



RADIO WORLD

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Alliance Engineers: First Do No Harm

They say disenfranchising listeners is no way to revitalize AM radio

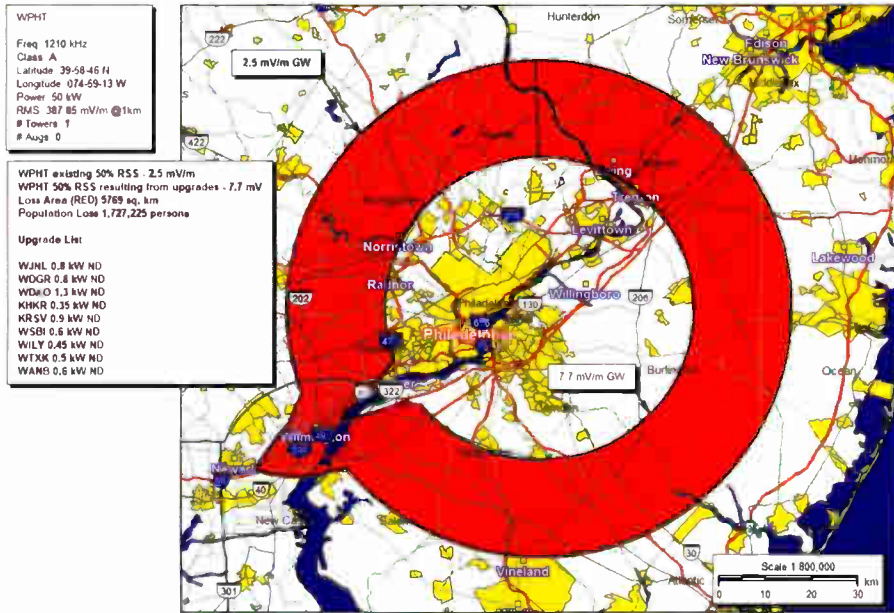


Fig. 1: According to the authors, an impact study for WPHT(AM) in Philadelphia shows that the interference level to the station would be triple the current levels, resulting in lost coverage to over 1.7 million people – “not in some distant area, but well within metro Philly commuting distances, such as Trenton and Wilmington.”

COMMENTARY

BY JEFF LITTLEJOHN, MILFORD SMITH & E. GLYNN WALDEN

The AM Radio Preservation Alliance in April told the FCC that some of its AM revitalization proposals would be a “potentially irreversible step toward extinction” for most licensees on the band. Given the importance of the topic, Radio World invited the alliance to summarize its arguments for our readers.

The alliance consists of Alpha Media, Bonneville, CBS, Cox, Cumulus, Entercom, Family Stations, Grand Ole Opry (WSM), Greater Media, Hearst, Hubbard, iHeartMedia, NRG, Scripps,

Townsquare, Tyler Media and Tribune. The commentary was written by iHeartMedia Executive Vice President of Engineering & Systems Jeff Littlejohn; Greater Media Vice President of Radio Engineering Milford Smith; and E. Glynn Walden, CBS retired.

Radio World publishes and covers various industry viewpoints; we welcome comments to the email address at the end of the article.

Last October, the Federal Communications Commission adopted a number of important and broadly supported modifications to its AM radio rules, acting on a longstanding promise to help strengthen the long-struggling AM band. As broadcast engineers with over 125 years of combined experience in AM radio and as participants in the

(continued on page 6)



This issue is STUFFED with show photos!

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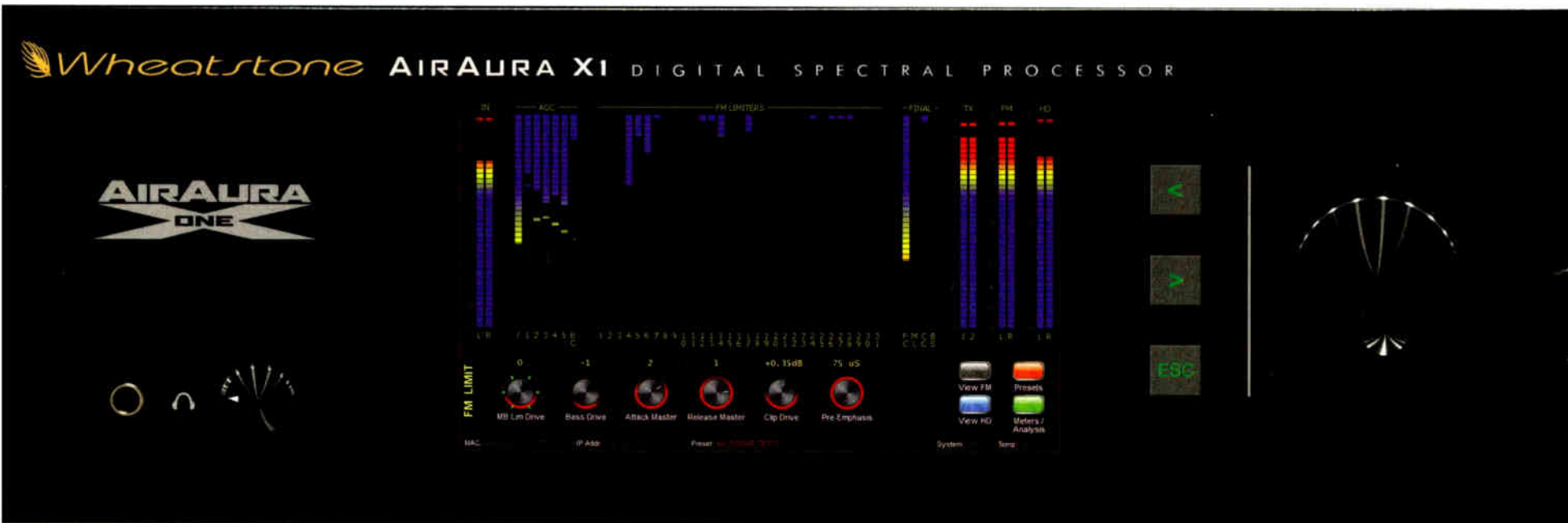
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▲ Getting ready for the show floor (and getting the show floor ready).



▲ FCC Chairman Tom Wheeler, right, talks policy with Marci Burdick, NAB Executive Committee Member and former Television Board Chair. NAB pressed the FCC to address interference on the AM band; it said intra-service interference is not necessarily the biggest issue. "Rather it is manmade ambient noise caused by unintentional and incidental producers of RF radiation that often drives listeners away," the NAB wrote in filed comments. It asked for a thorough review of relevant Parts 15 and 18 rules, as well as a plan of enforcement.

▲ Attendees at the opening. In his remarks, NAB President/CEO Gordon Smith referenced a study on connected cars that indicates "radio is indispensable to drivers – it is the most used and most important audio source by far." While many desire interactive features, Smith said, the great majority also want a traditional radio interface. "We know that radio is what drivers want most, and we'll also ensure that Detroit knows it." Read the text of his remarks at <http://tinyurl.com/rw-smith4>.

Sporting a different kind of badge, law enforcement dogs and handlers were much in evidence. The NAB had said it would boost security procedures "in light of recent incidences, both domestic and global." It said there was no known threat. Designated entry/exit points and increased random bag searches were part of the plan. The Consumer Technology Association also tightened security at its recent CES, also in Las Vegas. ▶



◀ Colleagues Geoff Mendenhall, Glynn Walden, Ben Dawson, Tim Hardy, Ron Rackley, David Layer and Bert Goldman enjoy tech talk at the National Radio Systems Committee meeting. NRSC updated guideline documents dealing with the measurement of RF mask compliance for AM and FM HD Radio stations, as well as the transmission power of FM digital sidebands. AM revitalization also was top of mind.

NAB Show in Pictures

FROM THE EDITOR

Paul McLane



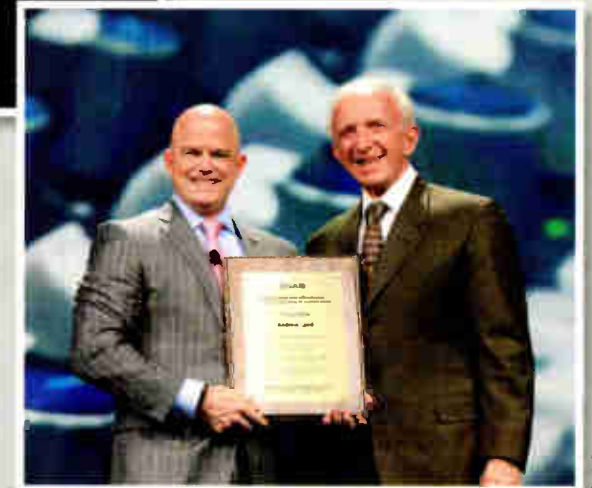
When Publisher John Casey and I launched the Radio World Excellence in Engineering Award program 12 years ago, we sought to recognize recipients who represent the highest ideals of the U.S. radio broadcast engineering profession and reflect those ideals through contributions to the industry. A secondary goal of mine is to recognize engineers while they are having an ongoing impact on our business and not necessarily at the conclusion of their careers.

I'm so proud of the people we've chosen, and I was reminded of that as we saluted our most recent honoree David Layer during the spring NAB Show. Many of our Excellence alumni joined us, and we were able to grab a quick photo before everyone went their respective ways. Shown in the photo, from left, are me, Milford Smith (2010 recipient), RW Publisher John Casey (obscured), sponsor Ashruf El-Dinary of DTS Inc./HD Radio, Paul Brenner (2012), honoree David H. Layer, Wayne Pecena ('14), Andy Andresen ('04),



Mike Starling ('05), John Lyons ('06) and Jeff Littlejohn ('08). Not shown are past honorees Marty Garrison, Barry Thomas, Gary Kline and Clay Freinwald. Thank you, alumni, for all you do for our industry.

Separately, kudos to the NAB for choosing another well-deserving engineer, Andy Laird, to receive its NAB Radio Engineering Achievement Award. He's shown far right, accepting from NAB EVP/CTO Sam Matheny. If these pictures leave any doubt, let me confirm for you that in 2016, the annual spring show remains the place where the industry's top engineers gather.



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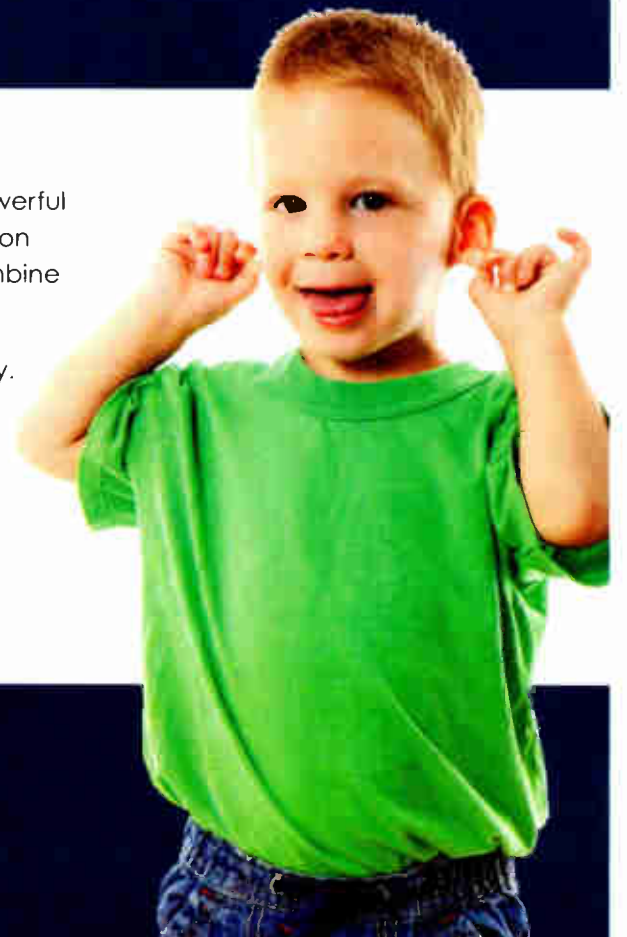
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OPINION

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Jim Peck

◀ Brian Lindemann (at left), new owner of Broadcast Electronics, pauses with President/CEO Tom Beck. Lindemann's IIC Acquisitions recently increased its ownership in BE to 100 percent. Lindemann retains his title of BE VP of engineering.



Jim Peck

▲ Andrea Zamorano and Shannon Pagentini of Nicom USA are next to an imposing BKP180HD STL Grid Parabolic Antenna for the 950 MHz STL band. After General Dynamics/Satcom/Mark ceased manufacturing grid dishes in the U.S., there were few choices available, causing concern. Nicom brought new designs to market, later joined by mWave, which purchased assets and rights to the Mark line.

Authors, editors, publishers and society luminaries attended when the Society of Broadcast Engineers introduced the "SBE Broadcast Engineering Handbook," co-produced with McGraw Hill Education. It is subtitled "Hands-on Guide to Station Design and Maintenance." ▶

SOCIETY OF BROADCAST ENGINEERS



Jim Peck

NEWS ROUNDUP

A roundup of recent headlines from Radio World's NewsBytes newsletter. Subscribe at radioworld.com.

The FCC released details about the new Emergency Alert System Test Reporting System that it plans to launch later this year, including sample user screens. The next nationwide test of the EAS system is set for fall and is being coordinated with the Federal Emergency Management Agency using these new guidelines. See them at <http://tinyurl.com/lrw-eas-forms>.

At the NAB Show, David Layer, senior director of the NAB's Advanced Engineering Technical Department, released findings of a recent testing program to determine the impact of all-digital signals on co-channel and other listening if stations on the U.S. AM band migrate to all-digital. A key finding: "Interference concerns of all-digital signals into existing analog stations should not be an impediment to the rollout of all-digital." RW will have more on this story ...

More news on page 8.

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ALLIANCE

(continued from page 6)

the severe, if unintended, consequences of the FCC's proposals to also reduce in-market interference protections for Class B, C and D stations.

In fact, although the reduced interference protections for Class B, C and D AM stations might yield some temporary benefits for some stations that will be able to increase power (albeit at a very significant cost for both new equipment and in substantially increased utility bills), the resultant co-channel and adjacent-channel interference increases will harm vastly more Class B, C and D radio stations and their listeners. By our calculations, for every one listener who gains access to a new channel, more than two would suffer new interference to existing stations. However unintended, this proposal cannot help but initiate an AM interference arms race.

"Interference Arms Race" Will Lead to Mutually Assured Destruction for All AM Stations — Imagine this scenario as an AM station owner: The proposed rules go into effect, allowing your station to increase power and reach more listeners, and you decide to take advantage of them. You invest hundreds of thousands of dollars into upgrading your station, and each month thereafter swallow hard and pay the monthly utility bill (which could be up to 10 times what it used to be). But your coverage is improved and you seem to be getting traction in the marketplace. All is going according to plan.

The problem is that you're now causing a lot of interference to all of your AM neighbors, so they decide to do the same thing. They invest, they upgrade, they increase power — and now they are all interfering with your station. At the end of this scenario, you and all of your competitors have all managed to spend enormous sums to upgrade your stations, but each of you is now receiving even more interference than before. Your listeners, fed up with AM interference, tune out.

That's bad enough, but consider what happens if your station can't make the necessary investments to upgrade, but your competitors on the dial do upgrade. Here's what happens: Your coverage shrinks, your listening audience shrinks and your ratings tank. Revenue fares no better, and you're no longer able to secure

the best programming. If ever there were a formula for a downward spiral of AM radio and its listenership, this is it.

Another case in point: The alliance studied this scenario for WONE(AM) near Dayton, Ohio. WONE is able to achieve a substantial upgrade from 5 kW to 45 kW by adding a tower, changing out its transmitter and upsizing all

Critical Hours, which coincide with morning and afternoon drive, are consistently the most listened-to periods for AM radio.

of its phasing equipment. This is likely a \$400–500K project that will take over a year to complete, and while additional coverage will be achieved, the station's utility bill will increase to nine times what it was. But 12 of WONE's neighbors also can upgrade power, some more, some less. The cost of these upgrades and the associated utility bills vary according to the amount of the power increase, but it should be very clear that a lot of money is being invested by each of the stations involved. However, the end result for WONE is that the interference it causes to others has increased by 2,300 percent — from 195K to 4.6 million people — and the interference it receives from others has increased over 500 percent — from 300K to over 1.6 million people. The consultants, equipment manufacturers and utility companies all get rich, but the station is one step closer to extinction.

IMPACT ON EMERGENCY ALERTING

If interference were only about impacts on stations, that would be one thing, but the FCC's proposal to reduce or eliminate protections for Class A AM stations — again, perhaps unintentionally — are cause for alarm because of their impacts on the nation's Emergency Alert and warnings systems.

The U.S. broadcast radio system, including especially Class A AM stations, has been and continues to be the backbone of our nation's Emergency Alert System. Twenty-five Class A AM stations are designated by the Federal Government as Primary Entry Point stations, serving as the primary source of initial broadcasts of Presidential Emergency Alert Notifications directly from the White House Communications Agency. They are an integral part of the Integrated Public Alert and Warning System, coordinating and communicating emergency alert information among federal, state, territorial, American Indian and local public safety agencies. As a nation, we have invested substantial time and money to ensure that this

system is hardened to withstand present and future threats.

One need not be a national security infrastructure expert to understand the critical and irreplaceable role radio plays in warning Americans all across the United States of impending natural disasters and assisting them in coping with their aftermath. According to a

FEMA subject matter expert on alert and warning systems, including IPAWS, "Class A AM PEP stations are a unique resource ... [as] many are equipped to survive events ranging from solar flare to a man-made EMP event, either of which could damage the power grid or cripple many alternative information sources ..."

Whether it be Hurricanes Katrina or Sandy, devastating tornadoes in Oklahoma, Missouri, Alabama or Georgia, or the recent and tragic flooding in Houston, radio, especially the Class A stations, is on the air 24x7 providing life-saving information and guidance when no other media can reach the impacted areas. If these AM radio services become less available to listeners as the result of interference, it will create dangerous coverage gaps in that vital part of the emergency warning system. In this era of vastly increased terroristic threats, such emergency alerting and information providing capability has never been so critical.

UNTESTED PROPOSALS

Ironically, in the name of strengthening the AM radio service, these FCC proposals may cause it the most harm.

By targeting Class A AM stations with particularly significant degradation, they hurt the very stations that attract and retain millions of AM listeners, serving as anchor stations in the same way a major department store, an "anchor" tenant, attracts shoppers to a mall. These are the stations that develop and produce some of the most popular and diverse programming available on AM radio and have the financial resources to promote innovation, attract and retain new talent, and provide the staples of news, weather, sports and entertainment upon which so many Americans rely, all for the cost of a radio receiver.

The tradeoff that the commission appears to be offering is strengthening lower-power and daytime AM radio stations. But this is a false tradeoff. Not only will it fail to yield its desired result of helping smaller stations, it will weaken the stations currently and historically supporting AM listenership, not to mention disenfranchise millions of AM listeners along the way. In fact, far more Class B, C and D stations are likely to be harmed by these proposals than will be helped because they, too, will be subject to new interference. And if listeners are tuning away from the AM band altogether, the increased listenership these stations hope to attract would be quickly proven to be illusory.

The FCC took several prudent and reasonable steps to strengthen AM radio last year, especially by making it easier for AM stations to expand their listenership through access to FM translators. The commission should give those solutions time to work. There is absolutely no reason to rush ahead with untested proposals that could cause significant harm to our strongest AM stations, to our national alert infrastructure and to millions of AM listeners.

Comment on this or any story. Email radioworld@nbmedia.com with "AM revitalization" in the subject field.

NEWSROUNDUP

Former U.S. Senator **Conrad Burns** passed away at 81. The three-term Republican senator had a background in broadcast; during his time in the Senate, he was considered a supporter of the broadcast industry. ...

After reaching the billion-dollar mark in total revenue last year, **Pandora** reported an increase in its first quarter revenue compared to Q1 last year. Total consolidated revenue was \$297.3 million, a 29 percent growth year-over-year. It said total listener hours grew 4 percent while number of active listeners was level to a year prior. ...

Technology supplier **International Datacasting Corp.** should soon have a new parent. IDC will merge with another Canadian firm, **Novra Technologies**. The transaction is expected to close by June 15. IDC earlier had an agreement to sell its product portfolio to Pico Digital but IDC shareholders later rejected that deal. ...

ASCAP said its domestic revenue was a record \$716 million in 2015, and that combined domestic and foreign revenues topped \$1 billion for the second year in a row.



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Conrad Burns

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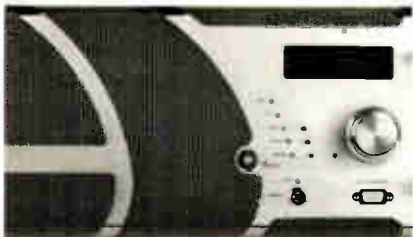
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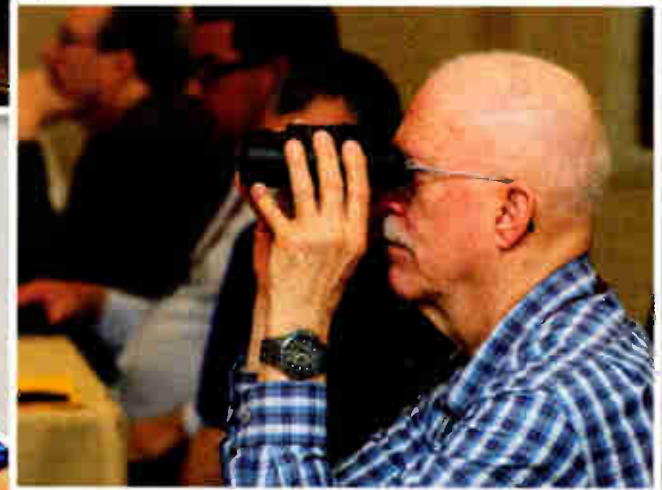
NAB Show in Pictures



Nautel

▲ 300+ turned out for the 21st Nautel User Group meeting. The traditional gathering moved to the Flamingo when its former home at the Riviera shuttered. Nautel introduced two NX Series AM transmitters, the NX3 and NX15, and grew its GV Series high-power FM line with the GV60 and GV80.

Presenters often apologize when their finely tuned PowerPoint graphics and text do not read well up on the "big screen." John Cone of Alaska Public Broadcasting was prepared at the Public Radio Engineering Conference. No details escaped his eagle eye and 40-power binoculars from the back of the room. Well done, sir! ▼



Jim Peck

◀ Mike Greenberg and Mike Golic of ESPN's "Mike and Mike in the Morning" were honored as radio inductees to the NAB Hall of Fame.



© NAB

Attendees scrutinize the inner workings of an Elenos transmitter. NAB reported estimated attendance of 103,012, roughly the same as last year's show. ▶



All Powers Photography © NAB



Jim Peck

◀ SCMS saluted its founder and president, Bob Cauthen, third from left, to celebrate his company's 40th anniversary. He's with NewBay Video/Broadcast Group Executive Vice President Carmel King, Radio World Editor in Chief Paul McLane and Radio World Publisher John Casey.

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Get More From Your Tower Re-Lamp

These tips and tools help climbers correct minor issues during a normal re-lamp job

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Chuck Weber is chief engineer for White River Broadcasting in Columbus, Ind., and principal of Weber Climbing Services.

From rock climbing in his younger years, to a side step into tower climbing when he left active duty in the U.S. Marine Corps in 1988 and began working as a two-way radio technician, through his present position as chief engineer in southern Indiana for the last 15 years, Chuck has been doing or supervising tower work of various kinds for decades.

Chuck writes that he's constantly asked his opinion about various tower companies. With a vendor only as good as its climbers, he refrains from recommendations, but passes along information about adding value to a standard tower re-lamp job. His tips can save stations thousands of dollars; he now shares those tips with Workbench readers. If your re-lamp job is only that, you're losing money — or at least an opportunity.

Admittedly there is quite a difference between a sole proprietorship, such as his own weekend gig, and a large tower

company that schedules your job within each traveling circuit through the area. But with a little small talk and a free lunch, Chuck finds that even crews

issues during a normal re-lamp. The kicker: The task doesn't create significant extra weight, work or time for your climber. Most things can be done quickly and easily during the frequent rest stops on the way up and/or down the tower.

Some situations will be restricted by



Fig. 1: A cracked antenna harness is visible in the foreground of this image taken during a re-lamp visit.

climbing for the big dogs will give you some added benefits during your re-lamp.

If you supply a small canvas tool bag (don't forget the convenient carabiner clip) and the items listed below, this extra effort can pay off, especially if your climber finds and corrects minor

the climber's knowledge and experience, but most involve only common-sense repairs. Even if temporary, they can gain you time for permanent fixes before a failure occurs, such as the cracked two-bay antenna harness pictured in Fig. 1 or the broken ground strap in Fig. 2.



Fig. 2: Your climber might also spot a broken ground kit.

Chuck's personal re-lamp tool bag contains a two-way radio and a cellphone; the latter is a backup for the radio. Never underestimate the importance of quick, easy verbal contact, even if it's just for calling for power to check that all bulbs are operational. Two-way communication is also a safeguard against possible physical problems experienced by the climber.

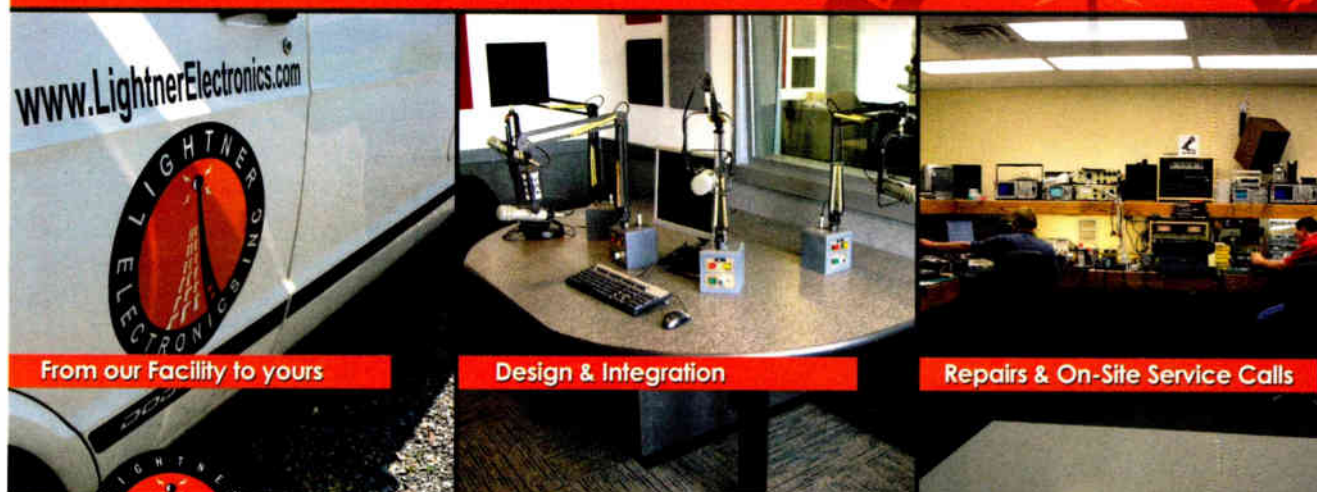
Every re-lamp should include a visual inspection. It doesn't take anything extra except the attention of the climber. Make sure you have it! The cellphone doubles as a camera for documenting problems being corrected or that may need attention soon. It's your single most beneficial tool.

Chuck's third item for the bag is quality electrical tape. Choose multi-use tape, "the duct tape of the tower world." This precious addition can make the difference between a simple repair now or an early and expensive failure later.

The fourth item is Aquaseal. This urethane repair adhesive/sealant, coupled with electrical tape, can save you

(continued on page 15)

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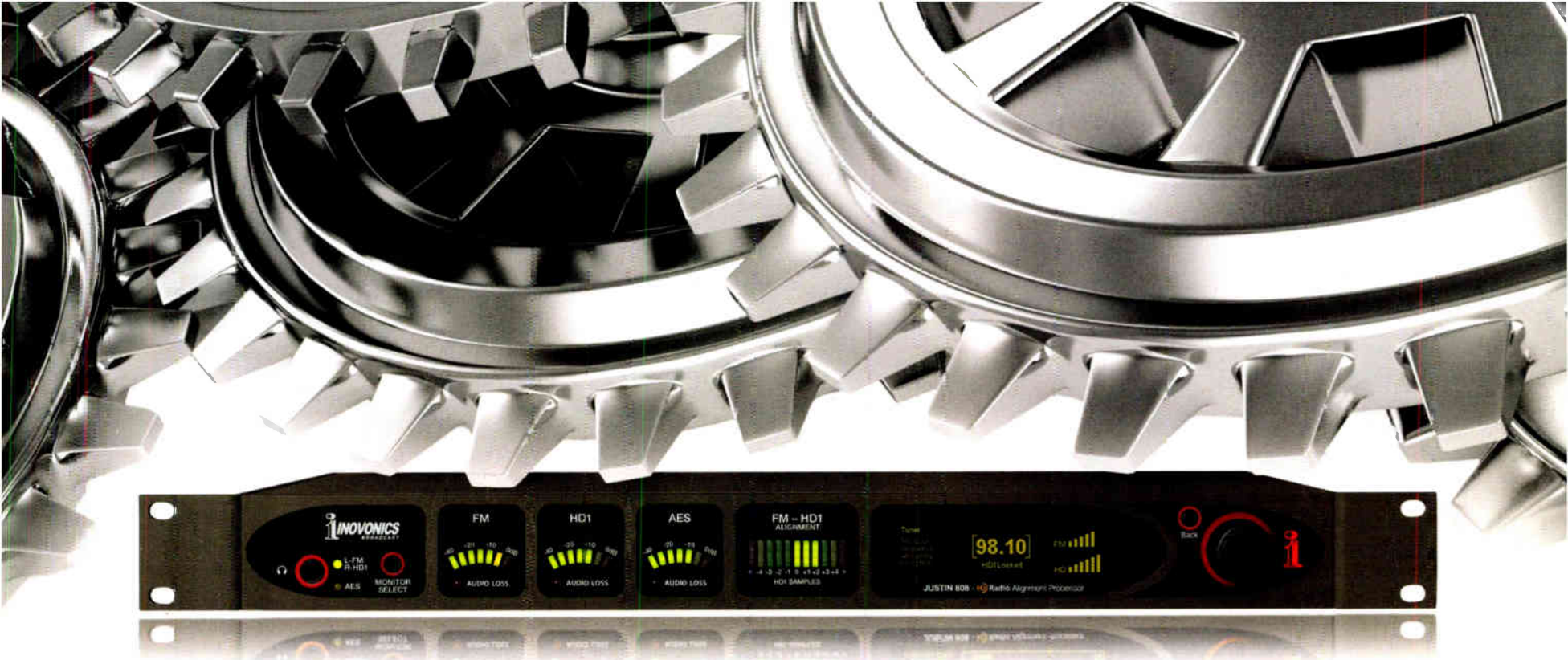
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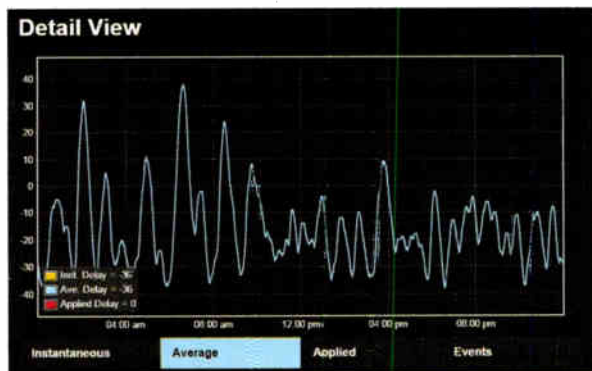
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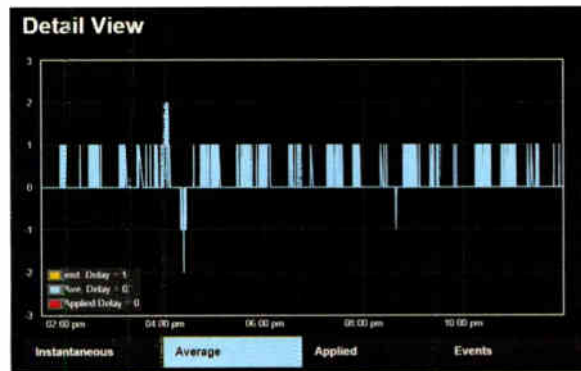
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NAB Show in Pictures



Jim Peck

▲ If you coop up engineers for too long inside, expose them to a tightly formatted, information-packed agenda (like the two days of the Public Radio Engineering Conference) and then expose them to sunlight, strange things can happen. WFAE's Jobie Sprinkle (left), immediate past president of the Association of Public Radio Engineers, and KAXE's Dan Houg, its current president, celebrated a break.

The new PRSS MetaPub Platform will integrate enhanced visual features and information from certain public radio programming into the NextRadio app. Shown from left are American Public Media VP/CTO & Head of Music Services Nick Kereakos, NextRadio President Paul Brenner and NPR Distribution VP Michael Beach. ▶



▼ Winners of the Crystal Radio Awards for community service were KNDE(FM) College Station, Texas; KNX(AM) Los Angeles; KPRS(FM) Kansas City, Mo.; KRLC(AM) Lewiston, Idaho; KTAR(FM) Phoenix; WCCO(AM) Minneapolis/St. Paul; WWJ(AM) Detroit; and first-time recipients WBAB(FM) Long Island, N.Y.; WJBR(FM) Wilmington, Del.; and WRLT(FM), Nashville, Tenn. The sixth Crystal Heritage Award went to WTMX(FM) in Chicago.



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WORKBENCH

(continued from page 12)

from an early failure on many fronts — from replacing a poor or missing STL connector weather seal to stuffing in a poorly fit wire entry to a fixture or junction box as seen in Fig. 3.

A fifth consideration is a three- to five-foot coiled length of #14 solid conductor THHN wire. Rarely does Chuck do a re-lamp where there's not a section of coax hanging loose as seen in Fig. 4. The wire also can be used to



Fig. 3: Aquaseal and multi-use electrical tape can provide a temporary repair for an antenna heater cable.



Fig. 4: Unsecured coax blowing in the wind eventually will fail.

repair missing retainer clips on side-lamp domes temporarily. That's just a couple of uses for copper tie wraps that can be cut to length as needed. Even if the problem is with a renter's cable, it can save you from dealing with additional climbs by other entities and the possibility of a misplaced boot. (Chuck has had a lot of climbs precipitated by the "carelessly misplaced boot.")

A misconception is that commonly used black UV plastic tie wraps for small coax will not fail. Even the big heavy duty/UV variety will break eventually. When one does, expect a cas-

ading effect on the other tie wraps. Copper tie wraps last virtually forever.

Chuck likes to include a multi-tool and screwdriver combo in the bag. Obvious uses include tightening cable clamps or electrical connections and removing the base of a broken bulb.

Remember to order and supply extra bulbs, at least one beacon and one side-lamp. Even new bulbs sometimes fail upon power up — or can be bad out of the box! You want a complete re-lamp with new bulbs, no old ones left in place because a new bulb failed. Old bulbs can be shelved for future use. The

expense of additional bulbs is cheap insurance for a complete re-lamp.

Thanks to Chuck for these practical tips.

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 a past recipient of the SBE's Educator of the Year Award.

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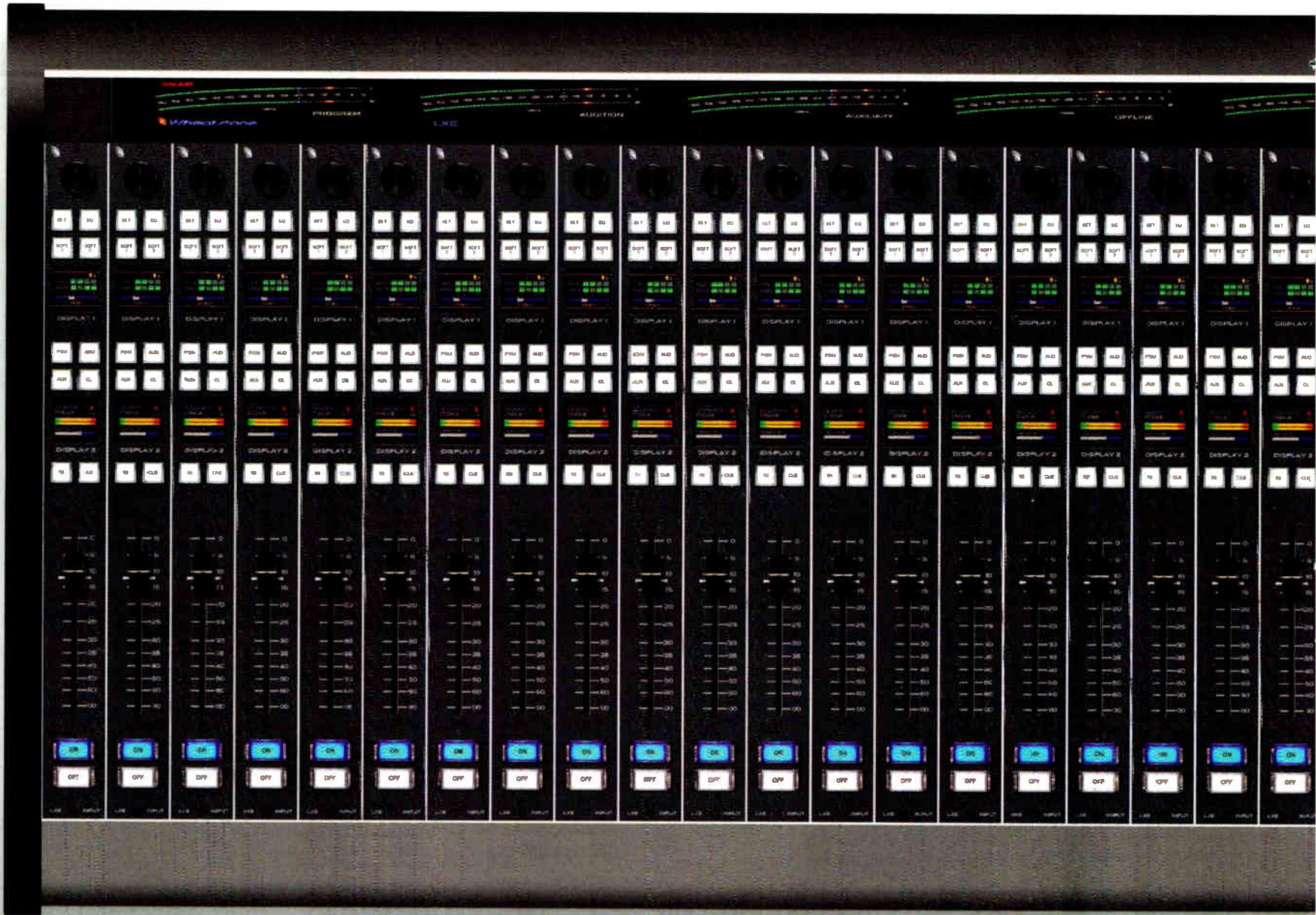
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LXE evolved



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

NAB Show in Pictures



It was the first spring NAB Show for DTS Inc.

since it acquired HD Radio. On display were a 2016 Subaru Legacy and Toyota Camry. The company talked about the rollout of HD Radio-enabled cars, integration with DTS premium sound products, and new monitoring gear to assist stations with time and level alignment. It teased FM+ technology to promote capabilities of an "enhanced radio experience" on mobile devices globally. The company also recently told the FCC that the expanded portion of the AM dial would be a good place for industry to introduce all-digital broadcasts to the band.



▲ CBS Radio COO Scott Herman received the Ward L. Quaal Leadership Award from The Broadcasters Foundation, which distributes aid to members of our industry who have lost their livelihoods through catastrophic event, debilitating disease or unforeseen tragedy. From left: CBS Radio President Andre Fernandez; Beth and Scott Herman; foundation Chairman Philip J. Lombardo.

In 1996, Stephen Turner, left, and Richard Gross founded AudioScience "to provide high-level design and manufacturing solutions to strategically targeted areas of the digital audio reseller market." At the spring show they celebrated 20 years in business. ▶



▲ Richard Rivers of Dialight is proud as punch of the new medium-intensity LED beacon and marker controller. A lot of stations are revisiting lighting requirements to save money or to comply with "Rev G," the latest revision of the TIA-222 Standard "Structural Standards for Antenna Supporting Structures and Antennas." LED lighting is being considered for both medium- and high-intensity structure lighting. At 10 percent of incandescent operating costs, it makes sense. The new controller can work with Dialight fixtures or others.



◀ Moseley Associates showed a new multiplatform IP and RF STL family, the Malibu X5 (fitting product name for a California company, don't you think?). Also, working with Omnia and Nautel, Moseley demonstrated new Micro MPX coding technology for highly rate-reduced STL data over standard STL links. Sunil Naik, Bill Gould and Matthew Coon of Moseley Associates relaxed just before the show opened.



▲ The Media Networking Alliance highlighted AES67 interoperability among 27 networked components operating with Ravenna, Dante and Livewire AoIP transports. Shown are MNA's Jessy Lynn and Kevin Gross. Interoperability was demonstrated among devices from ALC NetworX, ARG Electrodesign, Digigram, DirectOut, Focusrite, Genelec, Lawo, Meinberg, Merging Technologies, NTP Technology, Solid State Logic, Studer, Telos Systems and Yamaha. Gross added, "We are demonstrating audio interoperability first and foremost, but we are also demonstrating interoperability of discovery and connection management."



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THE TELOS ALLIANCE



WKSU Chooses Audio-Technica Mics, Headphones

AT2020USB+ microphones and ATH-M40x headphones chosen for news facility refurb

USERREPORT

BY DAN KUZNICKI
Systems Administrator
WKSU(FM)

KENT, OHIO — WKSU(FM), Kent State University's National Public Radio news and classical music public radio station, recently completed a comprehensive newsroom renovation and relocation within our facility, adding significant space and capacity while modernizing our technical capabilities and workflow.

For years, our news staff grew but our space did not, forcing reporters (and student interns) to share tiny cubicles in a small room. During the planning process we queried our reporters and news team for suggestions of features, upgrades and technical adjustments they desired in the new space. Topping the list was a request for the ability to do more audio production work from desktop workstations, eliminating the need for studio time for simple tasks such as capturing quick telephone interviews for soundbites (using our Telos VX phone system and associated software), quick voice-tracking, recording for edits and adjustments to stories in progress and similar capacity additions.

USB SIMPLICITY

The new WKSU newsroom space has nine reporter workstations, along with an office for the news director and three "touchdown" stations for interns, students and guests to share as needed, creating a total of 13 equipped spaces.

While evaluating how to accomplish recording/microphone capabilities at these desktops, I quickly



Robert Lucas, Robert Lucas Photography

Amanda Rabinowitz, WKSU "Morning Edition" host and assistant news director, uses the Audio-Technica AT2020USB+ cardioid condenser USB microphone and ATH-M40x professional monitor headphones at her desk.

discovered that adding an analog mixer, upgraded broadcast-quality sound card, acceptable-quality microphone and cabling, along with incidental required equipment, completely destroyed our limited budget. Adding all of this equipment at each desk also filled up the workspaces with equipment that would significantly diminish available countertop workspace — one of our primary reasons for moving to the new newsroom.

We were able to find the solution in the Audio-Technica AT2020USB+ cardioid condenser microphone. This little device packs in the features we required at each desktop in one little stand-mountable microphone. It's a high-quality, easy-to-use, broadcast-quality microphone, coupled with a sound card (headphone out) and zero-latency monitoring capability, ready to work out of the box. This microphone is solid. You could pound nails with it. Unlike many USB/computer desktop microphones that are made out of plastic, the AT2020USB+ does not feel like a cheap toy.

We coupled the Audio-Technica AT2020USB+ with an On-Stage DS300B microphone stand, using the mount adapter included with the microphone, to provide height adjustment in a compact desktop stand. This microphone has one USB cable (included) and installs in seconds with no extra software drivers or other complexity. After a few clicks to change the computer audio input/output settings, this microphone is ready to go. Training a reporter to use the AT2020USB+ takes about 10 seconds; there's nothing difficult here. It's a microphone without all of the fuss.

As part of our desktop equipment upgrade we also chose Audio-Technica ATH-M40x headphones, which complement our desktop microphone

and recording setup. After testing a variety of headphones from Audio-Technica and other manufacturers, our reporters found that the ATH-M40x provided a clean, solid and true sound for voice editing. They are comfortable, lightweight and durable while providing great isolation. Having two detachable headphone cables to choose from (one straight, one coiled) is an awesome feature, especially for any engineer that's ever had to shorten or "fix" a headphone cable that's been run over by a rolling desk chair dozens of times. The compressed length of the coiled cable is perfect for our desktop workstations.

The Audio-Technica AT2020USB+ and ATH-M40x are a great fit for WKSU. I'm fully confident that our reporters are more efficient and capable as a result of this gear. I can't speak highly enough for the ease of installation and quality of these products.

For information, contact Audio-Technica in Ohio at (330) 686-2600 or visit www.audio-technica.com.



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Blue Mo-Fi Headphones Satisfy KBRE

Headphones offer passive mode and a built-in audiophile amp

USERREPORT

BY CHRISTOPHER MORENO
Assistant Program Director
KBRE(FM)/KTIQ(AM)

MERCED, CALIF. — I have always been a fan of Blue Microphones. I've used many models throughout my recording career and had great results. The craftsmanship and simplicity of their designs are functional and beautiful.

The company's Mo-Fi headphones definitely fall into that category. I have to admit, at first, I was a bit skeptical about the idea of Blue headphones, as I had never used or seen their headphones.

I have worked in radio for over 10 years and my headphones are a crucial component of my day-to-day activities. I have to wear them for hours at a time; they have to be accurate and comfortable, as well as functional.

As a recording engineer, I know how important it is to have headphones that reproduce the sound accurately with no tricks, filters or DSP. The passive mode on these headphones is true analog passivity and helps me review my sound files on Adobe Audition with no filters, just true sound. They are great reference headphones when in passive mode, and are so comfortable I

honestly forget I have them on at times.

The supple leather earcups are actually shaped like ears (what a concept!) and provide superior isolation and minimal sound bleed. The four-point adjustable arms on the headphones can dial in a custom fit. The only thing I had an issue with was the adjustable tension wheel on the headband, sometimes it would get locked up or spin freely and disconnect from the frame. I love the lightweight metal frame and the light that lights up when you turn on the built-in audiophile amp, it gives them a really cool vintage glow.

What sets these headphones further apart for me is the built-in 240 mW amplifier. It does not distort, but enhances the listening experience, especially on devices that play lower-quality files like MP3s. I like to record my commercials and segments in passive mode for true audio reference, then switch it over to "On" mode when I take my files on my laptop or phone to hear my finished files with some audiophile-quality bass and texture. These headphones give those lower-quality files a much needed boost that lets me know how it would sound on my home or car stereo.

So basically these headphones are the last headphones I'll ever need. I can use them for reference with no filters or DSP when I record in the studio, and give my files a much needed audiophile boost when I take them on the road or play them through another device. I



love being able to use these headphones with my tablet or phone and make those audio files sound like I'm back in the recording studio listening to my monitors.

The Blue Mo-Fi headphones offer a versatility and quality that sets them apart.

For information, contact at Blue Microphones in California at (818) 879-5200 or visit www.bluemicro.com.

TECHUPDATES

PRESONUS ERIS MONITORS USES MTM DESIGN

PreSonus says that its Eris E44 and E66 two-way active MTM studio monitors deliver an expanded frequency range and the widest stereo field in their class, thanks to their nested midwoofer-tweeter-midwoofer (MTM, also known as "D'Appolito") design. The result is a more consistent listening experience on- and off-axis, company says.

The Eris E44 and E66 nested MTM configuration incorporates dual Kevlar low/mid drivers (4.5- and 6.5-inch, respectively) operating in parallel and covering the same frequency range so that they acoustically couple. This effectively creates a larger woofer to provide a more dynamic output than conventional two-way studio monitors. Nesting a 1.25-inch, silk-dome, high-frequency driver between the two woofers minimizes phase displacement to improved spatial resolution and a wider sweet spot.

Eris E44 and E66 monitors provide the tools and flexibility needed to suit various mixing environments, yet they are compact enough for small radio station production studios. By bringing the midrange drivers together and raising the HF driver, the E44 and E66 are able to perform optimally in either horizontal or vertical orientations.

A three-position Acoustic Space switch helps compensate for the boundary bass boost that occurs when the monitor is placed near a wall or corner. High and mid-range acoustic tuning controls help to mitigate room problems. A low-cut filter makes it easy to integrate a subwoofer. The connections consist of individual balanced XLR and 1/4-inch TRS and unbalanced RCA input connectors. Safety features include RF shielding, current-output limiting, over-temperature protection and subsonic protection.

For information, contact PreSonus in Louisiana at (225) 216-7887 or visit www.presonus.com.



NUMARK HIGHLIGHTS RED WAVE CARBON

DJ equipment maker Numark says it developed the Red Wave Carbon because many headphones designed for professional use fall short in terms of being able to combine the elements of great headphones.

Red Wave Carbon, it says, combines those attributes: full-range frequency response, ear pads for long-lasting comfort, swiveling ear cups for convenient monitoring and a detachable cable with 1/8-inch adapter for use with most equipment.

The drivers are 50 mm with neodymium magnets compared to the more common 40 mm headphone driver size. This gives the Red Wave Carbons a deeper bass response. When combined with high-temperature/high-power voice coils, the effect is one of effortless aural authority, where nuances are reproduced with detail and accuracy, Numark says.

Extra consideration was paid to comfort and convenience. The ear pads are a breathable protein-leather material, which stay comfortable and cool with no "sweating" during extended use. The cable is detachable. As a finishing touch, a custom carrying pouch is included to store the headphones, cable and adapter.

For information, contact Numark in Rhode Island at (401) 658-3131 or visit www.numark.com.



TECHUPDATES

ALESIS ELEVATE 6 RISES ABOVE

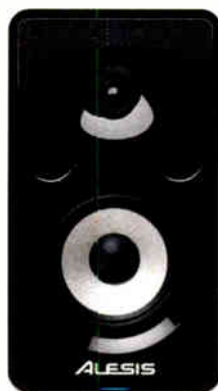
The Elevate 6 is an active biamplified studio monitor that Alesis highlights for its flat frequency response, clear stereo imaging and excellent transient response for professional mixing and monitoring.

It is equipped with a 6.5-inch woven Kevlar low-frequency driver, 1-inch natural silk dome tweeter with ferrofluid cooling and dual Class A/B amplifiers. The company says the Elevate 6 delivers high-powered sound that stays accurate and clean across a wide frequency range.

The Class A/B amplifiers, 50 watts to the LF driver and 25 watts to the HF driver, offer generous clipping headroom compared to Class D digital amplifiers. Its enhanced elliptical waveguide widens the sweet spot for a consistent, stable stereo image and enables a sound engineer to make adjustments to the mix that translates on any playback system. The baffle edges are "radiused" to reduce edge diffraction. Alesis says the result is clean transparent sound that delivers an accurate representation of the original program material.

Elevate 6 comes with an onboard HF- and LF-trim switches, giving the user a professional reference monitor setup that adapts to various production environments. With -2 dB, 0 dB, and +2 dB settings, sound technicians can adjust Elevate 6 to fit the acoustics of any size of room or studio, especially when it's situated close to a studio wall. A balanced XLR+1/4-inch combo input and an unbalanced RCA input connect Elevate 6 to various types of audio equipment. Elevate 6 is ERP-compliant and has an automatic shut-off feature that powers down the monitor when it is not in use.

For information, contact Alesis in Rhode Island at (401) 658-3131 or visit www.alesis.com.



MICROTECH GEFELL INTRODUCES NEW BROADCAST MICROPHONE

Microtech Gefell has recently introduced one of those rare gems, a new broadcast microphone.

The MD 300 is a top-address dynamic with a cardioid pattern. Its frequency response has been "optimized for intelligibility" with a 2 dB bump at 2 kHz-8 kHz.

Microtech Gefell specs the mic at 50 Hz-16 kHz. Internally it has an elastic capsule suspension to handle noise so it can also double as a handheld microphone.

For information, contact Microtech Gefell in Germany at 011-49-36649-882-0 or visit www.microtechgefell.de.



SENNHEISER, APOGEE OFFER MK 4 DIGITAL FOR USB AND IOS

The Sennheiser MK 4 digital connects directly to iOS devices, Mac and PC computers using Apogee Electronics A/D conversion and mic preamp technology.

The company says the large-diaphragm MK 4 digital is suitable for mobile recording tasks requiring quality sound with the warmth and detail of a true condenser microphone.

The MK 4 digital can be used in a home studio, in a rehearsal space or on the road in mobile recording.

It offers high sound quality for the recording of speech. It is delivered with a USB cable and a Lightning iOS cable for connecting to iPad, iPhone or iPod touch as well as a microphone clamp and a pouch.

The microphone can be used with common media production programs such as Logic Pro X, Final Cut Pro, Adobe Premiere, Pro Tools or Ableton Live and iOS recording apps such as GarageBand and Apogee MetaRecorder. The MK 4 digital will become available from summer 2016.

For information, contact Sennheiser in Connecticut at (877) 736-6434 or visit www.sennheiser.com.

KRK LAUNCHES GENERATION 3 ROKITS

Speaker specialist KRK has released Generation 3 of its familiar, yellow-woofered Rokit line of monitors.

The company says the new Rokit 4 G3 is its first 4-inch monitor designed for the broadcast community on the go or in remote setups. It is a powered studio monitor featuring a 1-inch soft dome tweeter and 4-inch glass-Aramid composite woofer. It delivers high frequencies up to 35 kHz.



The proprietary biamped Class A/B amplifier grants SPL up to 100 dB. The Rokit waveguide is said to ensure detailed imaging in the listening position. The front-firing bass port reduces boundary coupling to allow flexible positioning in the room while the engineered surface reduces diffraction distortion. Multiple input connections help the ROKIT 4 G3 integrate in various system configurations. It is available in black, white or silver.

For those with heftier needs, the Rokit 10-3 G3 powered studio monitor offers professional performance and accuracy for recording, mixing, mastering and playback. The system provides a 1-inch soft dome tweeter, a 4-inch midrange driver and 10-inch glass-Aramid composite woofer, and delivers high frequencies up to 30 kHz. The triamped Class A/B amplifier provides SPL up to 110 dB. Again, multiple input connections are provided. Features include updated voicing for more punch and control and overall a more balanced sound.

For information, contact KRK Systems at (800) 444-2766 or visit www.krksys.com.

PRODUCT SPOTLIGHT

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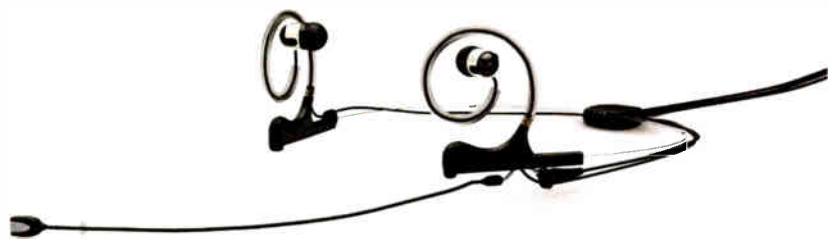
Audio-Technica BP40 Large-Diaphragm Dynamic Broadcast Microphone

Audio-Technica's new BP40 broadcast vocal microphone offers a rich, natural, condenser-like sound from a large-diaphragm dynamic design. The 40 mm diaphragm features patented floating-edge construction that maximizes diaphragm surface area and optimizes overall diaphragm performance, while the humbucking voice coil prevents electromagnetic interference (EMI).

With rugged construction and stylish, waveform-inspired design, the BP40 delivers clear and articulate reproduction. Optimized capsule placement helps maintain a commanding vocal presence even at a distance, while the multistage windscreen provides superior internal pop filtering. See the BP40 review on www.radioworld.com. U.S. estimated street price \$349.

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TECHUPDATES**DPA DEFINES IN-EAR HEADSET**

DPA's d:fine In-Ear Broadcast Headset Microphone is targeted at radio and television broadcast hosts and guests who need in-ear monitors to communicate with producers off air or to hear foldback from people interviewed outside the studio.

The company says that broadcasters have had to contend with two parallel systems, one for the mic and one for in-ear communications. By combining a monitoring component into its d:fine headset design, DPA says it has created an in-ear monitoring solution with outstanding acoustic performance and feather-light comfort.

DPA says that the d:fine In-Ear Broadcast Headset Microphone is built on the same capsules and mechanical design that have made DPA's d:fine range popular. It said care has been taken to ensure that there is no audio leakage between the in-ear drivers and the microphone capsule, which can be either omnidirectional or directional.

The unit incorporates two cables — microphone and in-ear — that run parallel to give a tidy look. A spring steel construction at the ear-hook offers quick mounting around most ears, while the cable coming into the ear hooks can be lengthened or shortened to suit the user.

DPA has incorporated a miniature MicroDot connector for the microphone and a mini jack for the in-ear. Adapters are available to fit most professional wireless belt packs.

Several combinations are available: single-ear mount/single in-ear driver, dual-ear mount/single in-ear driver and dual in-ear drivers. Ear-pads in two sizes are included.

For information, contact DPA in Colorado at (303) 485-1025 or visit www.dpamicrophones.com.

DENON OFFERS TRIAMPLIFIED SPEAKERS

The DN-506SA and DN-508SA (shown) are compact three-way triamplified speakers suitable for a variety of roles. Both models feature studio-grade acoustics, luxurious aesthetics and innovative proximity controls for flexible placement options.

The 160 watt DN-506SA and 220 watt DN-508SA combine 1-inch silk dome tweeters, a 5-inch woven Kevlar midrange unit and either a 6-inch or 8-inch woven Kevlar woofer, each promising dynamic, wide-range frequency response.

The midrange and tweeter are mounted co-axially. According to Denon, this means the sound of the two drivers integrates perfectly, without audibly-distracting time/arrival distortion of widely-spaced drive units.

A concave integrated tweeter waveguide in front of the midrange cone focuses and directs the treble energy into the listening field for a solid and stable sonic image.

Three individual high-current Class A/B internal amplifiers provide power to each of the speaker elements. These amplifiers are tailored to the drivers they are matched with. Denon says this creates seamless operation and system synergy that is hard to equal using bulky, expensive outboard amplifiers and passive speakers.

The speakers come with detachable metal grilles framed by a liquid-smoke metallic trim. When powered, a blue LED assists with placement orientation. The grilles attach to the baffle board with hidden neodymium magnets for a "fastener-free" appearance.

For information, contact Denon Professional in Rhode Island at (401) 658-3131 or visit www.denonpro.com.

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The CAP-DEC1, Gorman-Redlich is a stand-alone CAP-to-EAS converter for use with your existing emergency alerting equipment. This cost-effective device allows broadcasters to easily meet Common Alerting Protocol (CAP) compliance requirements mandated by the FCC without requiring the purchase of an additional encoder/decoder system or other costly

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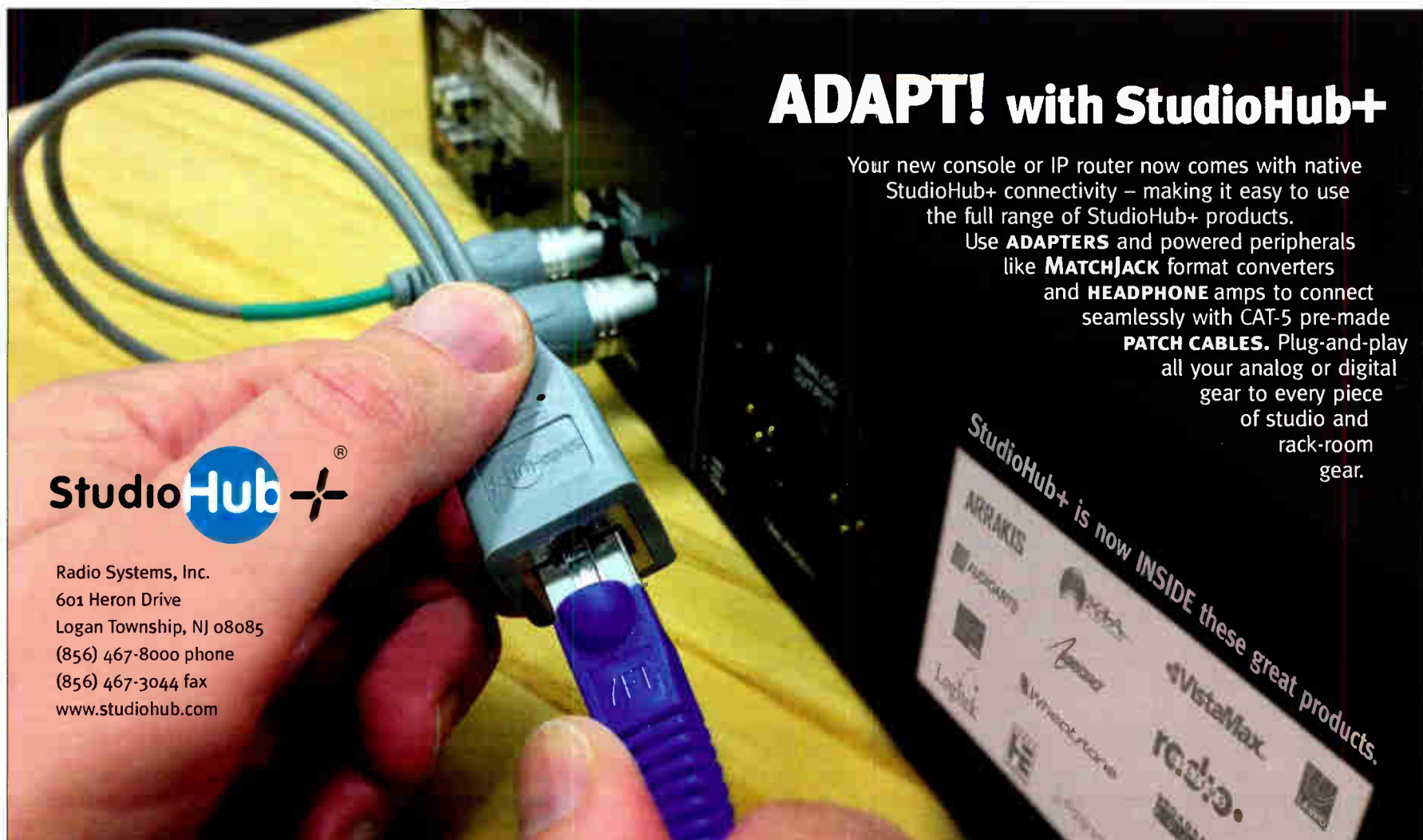
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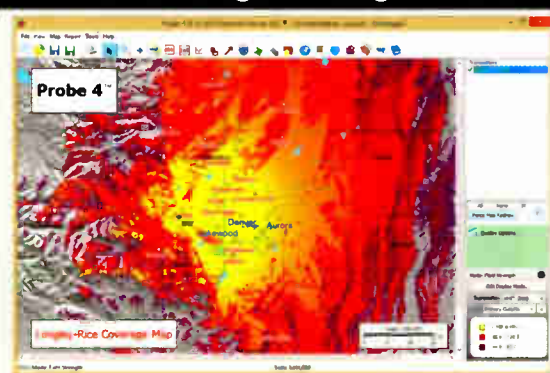
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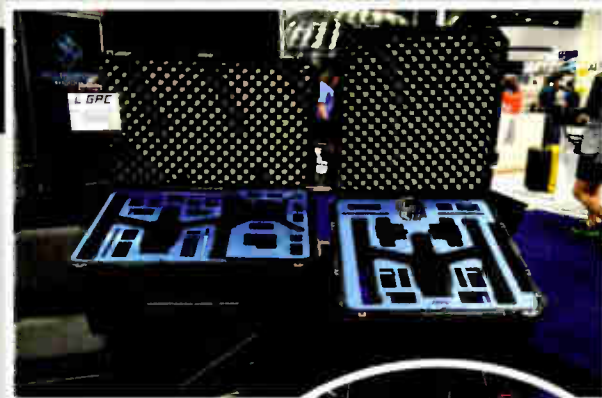
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NAB Show in Pictures

The images on this page are not about radio, but no technologist who went to the NAB Show will talk about the convention without mentioning the massive presence of drones, the explosion in virtual reality technology and the pervasiveness of cool new toys for shooting video in unconventional ways. More and more, these technologies are also finding homes in the radio environment. (Plus, we radio folks just love drones.)



Jim Peck



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World Radio History



Class Warfare in the Senior Band

Consider AM remedies, but not at others' expense

COMMENTARY

BY ROBERT MEUSER

There have been numerous comments filed with the Federal Communications Committee regarding improvements to the AM radio service. There are many and often opposing points of view; however some of them could actually be harmonized.

There are Class D stations that would like full-time operation at a reasonable power level. A number of these have had listeners file comments on their behalf supporting extended operation as well. The usual reason involves the broadcast of sports and local political events along with various weather alerts. On its face, that would sound like a compelling reason to expand the service of these stations, but in reality only some stations have the resources (or even the desire) to provide such programming. Other stations will just continue with satellite

or brokered programming.

Regardless of intent, these stations need to be considered for a remedy, but not at the expense of other broadcasters.

BACKGROUND

Before we go further, let's look at the history of Class D stations.

The initial stations built in the 1940s and early '50s were usually on regional channels. Quite often, they were built to either avoid building a DA or because reasonable land was unavailable in a location that would allow the station to provide coverage of their market and protection of co-channel stations.

Initially many of these stations had decent pre-sunrise authorizations so they could sign on at 6 a.m. all year, obviously a better situation than what now exists.

Later, many of those stations added FM service, initially as a simulcast of the AM. Still later, as FM became dominant, many of those FMs were



istockphoto/robertCerto

How can AM radio get its groove back?

sold off separately and moved closer to more profitable markets, thus orphaning the AM. Some of those orphaned AMs ultimately were taken dark only to be resurrected by a new owner, often at a fire-sale price.

Certain stations in this group have been very vocal about expanding service without understanding that their plight has nothing to do with whatever happens to the Class A stations. They protect the groundwave of co-channel Class B stations, which in some cases have their main DA lobe pointed almost

directly at them.

Skywave is just a part of propagation that can't be revoked and it would be confiscatory to merely operate during darkness and therefore further eroding the groundwave coverage of co-channel stations that can already be greater than 5 mV/m at night. We cannot repeal physics, nor should we take from the population of one or more markets of 200,000 to 300,000 folk just to serve 1,000 or 2,000 people elsewhere.

Looking at a few of these cases, some stations in this group could probably run about 25 kW DA-1 day and night. The problem is that the market is too small to support the construction of such a facility. Two solutions are possible: an FM translator (more on that later), or flash cutting the existing facility to the expanded band. As it appears that more and more translators are going to be quite expensive, the latter solution might be more practical.

The second kind of Class D stations came on air beginning in the late '50s and early '60s. Many were on what was then Class 1B "semi" clear channels. Often they were located within the 0.5 millivolt skywave contour of the 1B

(continued on page 30)



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AM

(continued from page 29)

station and therefore had no chance of getting a micro night power when it became possible much later. In addition to the possibility of buying a translator, they should be first in line to cut over to an expanded-band channel.

Any station operating above 800 kHz would have an acceptable existing facility to cut over. Below 800 kHz — a proposal that the commission to date has brushed aside — stations could operate on 530 kHz. There is a grey zone between 800 and 850 where stations could move either way. Those are practical technical limits and not something to be codified. Ex-band stations would operate with 1,000 watts and stations on 530 with 250 watts EIRP day, 250 watts night and could be spaced about 200 miles apart. The frequency 530 kHz is included in NARBA and in commercial use in neighboring countries, so there is no legal obstacle to its use.

The third kind of Class D station include those that at some point chose to eliminate night facilities for economic reasons or to skirt FCC coverage requirements at the time. Many could provide their own relief by restoring their previously authorized night facilities should they find it economically viable.

Class C stations have enjoyed full-time operation for many decades; however, the Class C channels have always been notorious for high levels of nighttime interference. This is a preview of what the entire band will become if the commission adopts some of current proposals.

Some licensees of these facilities feel they should get a power increase, while others point out an increase will just raise the mutual interference levels. There are also international implications for at least some stations.

Some of the problems of concern to Class B stations have been addressed in the first report and order, while others can be addressed over time as hopefully the band clears somewhat.

A threat to Class B stations is the proposal to reduce protection to 2 mV/m. Most Class B stations have had

viable daytime operations for a long time, and some former Class III stations on regional channels have long ago boosted at least daytime power to 50 kW. The problem is nighttime operation when stations already have higher night limits. NIFs above 5 mV/m is already pretty common. The solution to nighttime coverage improvement requires fewer stations on air in many cases.

CLASS WARFARE

The Class A controversy is over 85 years old and has been a form of class warfare the entire time: the big guy vs. the small-town family business.

What *has* changed over that time is that, when AM radio was the only mass electronic media, it was necessary to have a fair distribution of resources. Since that time numerous other means of reaching the public have evolved, and it is now more practical to think in terms of better leveraging the ability of medium waves to cover wide areas efficiently.

A number of commenters suggested that the daytime power of Class A stations be allowed at the internationally agreed limit of 100 kW. That is at least a small step in combatting rising noise levels. Eventually at some future international conference, that 100 kW limit might be removed. Many things have changed since the limit was put in place in the '80s.

There has obviously been vigorous discussion over skywave protection for Class A stations. In general, the discussion splits into three camps: those who wish to maintain the status quo; those who have offered hard pragmatic technical data supporting reasons why it should not be protected; and those who don't fully understand the issues involved and have a misdirected self-interest.

Another factor involving skywave is that it still exists.

The station that receives the skywave interference will have extremely high NIFs, making their service area extremely small, and depending on distance, have well below Class B minimum power. In other words, no improvement to AM, only more interference. An interesting aside to the discussion is that just as some

Class D stations justify extended coverage in supporting local school sporting events, a number of major professional sports teams have filed in support of protecting Class A skywave coverage as those teams have numerous fans that rely on that coverage.

The Class A discussion has often been linked to the noise floor. The SBE filed well-crafted but stern comments regarding the FCC's inaction in enforcing existing Part 15 and 18 regulations. Many comments filed state, quite factually, that the noise floor is universally impairing AM coverage. In reality, while it may be bad in many places, it is not so everywhere, especially in sparsely populated areas where secondary and sky-wave coverage may be the only available signals.

The SBE comments, if actually heeded by the commission, have the potential to create a lot of blowback from the parties affected by enforcement and may be better addressed by a directive from Congress.

The FM translator issue, though partially settled, still has drawn numerous comments. There are those who believe putting a signal on FM is not AM revitalization and have opposed the concept from the beginning of the proceeding. More recently, some commenters have pointed out that since translators are unprotected, they can potentially be risky. There have been suggestions that stations that license translators that provide satisfactory coverage compared to the AM be given protection in exchange for the surrender of the AM license. They argue that that would provide a greater degree of AM improvement.

Broadcasting is a business like any other, and the business people involved have the right to protect and, where possible, grow their business. Small businesses would be given the equivalent of a land grant in the form of being able to move to a new frequency while medium and large businesses should not be subject to the equivalent of confiscation. Some of those businesses will either fail or find a more effective business model, while others will want to expand. Under our system, all the above should be possible.

The author is chief technical officer for design engineering company Engineaux.

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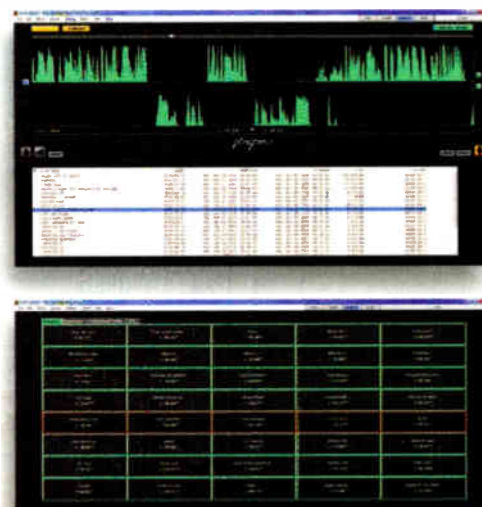
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