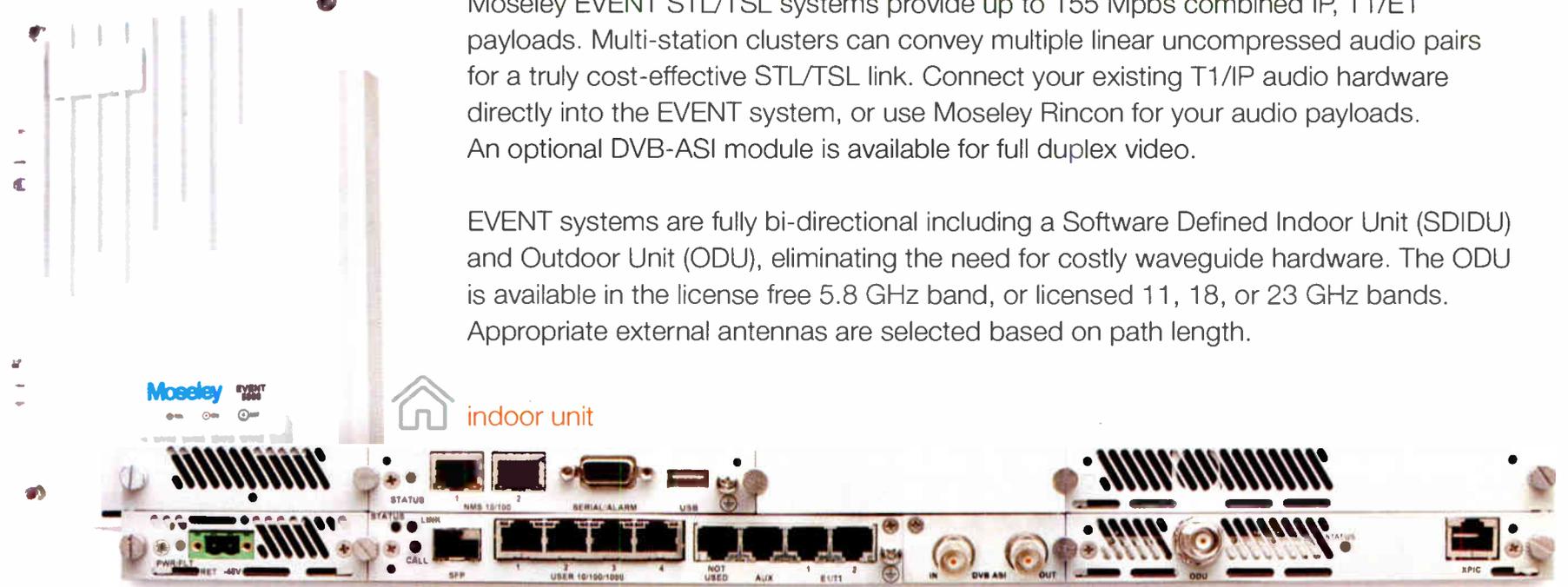
outdoor unit



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UNDER 40

(continued from page 8)

broadcast engineer. I grew up helping him with projects and going out with him to take field strength measurements. When I was 17, the transmitter building at one of his AM stations burned to the ground. I spent the following summer helping rebuild. I got experience in building ATUs and wiring components together, and installing transmitters, feedlines and ground systems. I ended up helping the tower company that was contracted to install the new feedlines and repair the ground system. After helping them on that job, I was offered a full-time position with them, building towers and antenna systems.

What do you see as the most important industry trend affecting broadcast engineering?

Brewster: I think that one of the most important and interesting trends is the integration of IP-based equipment over the last several years. It requires the engineer to understand and learn the skills that were previously confined to the computer industry. Although it is another skillset to learn, it provides flexibility in how one is able to access, control and monitor equipment and sites. It also allows for multi-platform broadcasting. You can now access your station's content from any number of devices.

What would you say to other aspiring engineers?

Brewster: The advice I would give to young engineers is never settle for the knowledge you have. There are always people that will know more about a particular piece of equipment, or technique. Always be looking for the next thing to learn, or the person that can teach you.

What's an important thing you've learned from an industry mentor?

Brewster: One of the most important lessons I have learned, you are never too young or too old to solve a problem in a new way. My grandfather, who is in his 70s, is still coming up with new ideas, and better ways of dealing with old problems. It is exciting to watch and listen to the concepts and ideas that his mind creates. Likewise it is fun for me to look at a problem and think of a different way to find a solution.

How did you get into engineering?

Yancy T. McNair: I started as a board op in 1996 at the age of 17. In 1997 the company I worked for purchased another radio station, and the engineer needed help building a new studio. From that point on I was hooked. I wanted to be an engineer. Shortly after the build I became his assistant, and I followed him



Name: Yancy T. McNair, 37
Company/title: Cumulus Media — Vice President of Engineering
City: Houston, Texas
Certifications/memberships: SBE member

"Someone once told me they would never ask me to do something they wouldn't do themselves. That really stuck with me, and I've tried to live by that and pass that on every chance I get."

everywhere, learning everything I could absorb.

What do you see as the most important industry trend affecting broadcast engineering today? How might it affect the profession going forward?

McNair: With the advancements of audio-over-IP and with computers controlling radio stations, engineers really need stronger IT skills than they needed just five or 10 years ago. Also, with radio stations adding more digital products, engineers are having to deliver audio to more than just a transmitter. Online and mobile streaming and the addition of video products are changing the way people interact with radio. In markets where the engineer handles it all, it's becoming more difficult for them to keep up with all the changes. I think this is changing the way managers look at skillsets of engineering candidates.

What advice would you give to others?

McNair: There's no one-stop-shop school to learn how to be a broadcast engineer, so asking questions is the way to learn. You will never know the answers to all the questions, but you need to know how to find them.

What's an important thing that you've learned from an industry mentor?

McNair: Someone once told me they would never ask me to do something they wouldn't do themselves. That really stuck with me, and I've tried to live by that and pass that on every chance I get.

How did you get into the field of radio/broadcast engineering?

Kurt Oberloh: I took my first radio gig at KCWU 88.1 as a broadcast IT specialist. They recently upgraded their

Name: Kurt Oberloh, 36
Company/title: Townsquare Media, Director of Engineering, Washington
City: Yakima/Tri-Cities, Wash.
Certifications/memberships: SBE member

"Create relationships. Get to know your vendors and other engineers in your area. The issues and problems you are trying to solve on your own have most likely already been seen by someone else."



facility to a complete Axia/Livewire plant. Once I got my feet wet, I was hooked. Creating efficient and redundant audio paths upgrading the station's main transmitter to a Nautel VSI and attending my first NAB conference in 2013. I then took a position with Ingstad Radio Washington, and the flood doors of experience opened. In the span of two and a half years, I built new studios with new Axia/Telos technology and upgraded automation, replaced two antennas, installed/moved 10 transmitters, built and designed Yakima Valley's first commercial HD signal along with three translators and assisted with the conversion of a FM freestanding tower with antenna to a "long-wire" AM site keeping both stations on air from that site.

I was recruited to Townsquare Media in the beginning of 2016 to serve as their regional engineer for their Washington properties and have already started building again upgrading one of their properties to an AoIP facility using WheatNet technology.

What do you see as the most important industry trend affecting broadcast engineering today? How might

it affect this profession in the future?

Oberloh: Broadcasting now is like the automobile was in the late '80s, early '90s. You used to be able to look at the engine on the car see what was wrong and fix it. Simple enough right? Well, now ... you now need a computer to figure out what is wrong with your car. Broadcasting is the same.

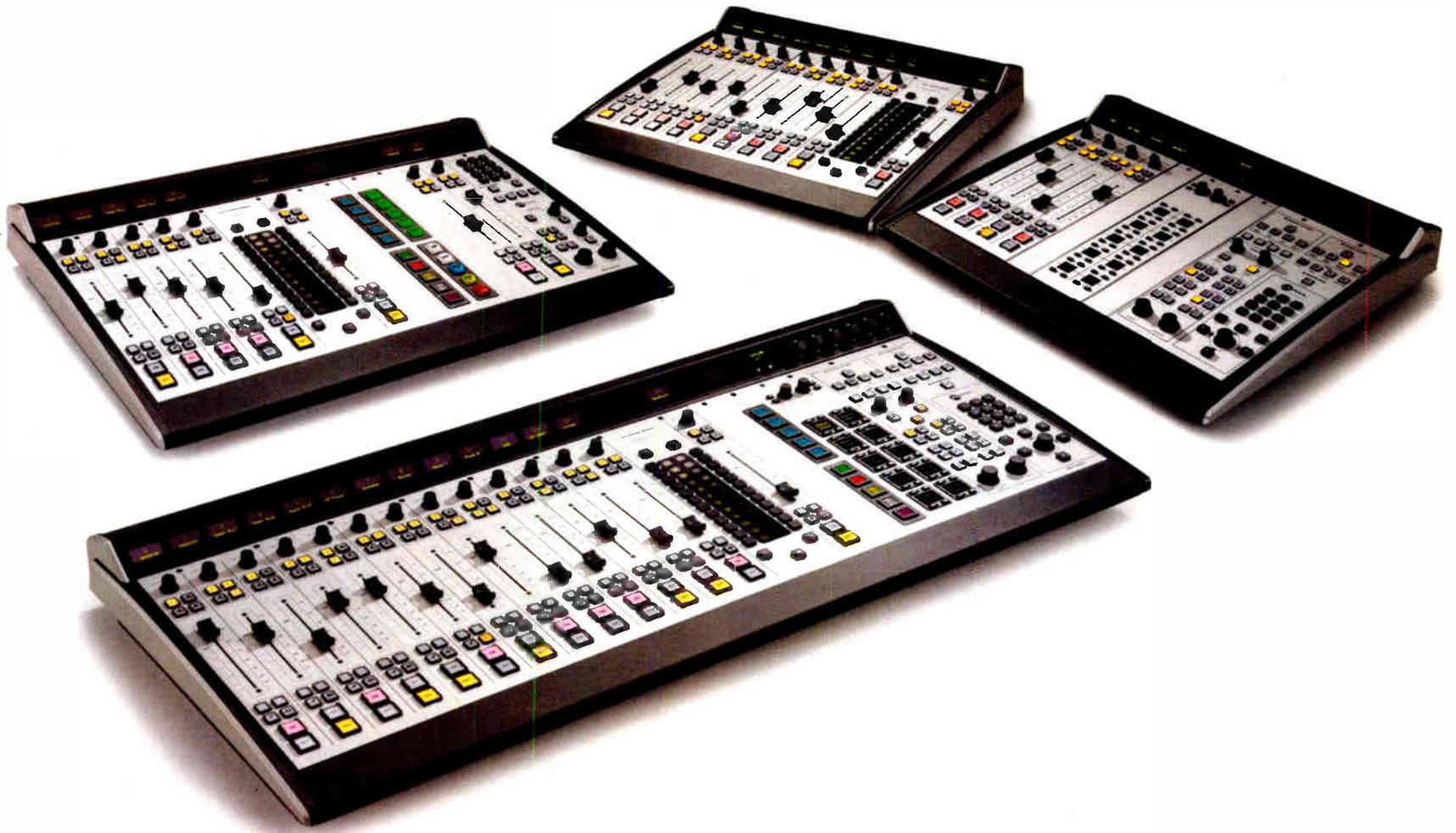
Don't get me wrong; I love the fact with AoIP I can simply route audio from one point to the next without rewiring a thing, or my transmitter will call/text/email me once it feels there is something wrong with its programming/hardware.

What advice would you give to other young engineers or to aspiring engineers?

Oberloh: Create relationships. Get to know your vendors and other engineers in your area. The issues and problems you are trying to solve on your own have most likely already been seen by someone else. Reach out and ask for help; in the long run it will help keep you sane.

Are you an engineer in your 20s or 30s? We'd like to hear from you. Email Emily Reigart at ereigart@nbmedia.com.

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Why Did Art's LED Lamps Begin to Flash?

Something interesting happened when Art Reis helped out on a homeowner's electrical project

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Art Reis, principal of RadioArt Enterprises, writes that lighting seems to be evolving at a rapid pace — as anyone who has had to buy an old-school incandescent bulb recently can attest.

For years, the compact fluorescent bulb has been the replacement of choice for the old hot-filament type; but they have their own demons, including RFI and a hazmat problem.

in the handle.

The homeowner had picked up a whole carton of the new, low-priced LED bulbs, so they were duly installed in their new lamps. When power was applied, the bulbs came on perfectly — no latency as with their CFC counterparts, and no “warm-up” time either.

Then Art turned all the lights off.

Within moments, the LED lamps began to flash, every few seconds, without fail. Everywhere there was an LED lamp with a neon-lit switch, there was a flash, and the flashes were not synchronized. They were “dancing” from room to room!

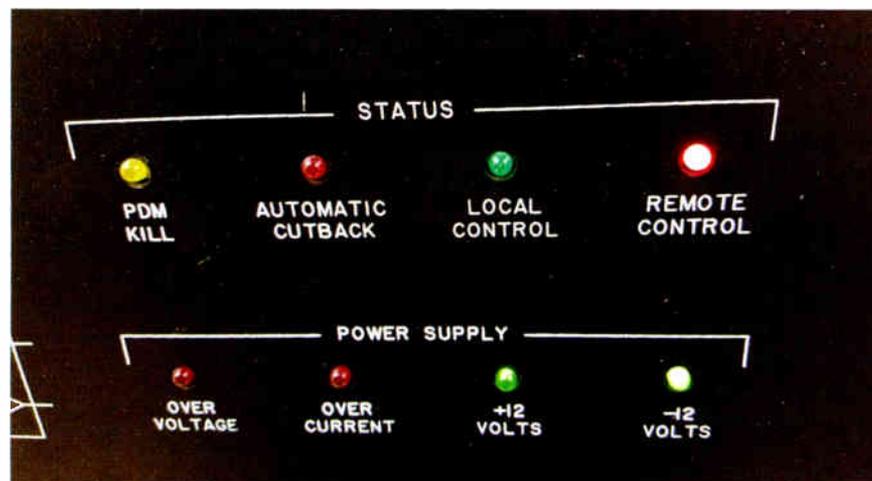


Fig. 1: LEDs aren't just for status panels any more.

LED light bulbs have become prominent, but the concern here, at least at the outset, was cost. Lately, that drawback has been evaporating, with LED bulb prices falling faster than the price of oil. Art has seen 60 watt versions in the local hardware store for under \$3.

He recently undertook the electrical upgrade of a home where the wiring was over 70 years old and becoming dangerous. As a part of the project, all the original-equipment “push-button” light switches were replaced with glow-in-the-dark switches that have neon bulbs

It took Art a moment to figure out what was going on. Can you? We'll return to the discussion in a moment.

SBE members are a great resource for today's broadcast engineer. At a recent chapter meeting, the question of coatings on guy wires came up. Is it necessary; does it help or hurt the guys? Is grease sufficient?

The overwhelming response was the wires should be periodically greased, the thinking being that grease will inhibit rust. A tower contractor took issue with other types of coating, saying those don't help much because the outer coating would come off, and the internal pressure of the wires making up the guy wire would be enough to keep out foreign material. Greasing the guys is adequate.

Another person whose experience I respect says check with the provider of your guy wires and tower for their recommendation, especially if you operate

in a saltwater environment. “I don't generally see corrosion on guy wires, though once in a great while I see some that are pretty bad, particularly on smaller towers with smaller/cheaper cables. It's always been my assumption, and that's all it is, an assumption, that it depends on the

circuit that sets the proper voltage for the LED. That circuit includes a charging capacitor.

With the light switch turned off, the current to the bulb is reduced to a trickle, but it is still present, so the capacitor charges up much more slowly until it reaches the circuit's threshold voltage. Then it discharges all at once and the process starts again. What you



Fig. 2: The changing face of your local neighborhood bulb shelf.

material and/or manufacturing process as to how they weather.”

What has been your experience? I'd like to hear from Workbench readers at johnpbisset@gmail.com.

Bill Bowin is chief engineer for North American Broadcasting Co. in Columbus, Ohio. He was seeking a battery for the amplifier in an old Delta OIB-1 when his wife Sherrie Bowin, CRO, CBNT, ran across a firm that manufactures replacements for batteries that have been obsolete for years. Visit www.exellbattery.com.

One of their products includes a replacement for the “B” batteries found in the older Nems-Clarke, Potomac and other AM field intensity meters. Exell Model 457 is a 67.5 V alkaline replacement battery. Type “457” into the search field of the website.

In addition to periodic recalibration, battery replacement can restore some of these old timers, and batteries from Exell are made in the USA.

Back to Art's flashing lamp problem. Remember that with a neon-lit switch, the circuit is never completely off. There's always at least a tiny bit of current going through the neon bulb and its companion 100 k ohm resistor, then through the LED lamp. Inside the LED lamp is a tiny digital power supply cir-

are seeing is the circuit operating as it always does but in slow motion because the current flow is greatly reduced.

The bottom line is that, at least in Art's experience, using LED bulbs with neon-lit switches is not particularly recommended.

Art ran this anecdote by a friend who is a lighting consultant, well versed in the latest stuff. He says that while Art's experience is real, he would experiment with various brands and models of LED bulbs; he doesn't believe that this trait is universal with this type of bulb.

However — and this is for you radio engineers out there who have studio facilities with neon-lit switches — when the boss shows up one day with a basketful of LED bulbs that he wants you to install in place of the old filament-burners, try *one* first, watch it for a minute or so, and if you see the thing flashing, let the boss see it, so he or she can decide which stays and which goes.

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

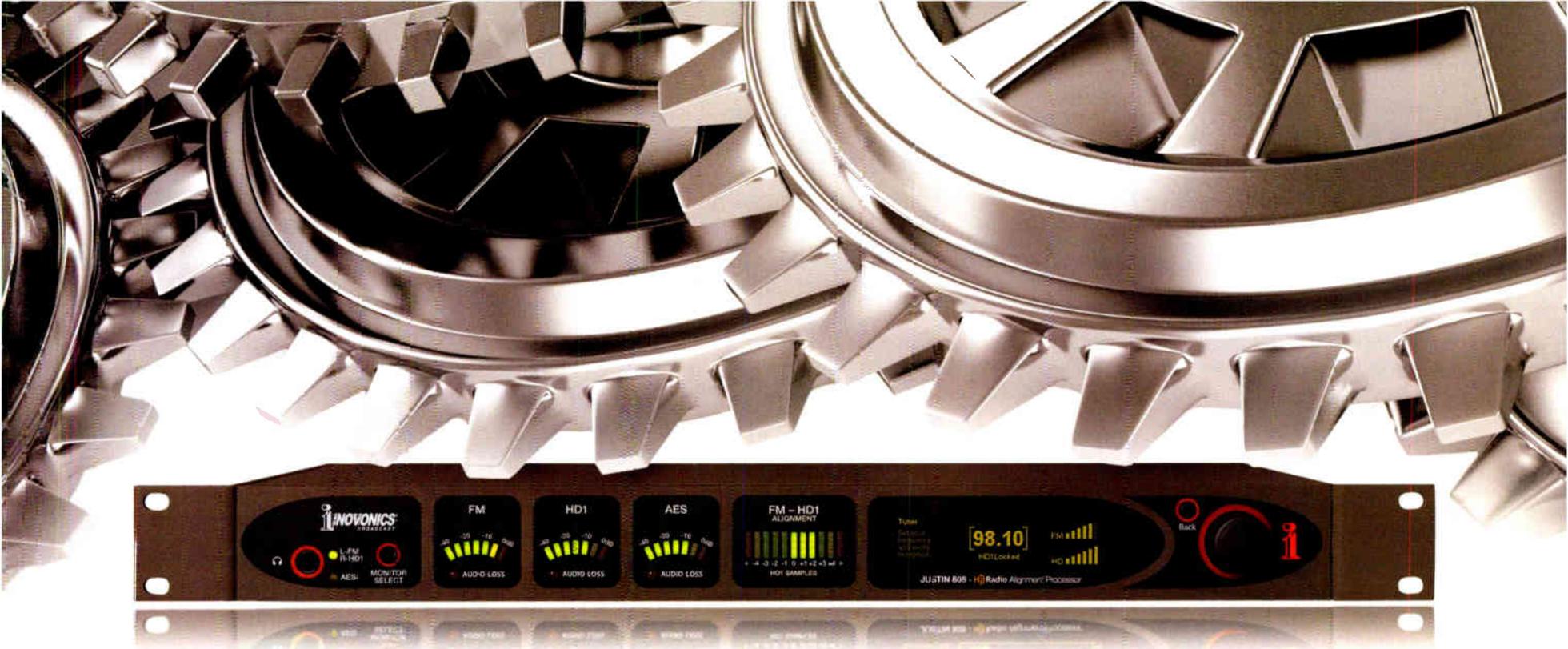
Author John Bisset has spent 46 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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- Sam Caputa, Director of Engineering, Emmis Communications.

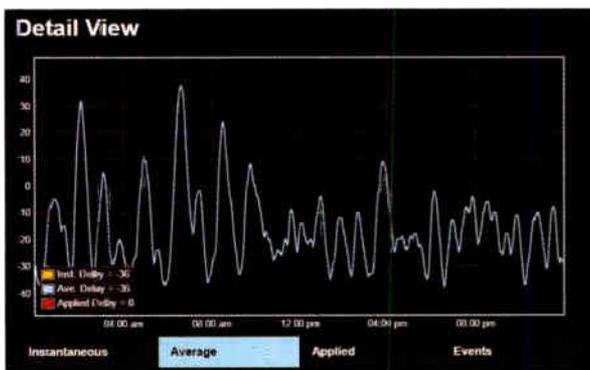
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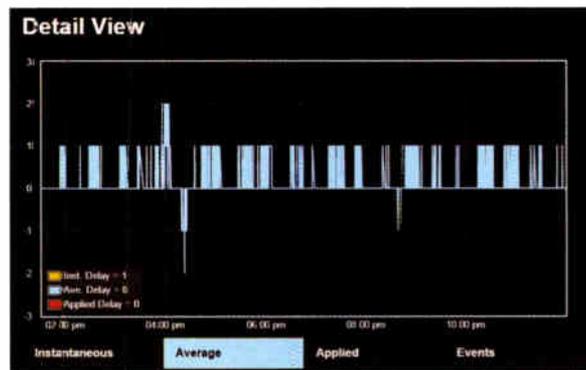
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MARKET PLACE

Light Headed: Pelican Products has a nifty product for the engineer who has almost everything: a headlamp.

The 2780R uses LEDs and offers three levels of intensity. Powered by a rechargeable lithium battery, via a USB charger, operation time varies by intensity: high — 558 lumens/2 hours; medium — 213 lumens/3 hours; and low — 95 lumens/7.5 hours.

The water- and weather-resistant polymer lighthouse also has a second “down-cast” LED for lighting the space immediately ahead and below. The whole head can be pivoted 70 degrees. The forward beam has an estimated effective range of about 400 feet.

The battery pack mounts on the rear of the head harness for balance. It also contains a battery level indicator and red safety light.

The 2780R ships with cloth head harness and black, white and luminescent covers.

Price: \$119.95.

Info: www.pelican.com



Mic-tastic: Electro-Voice has a new group of microphones available for instrument and voice use in studio or live applications.

The company calls the ND series successors to the long-serving N/Dym series. The family starts with four vocal and four instrument microphones.

The core of the ND series is a capsule built on the N/Dym foundation. Other features include Memraflex grilles, humbucking coils and internal shockmounting.



The ND76 and ND76S are cardioid vocal mics; the S model has an on/off switch. The ND86 is a supercardioid with increased off-axis rejection while the ND96 is a supercardioid designed for loud environments.

The instrument models are the ND44 clip-on aimed at drums; the ND46 dynamic swivel mic; ND66 small-diaphragm condenser pencil-style mic; and the ND68 dynamic kick drum mic.

The ND microphones will begin shipping in spring.

Info: www.electrovoice.com

Folding the Monopole: Ampegon says its new folded monopole 50 kW antenna system features a “new design concept and optimized antenna structure.”

Fully grounded and not requiring a base insulator for antenna placement, the new system streamlines antenna setup, explains Ampegon, simplifying maintenance of components and auxiliary systems.

For example, says the company, no isolated energy transformer is required to power the air obstruction light since a light is supplied directly with the antenna structure.

Constructed as a single unit, the folded monopole

antenna comprises a mast and a radiating element. The guy ropes supporting the mast are each divided by a single insulator. The upper section forms the “antenna cage,” which is connected to the mast on one side, and by ropes to the insulated feed point at the base of the antenna.

As a result, says Ampegon, all parts of the steel structure and ropes are fully grounded, which eliminates the risk of “floating” and means there is no electrostatic discharge or flashover.

A minimum number of advanced insulators (featuring silicon protection and able to handle extreme environmental conditions) are installed, thus maintenance requirements are simplified and minimized, says the firm.

Info: www.ampegon.com



EAS Upgrade: Emergency alerting equipment specialist Digital Alert Systems has announced a new software version of its main hardware platform for its DASDEC EAS/CAP emergency alert hardware boxes.



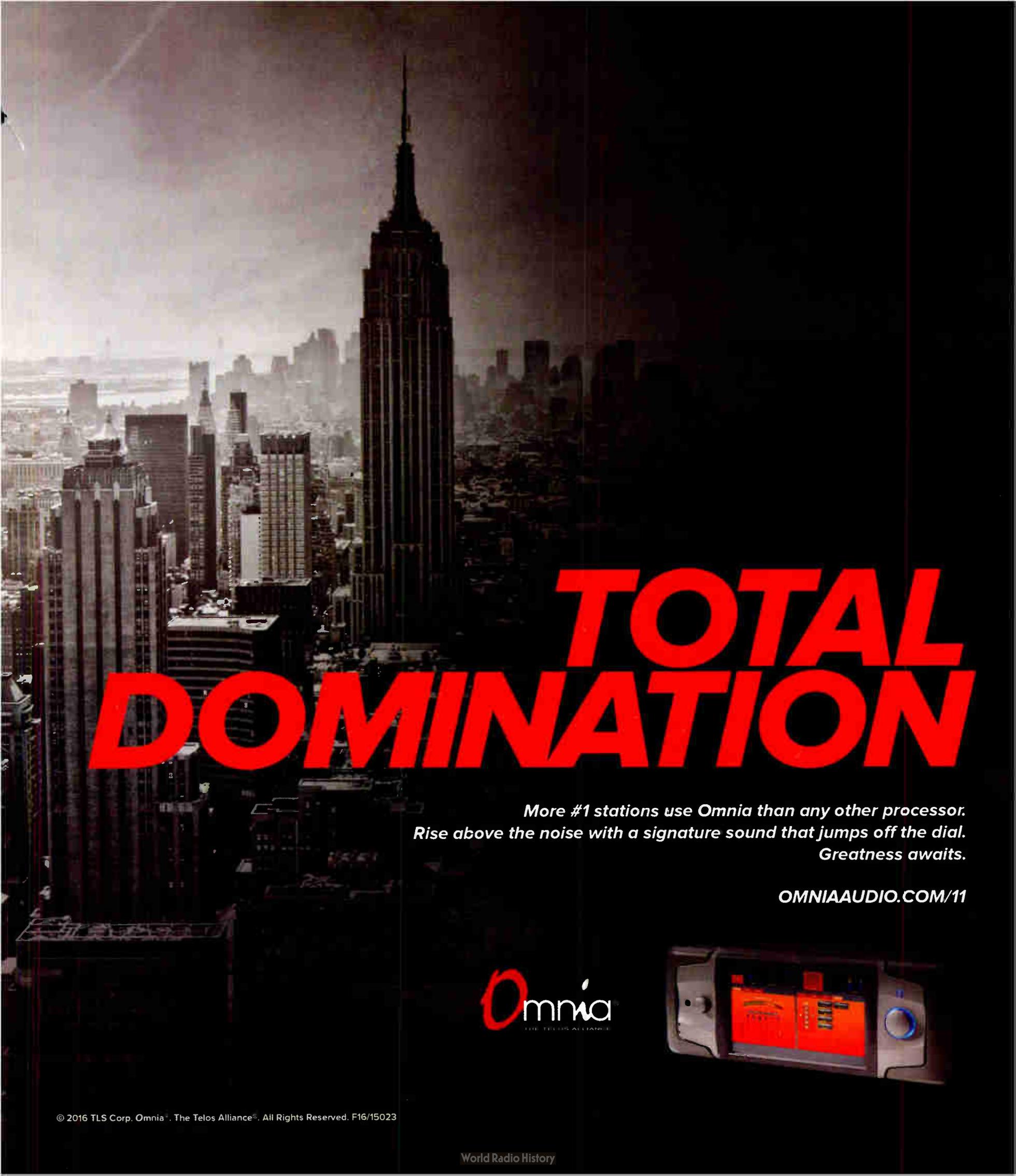
According to the company, version 3.0 “features dozens of new functional and operational improvements including the unique Alert Agent, a more enhanced and powerful way to selectively process EAS messages from a variety of sources, as well as to streamline menus and reduce compliance complexity.”

In addition, the company says, it is compliant with 2016 FCC requirements.

Not done with the updates, DAS also has announced that version 2.0 of its Audio Management System is available. The company said that many tweaks were customer-driven.

DAS VP for Business Development Bill Robinson said, “Our newest software upgrades reflect several years of development and refinement, and we will highlight this work by demonstrating the new auto-recue feature for the Audio Management System and the new DASDEC version 3.0 with Alert Agent.”

Info: www.digitalalertsistemas.com



TOTAL DOMINATION

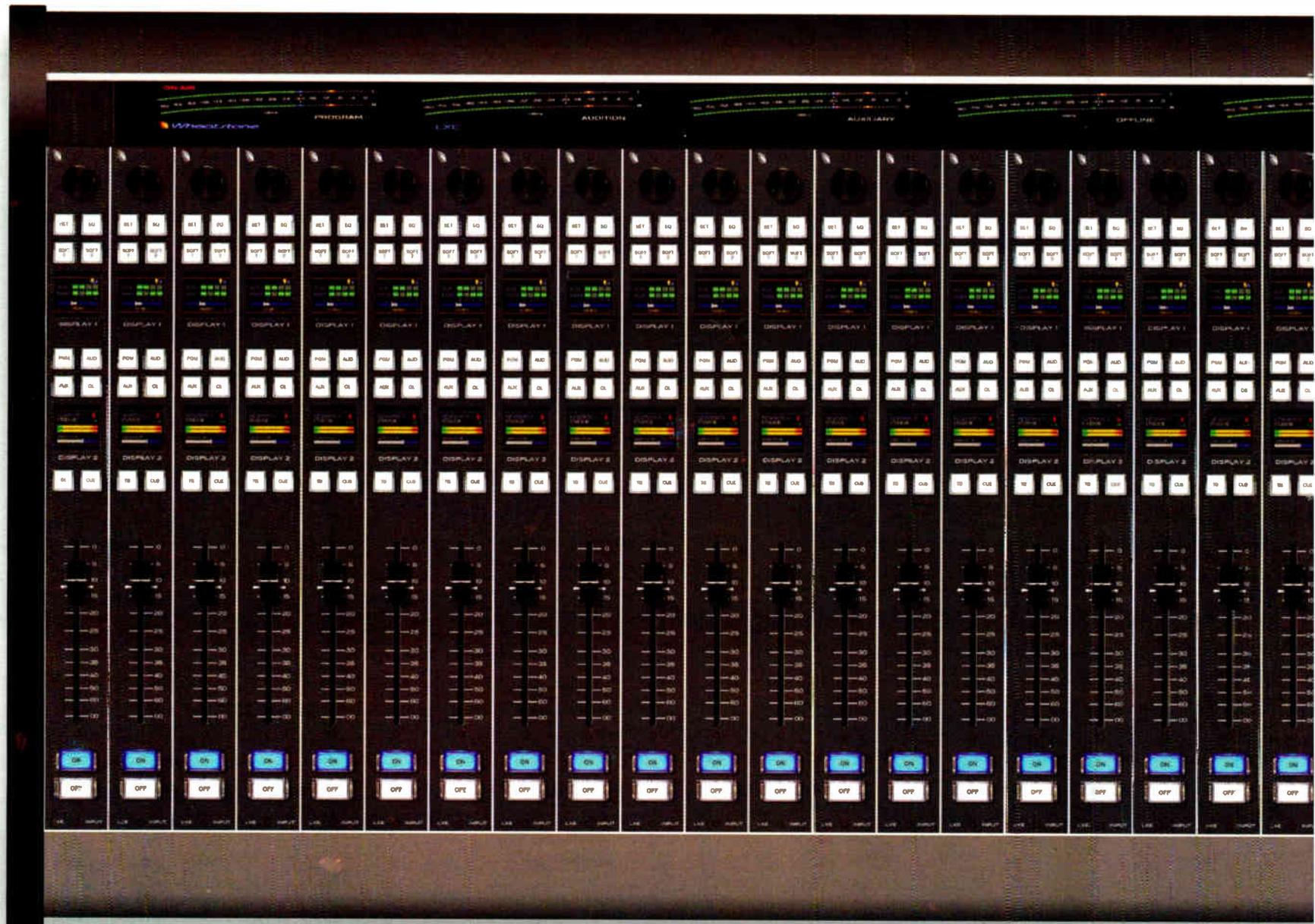
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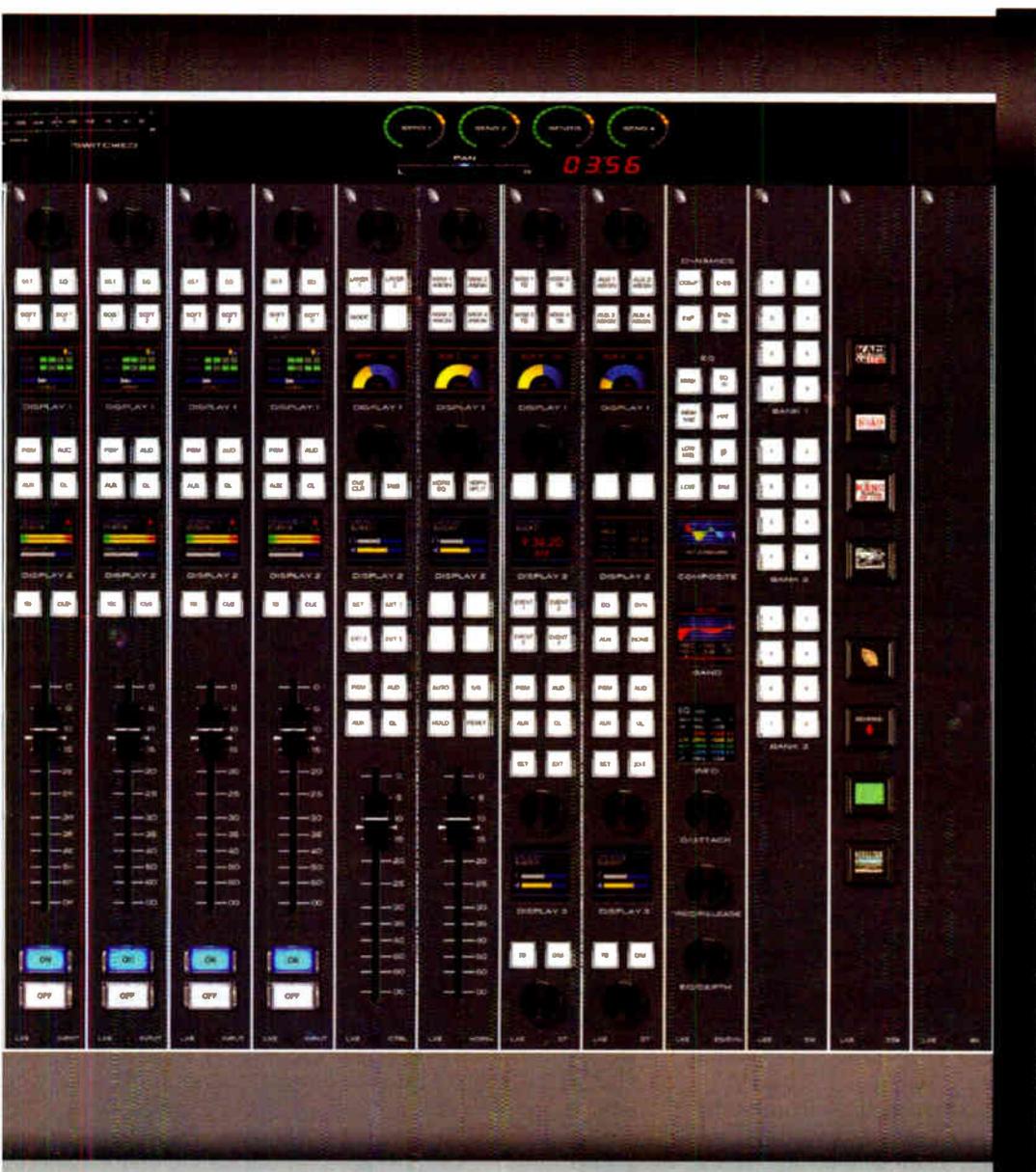


The Evolution of LX Radio Control Console

Wheatstone's new LXE console brings control surface configuration to a new level. Going far beyond the usual "any source to any fader" network concept, the LXE is a fully flexible control interface, where every switch and rotary control is programmable to perform any desired function. This means console architecture is completely customizable to client requirements, and limitations to functionality are no longer a factor. Physically compact, the LXE is available in several different form factors including countertop, countertop sunken, and split frames (split sections are not confined to one room, they can actually be in different studios).

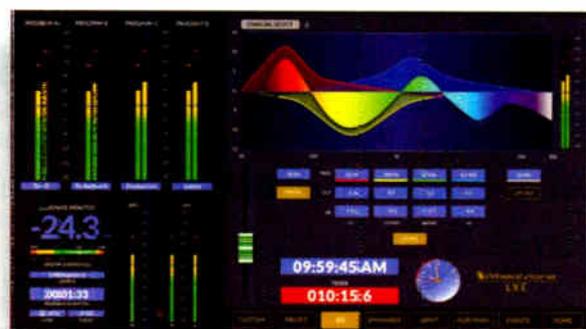
Any Way You Want It

ConsoleBuilder software allows every switch on the surface to be programmed for function, mode, and even color (switches are RGB led illuminated). In fact, built-in software allows every button to be scriptable, letting you create powerful macros for as many controls as you want. Multiple full color OLED displays on each panel keep pace with ongoing operations, and event recall allows painless one touch console reconfiguration at the press of a button. With its inherent control flexibility and ability to access thousands of signals (sources and destinations are limited only by the size of the network) the LXE takes facility work flows and audio control to a new level.



The World At Your (Motorized) Fingertips

The LXE can have up to 32 physical motorized faders, with full DSP processing available on all 32 channels. Surface(s) interface seamlessly into the WheatNet-IP Intelligent Network, and utilize BLADE-3s for audio control and associated logic data flowing on single CAT6 interconnecting cables. The system can ingest and convert virtually all audio formats: analog, microphone, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67. Loudness metering, phase control, and full EQ/Dynamics are included.



All New Graphical User Interface

LXE's new GUI has pre-built screens for everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touch-screen accessible with gestures you're used to using on your smart devices. And, the GUI is just as customizable as the LXE surface. Using our ScreenBuilder-LXE software, you simply drag and drop objects and define their functions via a simple wizard interface. You can store multiple custom screens, if you like, to go with your custom LXE setups.

THE ALL NEW LXE BROADCAST AUDIO CONSOLE

Testing and Using Power Transformers

Tips including a good procedure for drying a high-voltage power transformer

TECHTIPS

BY MARK PERSONS

So you have an old tube-type transmitter as a backup. It ran perfectly when you last turned it on two years ago to substitute for your then-ailing solid-state main transmitter. Now you need it again.

Filaments come up, high voltage comes up for a few seconds, and then BANG! Off it goes.

Ouch, what happened? Answer: There was an arc-over in the high-voltage power transformer.

Gosh, it worked fine last time! What transpired in those two years?

Answer: Moisture crept into the transformer windings, just waiting for high voltage to be applied so it could create an arc-over path.

To prevent this scenario, run the transmitter for a few hours every six months to heat the components and drive out moisture. You'll smell it too ... something like an old electric heater being started for the first time in the fall. Also best to check the inside of the transmitter for mouse houses or snakes before energizing with power. You'll often be amazed at what you find. There might even have been a roof leak that dropped water inside the transmitter.

BRINGIN' THE HEAT

Now you go looking for a replacement high-voltage transformer to fix the old transmitter. Your engineer friend 60 miles away says he has the exact replacement from the same model transmitter that he "parted out" a couple years ago. Good news.

You get the transformer, but you are smart enough not to install it right away. Instead, you warm it up to drive out moisture.

How do you do that? Well, you can put it in an oven and heat it to 150 degrees for a few days. Your wife might not appreciate that, especially if the transformer weighs in at a hefty 400 pounds. You can blow hot air on



Fig. 1: Heating transformer coils with a battery charger and variable AC power supply.

it with an electric heater, but there is a better way.

A good procedure for drying a high-voltage power transformer, even if it has not doused been in water, is to put a traditional non-regulated car battery charger on the primary winding (Fig. 1).

Yes, this is direct current, but the

transformer is not being used as an AC transformer in this case. Hopefully the current will be in the range of what the charger can deliver, probably 10 amperes or less. Older chargers have a 6-volt output, which will reduce the current. I use a Sencore brand PR57 AC Powerite variable AC transformer

NABA

(continued from page 18)

(he will remain as a board member) and the newly elected executives were introduced. They are NABA President Richard Friedel (executive VP, engineering & operations, Fox Networks and ATSC chairman), NABA Vice-President Sergio Sarmiento (editor-in-chief, TV Azteca), and NABA Vice-President (reelected) John Lee (executive director, technology solutions CBC/Radio-Canada). I thank Bob Ross for his service and leadership to NABA over the past years and look forward to the leadership of the new executive over their two-year term.

FUTURE OF RADIO & AUDIO

On March 3 we held the "Future of Radio & Audio Symposium." Paul Brenner, senior VP, Emmis Communications and vice-chair of NABA's Radio Committee, chaired the day. It was the second Radio Symposium that NABA has done; the first was held in Toronto last year; a third will be held in Washington next year.

It was another day packed with great information, with speakers and panelists interacting with the attendees. The director-general of CIRT gave the opening keynote, and like his counterparts from television the day before, he focused on the new communications law, reform of the electoral law and technological delay. This was an informative context for all the symposium delegates on the challenges facing Mexican radio broadcasters as they embrace change, and it provided a background for the discussions and presentation that followed.

to set the battery charger's input voltage to get the output current I want. Let the charger's current warm/heat the transformer for a day to drive moisture out. Make sure the current you use is less than the maximum allowed amperes for that winding. If this is a three-phase power transformer, do the same for all three poles of the transformer.

Now hook the transformer primary to a variable AC transformer, as mentioned above (Fig. 2). For safety, use a three-conductor cable with the ground connected to the transformer's core. Slowly run the up the voltage while measuring the secondary voltage with a high-voltage AC meter. Likely your variable AC supply will only deliver 0-130 VAC. Assuming the transformer has been built for a 240 VAC input, the next step is to connect the primary to 240 VAC for a full-voltage test.

Perform this drying procedure with every high-voltage transformer, modulation transformer, filament transformer or power supply choke that has been sitting in storage for any length of time. It is common for moisture to be "drawn up" from a concrete floor into a transformer. Components like this should be stored sitting on wood.

Sometimes a transformer winding will short to its iron core. Use an ohmmeter to verify it hasn't. A Sencore LC53 Z-Meter can apply 600 volts between a winding and the core. That is better than a regular ohmmeter that

We also had a panel and then a presentation on the rollout of HD Radio in Mexico. The panel was chaired by Claudio Martinez (VP, consumer electronics business development, DTS Inc.) and included a number of Mexican broadcasters who discussed both business and operational issues. Glynn Walden, whom many consider to be the "father" of HD Radio, participated and added great value to the discussion. At the end of the panel we had a presentation from Miguel Fernandez Arias, director, engineering, IMER (Instituto Mexicano de la Radio) on the technical issues surrounding the rollout of HD Radio in Mexico City.

John Ellis (founder and managing director, Ellis & Associates) gave a terrific presentation on the connected car, covering both the challenges and opportunities open to broadcasters. It is clear that the car is key to a radio broadcaster's business plan; to not be a part of that connected world is to not have a business. It was great no-nonsense advice.

The symposium ended with a great panel chaired by David Layer (senior director, advanced engineering, NAB and Chair, NABA-RC FM Chip WG) focusing on getting the FM chip turned on in mobile phones. Colleagues from Canada, Mexico and the U.S. joined him, and while great strides have been made in the U.S. to get the carriers to activate the chip, there has been little success in Canada and Mexico. Like the connected car, getting the chip turned on, with the appropriate app to maximize the benefit, is critical to the medium's future.

Paul Brenner wrapped up the symposium and noted how pleased NABA was about being in Mexico and understanding the Mexican perspective on the challenges we all face.

Paul's right, it was a great three days. Our thanks to our Mexican hosts: Televisa, TV Azteca and CIRT.





Fig. 2: Testing high voltage using a variable AC power supply on a primary winding.

puts a mere 10 volts or less across its leads. The PR57 Powerite has a leakage test built-in that will do the same test, but at 120 VAC.

FORMER GLORY

Let's say you are installing an old transmitter into service after it has been stored.

Check the transmitter with a fine-toothed comb to locate and clean previous arc-over spots. You will want to clean dirt, dust and grime off high-voltage components, especially the insulators. Not a bad idea to heat transformers for a few days. Look for and replace any burned or obviously heated components. The idea is to restore the transmitter to its former glory. Check for and replace any failed light bulbs. This will help in trouble-

shooting when things do not go well.

If you are changing frequency on a transmitter, start by testing on its original frequency and power level into a dummy load. Make sure it is running properly before attempting a frequency conversion. This will eliminate difficult questions when it doesn't operate correctly at the new frequency. While you are at it, check for manufacturer's bulletins on updates to the design.

If the transmitter was built before 1980, look to see if oil-filled transformers and/or oil-filled capacitors have a "Non-PCB" label. Best not to put high voltage on components filled with PCB (polychlorinated biphenyl) oil. Most of those components were replaced 25 or more years ago when this substance became a nationally

recognized health hazard. Studies show a link between PCB exposure and cancer. There are companies that specialize in disposal of PCB filled components.

On another matter, every transmitter should have at least one high-voltage shorting rod (Fig. 3). If a transmitter doesn't have one, buy or build one. Mine has a 12-inch-by-1/2-inch diameter PVC handle with a 6-inch-by-1/4-inch diameter metal rod at the end. A heavy wire connects the metal rod to chassis ground in the transmitter. Always, always, *always* use one before sticking your hands on high-voltage components that you "assume" have no voltage at the moment. A loud BANG from a shorting stick on high voltage will tell you that your assumption was wrong.

Be safe! There is a shortage of broadcast engineers and we can't afford to lose any more. It makes perfect sense.

Mark Persons, CPBE, is a longtime contributor. His website is www.mwpersons.com.

Photos by Mark Persons



Fig. 3: When working on equipment, use a grounding rod to ensure there's no high voltage present

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Preserving Our National Pastime in Sound

Schwartzes get to hear — and restore — things others haven't heard in decades

BY KEN DEUTSCH

Since before World War II, Cooperstown, N.Y., has been home to the National Baseball Hall of Fame and Museum. But unbeknownst to the thousands of fans who make the pilgrimage each year, there resides a hidden cache of more than 14,000 hours of audio recordings of baseball players, coaches and fans that stretches back in time to the roots of the sport.

"We may not know what everything is at first because some of these tapes and records were poorly marked," she said. "But it is very rare when we can't determine the contents by listening and sleuthing.

"What we're doing here may end up being the definitive historical record so we want to get all the details right. Some of the interviews we have restored include umpire Augie Donatelli, pitcher George Pipgras, utility man Tito Fran-

in Poughkeepsie called Barclay-Crocker," said David. "They had a bunch of Ampex 406 and 407 tapes, mostly classical music. We had to figure out how to play them without shedding oxide all over the place, so we taught ourselves to clean and dehydrate the tapes. There were also issues with gooey splices that all had to be redone using archival splicing tape that is acid-free. We use some of these same techniques on the baseball material."

Because the NBHOF archives were recorded by many individuals over a period of decades, the reel-to-reel tape

speeds range from 1-7/8 to 15 ips.

"There's a lot you can do digitally and we have the software," said David. "We could have just played them all back at a constant speed and let the computer make the adjustment, but it just doesn't sound right unless you play these on the same type of machine and at the same speed at which they were recorded."

DDS Enterprises is trying to digitize at the highest practical resolution rates.

"Compressing audio into an MP3 is not the way to go," said David. "We use 96 kHz, 24-bit sampling to preserve as much of the original audio as possible. And when we use noise reduction it's very important that we not introduce

Donna Schwartz cleans an old record with the Keith Monks Record Cleaning Machine.



While play-by-play radio broadcasts are the property of Major League Baseball, the stories of the people on and off the field belong to the Hall of Fame; and it is this collection of interviews, now being restored, that captures baseball's colorful history in sound.

"BASEBALL IS AMERICA"

There are two challenges facing the curators: first, how to play these recordings, and second, how to make them accessible to this and future generations.

"The recordings are on reel-to-reels, cassettes, microcassettes and DATs," said David Schwartz, co-owner with wife Donna, of DDS Enterprises-Information Alchemy in Newburgh, N.Y., the company handling the restoration.

"We have 78, 45 and 33 rpm records, aluminum discs and cylinder recordings. We have tapes with Dolby A, B, C, SR and dbx. We have to maintain an equipment museum to play this stuff."

While David is the main technician, Donna is the research and documentation expert.

cona and Cool Papa Bell, who played for the Negro League from the 1920s to the 1950s," she continued. "We also have 'The Ballad of Don Larsen,' a song by Red River Dave on 45 rpm. Another rarity we restored is the original 1939 induction ceremony for the Hall of Fame.

"We have this tremendous archive of unheard stories, these first-person accounts from the greats in baseball, and as we work there is this tremendous sense of discovery. Baseball is America, and we take our role as conservators seriously."

MAKING IT PLAY

Restoring these archival interviews is not just a matter of dusting the tapes and discs off, racking them up and transferring the audio to a computer.

The Schwartzes use a proprietary six-step process, detailed at www.dds-enterprises.com, to bring these recordings back to life. Each item must be evaluated and processed individually.

"We started our company in 1986, and our first restoration opportunity came when we bought out a recording studio



David Schwartz aligns an Ampex reel-to-reel recorder.

DOING THE JOB

Some of the equipment used by DDS Enterprises for restoration:

Tape Recorders: Ampex AG 440-c, Otari MTR-12, Studer A80, various Teac, Sony and Pioneer reel-to-reels; Tascam, Sony, and Panasonic DAT machines

Turntables: Technics SP-10, Technics SP-15, Thorens TD 145

Outboard Gear: dbx Type I, dbx Type II, Aphex, Dolby A, B, C, and SR noise reduction, assorted phono preamps with EQ curves for most record labels (78s), Mark of the Unicorn 896 A/D, D/A converters, McIntosh amplifiers, Micmix Dynaflex noise reduction processor

Cart Machines: ITC 99B, ITC R/P

Monitor Speakers: JBL 4412A, Infinity Monitor II, ESS AMT 3, Tannoy NFM-8

Software: CEDAR and Waves restoration software, Adobe CS 5, customized proprietary software

Esoteric Stuff: Keith Monks record cleaning machine, Ampex RR 200/3200 duplicator system (from Barclay-Crocker), EMU Emulator III, KABA cassette duplication system, Weircliffe Model 8 bulk tape eraser, thousands of spare parts for every piece of equipment, test and calibration equipment to keep it all running properly



High-speed tape duplicators and "thousands" of spare parts occupy a corner of DDS Enterprises-Information Alchemy.

couple will deliver a certain number of pieces a month for a fixed sum. Because some of the recordings are five minutes in length and others are two hours, it seems to average out.

"We would like to complete all their audio," he said. "And our client would like that too, but it comes down to budgeting for them. The NBHOF is soliciting private and corporate donations to complete this digitization process, but there's actually more to it than that. They also have documents, films, photos, baseballs, gloves and other memorabilia. We are only involved with the audio materials."

What happens to the original tapes and other media after they are restored?

"In addition to our 'manipulated' versions, we return the original materials to the Hall of Fame, hopefully in better condition than we found them," said David Schwartz. "There may be some future technology that could do a better job than we did."

Learn more about the restoration here: baseballhall.org/discover/preserving-tapes-from-hall-of-fame-collection.

Ken Deutsch says he was born in Chicago, where rooting for the Cubs gave him the strength to persevere while his dreams were being ground into the dirt.



An impressive collection of noise reduction systems populates these racks.

artifacts. Hey, if the interview was done in a locker room we like to keep those background sounds because it's part of being there for the listener."

MAKING IT PAY

To some extent this work is a labor of love for the Schwartzes because of the time-consuming nature of restoration, but the couple still needs to earn a living.

"No one could possibly pay us for all our time," he said. "But we do have a process. Once everything is in the pipeline, we can do multiple tasks at once. We can be dehydrating tapes, playing them back; we can be tracking and researching different tapes at the same time. There's an economy of scale."

DDS Enterprises has given the NBHOF a package price whereby the

One of several work areas at DDS Enterprises-Information Alchemy.



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You Have the Power. Use It or Lose It!

There is still something very special about letting your entire community share collectively via radio

Let's consider the special moments in your life that you share with extended family and the closest of friends. These highly-charged, emotional get-togethers typically celebrate or commemorate life-cycle events. Marriages, new babies, birthdays, anniversaries, graduations, military promotions, holiday greetings to loved ones, or even get-well wishes for someone with a serious illness — all show a willingness and commitment on the station's part to be a member of the community.

connections we make with listeners. To that end, one path to examine is how your station might better connect with listeners who are experiencing the most vibrant — or most challenging — times of their lives.

PERSONAL NEWS

Your training may have taught you that only small-town radio can successfully mention names and personal life cycle events on-air. But that assumption will limit your thinking on how to

KOGM(FM) in Opelousas, La., owned by Delta Media, announces birthdays every hour, every weekday morning.

While milestones are the most meaningful and memorable activities in our lives, they are rarely reflected in any meaningful way on modern local radio.

On-air reflection of these cherished memories has gone the way of the lost-dog announcement. While I'm not suggesting that we annoy the public at large with details about where Fido was last seen, localism has to involve emotional

approach this challenge.

If you wouldn't hesitate to mention the name of one contest winner on a big station in a major city, why would you shy away from congratulating a couple on an anniversary, or mention a high school graduation ceremony involving hundreds of kids?

Listeners have stopped calling radio stations to tell us about their birthdays or ask us to congratulate a spouse about an anniversary because we've stopped transmitting this personal news in any meaningful or consistent way. If we never congratulate people on the air for getting married, why in the world would they ever let us know that such a momentous occasion has occurred?

It takes effort and commitment to amplify personal events on-air on a regular basis. Your on-air staff first

needs permission and then guidelines on how best to work in the content. You may even want to keep a daily log to determine how often you're actually executing against this tactic so you can tell if there's enough frequency for listeners even to notice that you're doing it. Be sure to determine how much of this information should sound live and what should actually be produced.

PROMO POWER

Mark Lapidus



at your area food bank? Take 20 seconds to recognize them and their company by name, and it's easy to solicit others to get involved. Whatever the size of your community, you have just made your station a caring part of it.

WITZ(AM/FM) in Jasper, Ind., licensed to Jasper on the Air Inc., invites listeners to "let WITZ announce your new 'bundle of joy' on the air! Just click on the link below, print out the release form, and fax or mail it to WITZ."

News and talk broadcasters will certainly want to take a different approach than music-based stations. A man- or woman-about-town could do a feature on upcoming weddings, local awards or people who have helped others who are struggling with life.

Did a group of co-workers come together this past weekend to volunteer

Naysayers may claim that this on-air approach is meaningless today because of social sharing. It is true that with Facebook, Twitter and Instagram, you probably know as much as (or more than) you want to about the lives of your friends and family.

However, as ubiquitous as social sharing has become, the quantity of

A CAUTION ABOUT DATA

If you decide to capture personal data on your website or social media platforms, it's important that you understand age restrictions.

While it's fine to wish a kid happy birthday on the air, it's not okay to ask young children to disclose their name, age, email address, home address and other details without parental permission. The International Association of Privacy Professionals states, "In the United States, since the passage of the Children's Online Privacy Protection Act in 1998 and the Federal Trade Commission's subsequent COPPA Rule in 2000, there have been specific rules regarding the collection of data from children under 13."

Check with your attorney for details about this and other legal considerations involved when gathering data about listeners.

— Mark Lapidus

WIKY EVANSVILLE'S ADULT CONTEMPORARY RADIO STATION
101.1 FM (Evansville, Indiana)

MUSIC ON AIR EVENTS BLOGS PHOTOS NEWS WEATHER

LISTEN NOW

Kid's Birthday CLUB

Join the Donut Bank Kid's Birthday Club here!

Midwest Communications station WIKY(FM) in Evansville, Ind., runs the Donut Bank Kid's Birthday Club. "Just enter your birthdays in the form below. We'll announce birthdays every weekday morning at 7:05 and award a birthday cake from Donut Bank!"

people reached is of an entirely different nature and is still on a very small scale. Embrace localism more than ever and don't allow media writers to define broadcasting as meaningless or old in today's new media world.

There is still something very special about letting your entire community share collectively via radio. You have the power. Use it or lose it!

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

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PEOPLE NEWS



PJ Kling

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fills the newly-created position of vice president, product and business development

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appointed to vice president of Digital Sales Division



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WYBG 1050, Messina, NY, now off the air is selling everything: 8-chnl & (2) 4-chnl consoles w/mics & access; (4) CD players; Gates tuner for 1000W xmtr, studio patch panel; transmitter reader meter; EBS receiver, 250' tower w/building on 4 acres, collection of very old 78's, 12' satellite dish on concrete base and (3) commercial production aid library music, sound effects and copy, complete radio advertising training course w/ book, cassettes and CDs, all at great prices. 315-287-1753 or 315-528-6040.

WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

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

can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off

KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

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.



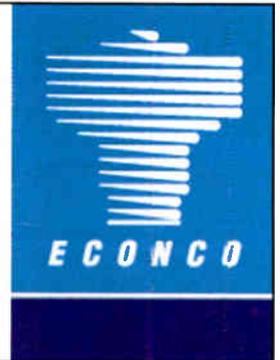
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NAB ON AM

(continued from page 29)

advances in technology have virtually eliminated the need for a local main studio, as almost all audience contact with broadcasters is by email or telephone. Indeed, accessibility to a station's public inspection file was one of the pillars of the original main studio rules, but only weeks ago the commission modernized the public inspection file rules to require that radio stations post their files to a central, online database instead of maintaining paper files at the main studio. The commission stated that the

evolution of the Internet and the spread of broadband infrastructure have transformed the way society accesses information today. It is no longer reasonable to require the public to travel to a station or headquarters' office to review the public file and make paper copies when a centralized, online file will permit review with a quick, easy, and almost costless Internet search.

Thus, the commission itself has minimized the need for a physical local main studio for purposes of community monitoring of broadcasters' performance. For the same reasons, the commission should relax the requirement that broadcasters maintain a full-time management and full-time staff presence at their main studio. Although the commission has determined that management personnel need not be "chained to their desks" during normal business

hours, they must still "report to work at the main studio on a daily basis, spend a substantial amount of time there and ... use the studio as a 'home base.'" This has been interpreted to mean that at least two employees must report to the main studio as their primary place of business on a daily basis, one of whom is management, and at least one employee should be present during normal business hours. Compliance with these obligations are burdensome and expensive for many broadcast stations, as well as outdated and unnecessary given the rapid development of technology, the public's preference for email communication and the transition to an online public file system, all of which ensure that audiences can monitor station performance and broadcasters remain engaged in their local communities.

Finally, relaxing the main studio rule and staffing requirements would help to allay concerns about the security of broadcast staff. As Commissioner O'Rielly lamented in a recent blog, local broadcasting personnel often become celebrities in their communities, but this exposure can attract unwanted and sometimes dangerous attention from unstable individuals. Commissioner O'Rielly noted that allowing unknown individuals into a broadcast facility to review the public inspection file or some other purpose can be risky, and encouraged the commission and industry to consider ways to improve the personal safety of broadcasting staff. NAB submits that this NOI is a perfect opportunity to fulfill Commissioner O'Rielly's goal. Permitting more AM broadcasters to collocate their main studios, and easing the staffing requirements of facili-

ties, will help stations narrow and control the circumstances when members of the public can access station personnel, reducing opportunities for trouble.

As to potential policy changes, NAB supports a flexible, easy-to-administer approach. For example, instead of considering case-by-case requests for waiver of the main studio rules, the commission should simply create a presumption in favor of permitting AM stations to collocate their main studio at a co-owned station outside the parameters of the main studio rule. This approach would be consistent with recent commission efforts to streamline regulatory burdens on AM broadcasters, including the relaxation of community coverage obligations and proposals to expand the siting FM cross-service translators. A presumption would also relieve applicants of the burdens associated with preparing a waiver request and conserve commission resources needed to consider individual requests. Nor should the commission impose an absolute restriction on the number of stations that could collocate their main studios, or a specific limit on the distance a co-locating station may move its studio from its community of license. In the same vein, the commission should refrain from placing any hard and fast limits on the management presence required at a station's studio.

Rather, marketplace constraints should govern. More than most outlets, AM broadcasters appreciate that localism is their most attractive, unique characteristic. AM stations must keep their fingers on the pulse of their local communities, not only to maintain a high profile, but also to help ascertain the programming needs and interests of

their community. Providing community-responsive programming and staying engaged in their local community are critical to a broadcast station's popularity, customer loyalty, and in turn, advertising revenue. Regardless of whether a station's main studio is located inside or outside the community of license, or staffed by management 24/7, listeners can always communicate with broadcasters by telephone or email, monitor a station's public service performance through the online public file, and most importantly, register their discontent with a station's failure to provide community-responsive programming by changing the channel.

Accordingly, NAB submits that broadcasters should be permitted to collocate and staff their main studio in a manner that ensures the public interest in AM radio service and allows broadcasters to remain viable in an increasingly competitive media marketplace.

V. Conclusion

For the reasons described above, NAB requests that the commission modify its proposal for locating FM cross-service translators, and relax the main studio rule and staffing requirements.

The filing was signed by Rick Kaplan, NAB executive vice president & general counsel; Larry Walke, associate general counsel; Sam Matheny, executive vice president and chief technology officer; Lynn Claudy, senior vice president, technology; John Marino vice president, technology; and David Layer, senior director, advanced engineering, technology.



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