RADIOWORLD

Your guide to radio technology

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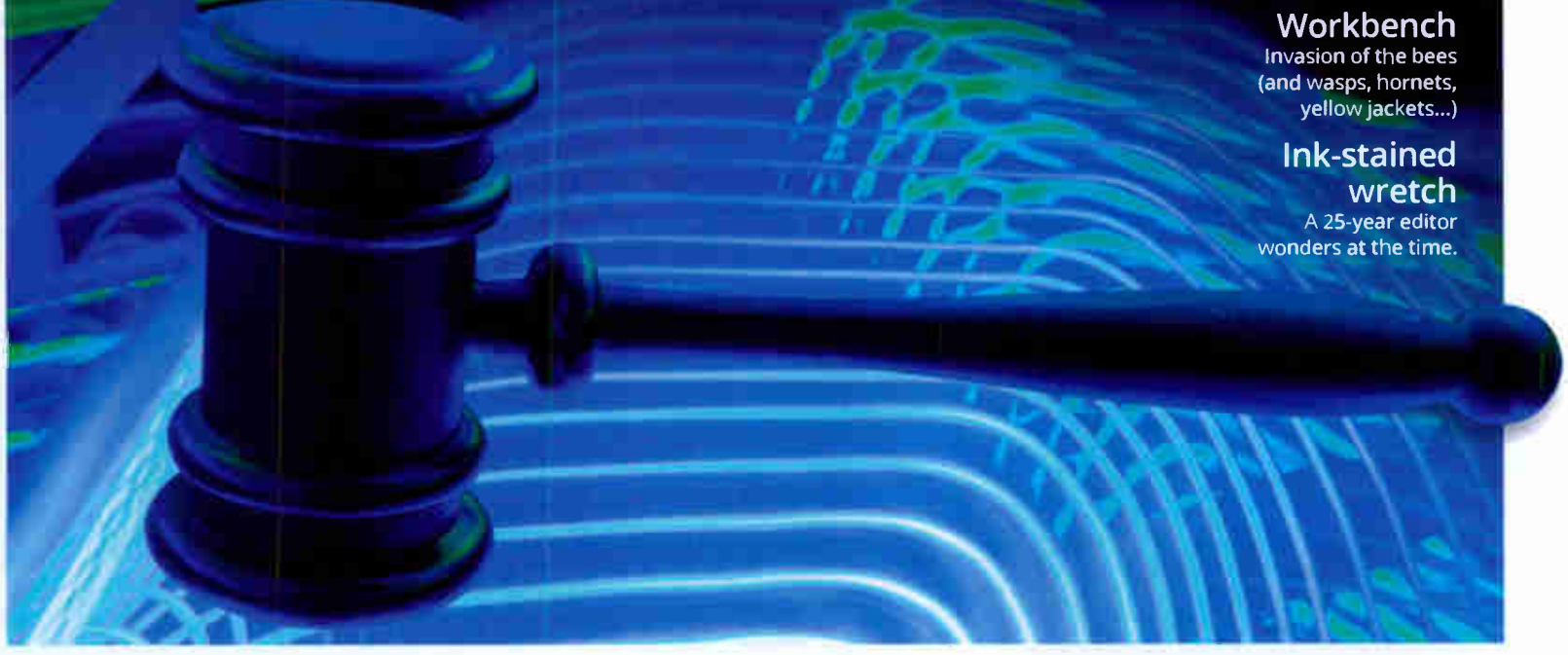
The FCC looks to whack some tech rules

Seven radio technical regulations are getting a look for revision or deletion.



Talk hard!

Ryan Star says the future of radio is social audio.

Workbench

Invasion of the bees (and wasps, hornets, yellow jackets...)

Ink-stained wretch

A 25-year editor wonders at the time.

RADIOWORLD

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25 years and counting

I just passed that milestone in my time at Radio World

Paul McLane
Editor in chief

With this issue I'm taking a moment to note my 25th anniversary of joining Radio World and to appreciate the circle of friends and colleagues who create the memories and stories we've shared and continue to make. The year 1996, in addition to being a landmark one for U.S. radio regulation, was also when I came on board here, having cut my teeth in radio newsrooms and learning about radio technology as a sales and marketing executive on the manufacturing and dealer side of our business.

This crazy industry has changed so much since. And it's not just that cart machines gave way to hard drives that gave way to the cloud, or that today instead of one station with four engineers, you might have one egineer watching 14 stations. As we document in every issue, the challenges that have faced radio stations, executives and engineers over those 25 years have been remarkable ... but so is radio's capability for reinvention.

It has been exhilarating to guide Radio World's content through a similar process, in partnership with the leadership of IMAS, NewBay Media and now Future, our most dynamic parent company yet. I'm grateful to today's business leaders who have put their trust in me, including Carmel King, Rick Stamberger, John Casey and Zillah Byng-Thorne, and to our many advertisers. I'm also privileged to work with a remarkable cadre of contributors, including a "brain trust" of engineers who have become my dear friends.

But none of it happens without you, the industry professional who reads our stories, saves our ebooks, watches our webcasts. Whether your title is chief engineer, station owner, department head, manufacturing employee, regulator or one of any number of other key radio roles, my hope is that Radio World's content continues to help you in your job as well as your career, keeping you informed while also entertaining you and stimulating new thinking.

So thank you for the trust and loyalty you've shown to me and to Radio World in those 25 years — and here's to many more years together.

AFCCE: Put a Technical Person on the FCC

The Association of Federal Communications Consulting Engineers urged the Biden administration to nominate a fifth FCC commissioner and to make it a person with a technical background.

President John George wrote, "In recent decades ... commissioners have relied upon the FCC's Office of Engineering and Technology and the FCC's staff engineers for technical advice, but those technical resources have suffered massive attrition over the past two decades with few positions backfilled.

"As the FCC itself has reduced its technological depth, the technology inherent in the industries regulated by the FCC — including broadcasting and multicast, personal wireless, and Wi-Fi — have become infinitely more complex."

Having at least one commissioner with a technical background and a fundamental understanding of RF and communications technologies "would be in the greater public interest and would provide an additional measure of balance and robustness to the FCC's overall decision-making process."

Wheatstone Beefs Up Factory Capacity

Wheatstone said it is making a million-dollar investment in production with large buys of electronic components as well as major new equipment at its North Carolina factory.

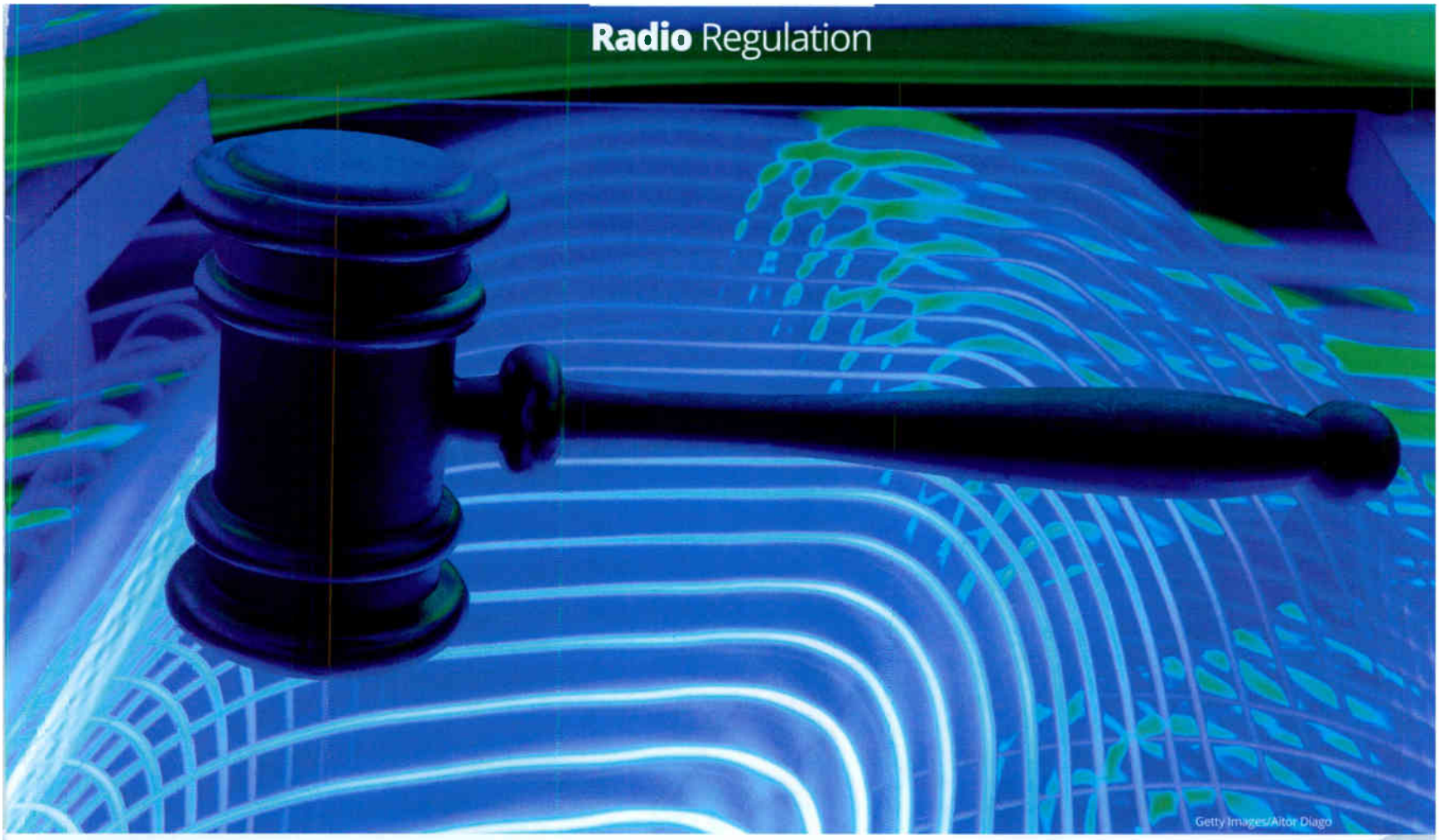
"The goal is to double production in its New Bern factory where all Wheatstone and Audioarts products are made, from machining, fabrication, screening and circuit board surface mount to final testing and AoIP system configuration," it stated in a release.

It quoted Production Manager Matt Wilson saying that by keeping manufacturing in-house, it can respond more quickly to changes and have better control over a "volatile" supply chain.

Additions include a second multi-axis CNC mill, as well as a larger-format brake press for precision metal work (shown). Wheatstone also plans to add another surface-mount machine to support manufacturing.

It said one recent order is for WheatNet-IP audio console surfaces, network devices and system preconfiguration for 24/7 studios in 32 U.S. markets, "with the majority of completed systems to ship through September." It did not identify the customer.

Manufacturers of broadcasting equipment are among those hit by the global instability in component availability. "Lead times on everything down to diodes and capacitors are insane," Wheatstone's Dee McVicker said, so the company has increased its materials inventories.



Getty Images/Aitor Diago

Writer
Randy J. Stine

The longtime Radio World news contributor wrote about regulatory fees in the July 7 issue.

FCC takes a broom to radio's technical rules

The proposed changes are "safe and sane," as one engineering observer put it

The FCC is moving to clean up more broadcast radio technical rules.

The four commissioners voted unanimously in July to adopt a Notice of Proposed Rulemaking that identifies seven technical rules they want to eliminate or at least revise. The vote, and the subsequent publication in the Federal Register, will start a public comment process toward final action.

Some changes are more significant than others, but radio observers told Radio World that all will benefit broadcasters and allow them to operate more efficiently.

Former Chairman Ajit Pai made it a theme of his tenure to eliminate outdated and redundant technical provisions for broadcast radio stations. But acting Chairwoman Jessica Rosenworcel too has identified rules worth revising or trimming.

The proposed changes include clarifying some conflicting technical provisions, as well as eliminating the maximum rated transmitter power limit rule for AM stations.

The FCC believes the latter is "outdated and unnecessary," given the commission's reliance on actual operating antenna input power as the most accurate and effective means of ensuring that AM stations adhere to their authorized power limits.

The commission also wants to eliminate a requirement that applicants demonstrate the effect of any FM applicant transmitting antenna on nearby FM or TV broadcast antennas, calling this rule seldom used.

It also plans to update the noncommercial FM community of license coverage requirement to create consistency across different rules for NCE stations. Specifically, the FCC proposes that "the requirement that

> **I think it's a good start, but they're certainly not taking any risks.**

Above
Shown on the screen in this artist's composite, Acting Chairwoman Jessica Rosenworcel gavels the July FCC online meeting to order. The four commissioners all supported opening the notice of proposed rulemaking. FCC Secretary Marlene Dortch also appears on-screen at center bottom.

stations reach 50% of their community of license or 50% of the population in their community should replace the more general requirement that the NCE station cover a portion of the community."

"Reasonable and prudent"

Bob Weller, vice president for spectrum policy at the National Association of Broadcasters, says the association is working with its members to ascertain whether there are particular benefits or concerns about the FCC's plans.

"Most of the proposed rule changes seem reasonable and prudent. It's always good to eliminate or clarify rules that are in conflict with other rules. But we want to ensure that those internal conflicts are resolved in a way that no broadcasters are harmed," Weller told Radio World in an email.

NAB expects to work with the FCC in its ongoing review of regulations and possibly comment in greater detail on one or two of the specific changes, Weller said.

Broadcast engineering experts contacted for this story generally are supportive about the cleanup.

One longtime observer of the commission said these updates are "safe and sane" deregulatory efforts and constitute a "clearing of regulatory underbrush" of outdated technical rules. "The changes being proposed appear to be mostly administrative in nature, harmonizing rules and eliminating inconsistencies from some areas and clarifying others," according to this expert.

Veteran broadcast engineer Ben Dawson, consulting engineer with Hatfield & Dawson, said he is "delighted the FCC has set out to clean up" outdated broadcast rules, in particular the maximum rated transmitter power limit rule for AMs.

"No one has paid any attention to this rule for decades, and the transmitter manufacturers no longer design their products in the old power limit series anyway," Dawson said.

Another rule that is mostly ignored, he said, is the requirement that applicants demonstrate the effect of any FM applicant's transmitting antenna on nearby FM or TV broadcast antennas.

"It serves no useful purpose except in the rare case where there is a new installation that really does mess up an existing one — FM antennas improperly interleaved, for example," he said.

However, one observer said that the "collocation rule" for FM stations provides legal teeth to a longstanding FCC policy that broadcasters who are "second in time" are "first in responsibility" to resolve interference problems due to proximity. "An FCC policy is subject change and may be difficult to enforce, while a rule carries clear legal standing," he said.

Another FCC watcher, Chris Imlay, general counsel of the Society of Broadcast Engineers, said that efforts by the FCC to ease broadcast regulations and clean up old rules began in earnest during the Reagan administration.

"It was a feverish effort to pare away overly limiting broadcast rules, to try to get broadcasting closer to a print media level of regulation," Imlay said.

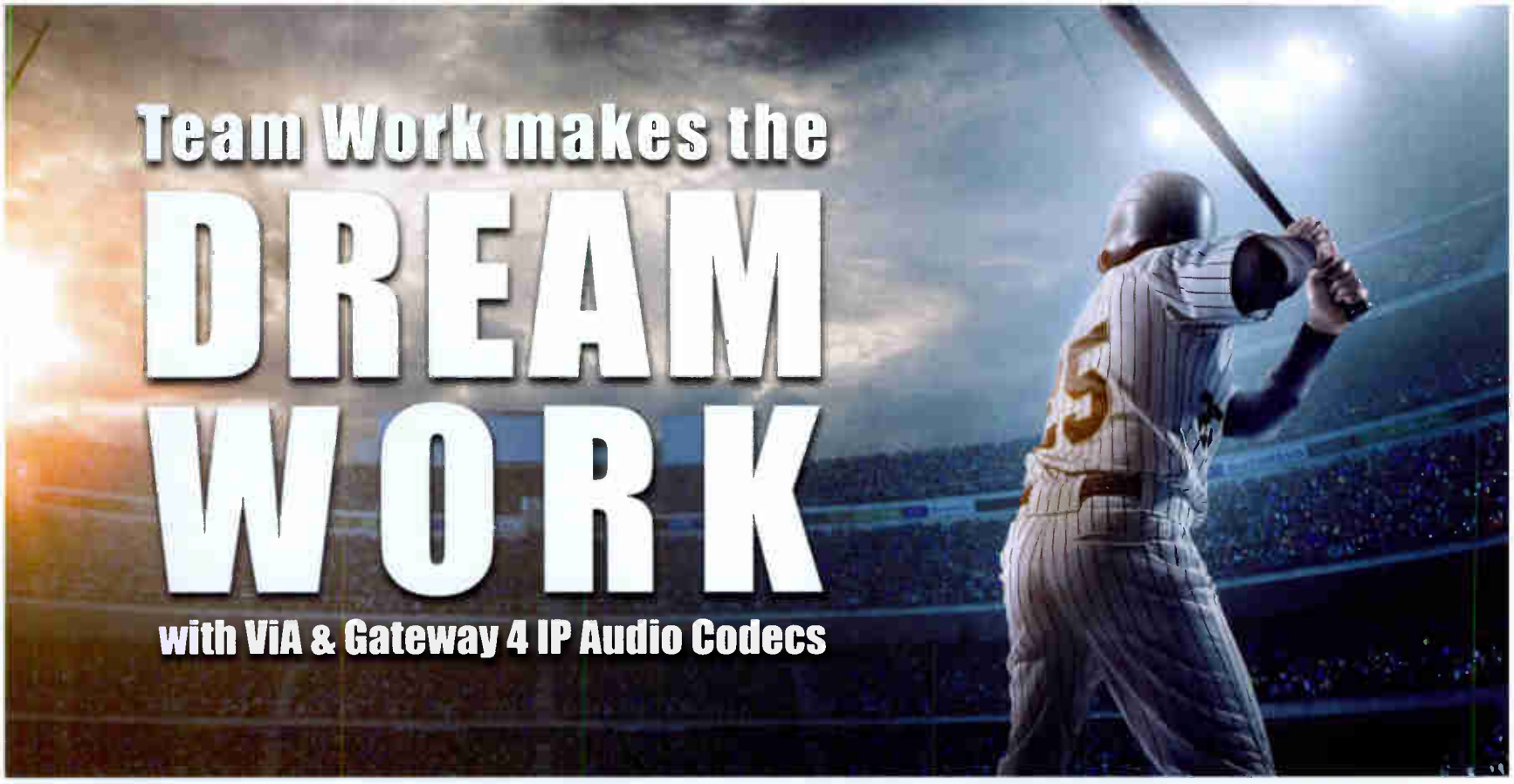
"After that, the biennial review dockets looked for rules that were outdated or needed updating. Advances in the reliability of broadcast equipment and reliable automation justify elimination of outdated technical regulations to some extent," Imlay said.

Update to a fill-in

Imlay thinks the redefinition of AM fill-in areas will be perhaps the most helpful and relevant change.

The commission wants to amend the definition of an "AM fill-in area" when an FM translator simulcasts an AM station. It says its change would "create consistency" across different rules governing fill-in translator transmitter siting.

"It seems to me that by far, that's the proposed rule change that will be most helpful, at least for AM radio broadcasters with FM translators," he said.



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* The Gateway 4 codec supports 4 channels only and is not upgradable to support more channels.

"The rules have been inconsistent. Making these two rules consistent alleviates an anomaly that is confusing, to say the least."

The FCC also plans to update the signal strength contour overlap requirements for noncommercial Class D FMs to bring those rules in line with the contour overlap requirements for all other noncommercial FMs.

The proposal states, "This change will allow Class D stations greater site selection flexibility as well as the opportunity to potentially increase their coverage areas." The commission proposes that "the time is ripe to extend the otherwise universal 100 dBu contour overlap standard for second-adjacent channels to NCE FM Class D stations."

The FCC believes the 100 dBu standard "is a better gauge of potential second-adjacent channel interference than the 80 dBu standard."

According to Laura Mizrahi, vice president of the consulting firm Communication Technologies, "The NCE-FM Class D second adjacent channel interference ratio most definitely should be consistent with all other services. It's been +40 dB or the 100 dBu interference contour for all other FM services for a long time now. High time to give the second-class Class Ds some relief here."

Asked if these changes might mean a lot of new business for broadcast engineering consultants, she said no.

"There may be some modest increase, if only from a curiosity standpoint, from some Class Ds, but from my perspective there isn't likely to be a huge influx of inquiries, since this would only benefit existing Class D facilities, of which it is believed very few would be able to benefit from the change."

> **"No one has paid any attention to this rule for decades, and the transmitter manufacturers no longer design their products in the old power limit series anyway."**

Border issues

As part of the NPRM, the FCC is also seeking to eliminate a requirement for broadcasters to protect grandfathered common carrier services in Alaska operating in the 76–100 MHz frequency band, "since there are no common carrier services remaining in this band in Alaska," according to the FCC.

The notice would also tweak allocation and power limitations for broadcast stations located within 320 kilometers, or about 199 miles, of the Mexican and Canadian borders.

Bert Goldman, president of Goldman Engineering Management, believes this particular update will affect broadcast licensees, particularly in the planning of translators.

"Codifying and updating some of the rules in Parts 73 and 74 will make things easier and will allow for some improvements of translators along the border. I have filed several translator applications near the Mexican border, and trying to decipher and apply the international treaty requirements for translators near the border is maddening," Goldman said.

"These changes should simplify the application process and allow for more reasonable facilities."

But Goldman is one of several observers who told Radio World they would like to see further action from the commission on outdated radio technical rules.

"I think it's a good start, but they're certainly not taking any risks. In my opinion, this NPRM is an attempt by the FCC to get something passed without creating a lot of pushback. It's extremely benign," Goldman said.

"I'd love to see the commission take on some really meaningful deregulation that helps broadcasters and consumers, and not just the biggest voices in the room."

He thinks the FCC has missed an opportunity to help smaller AM broadcasters with more changes to the rules. "Many people were hoping that the last push by the commission to deregulate AM rules would help them survive. Unfortunately, that hasn't happened. I know of a couple of broadcasters who were waiting for some pretty benign changes, like the elimination of third-adjacent protections. They could wait no longer and have sold or shut off their stations, and their listeners have lost out."

One industry veteran said he agrees that the rulemaking is conservative and not controversial. "This is what we have seen so far from Rosenworcel, who doesn't want to rock the boat while an acting chairwoman," that person said.

Ben Dawson said one change the FCC might consider is updating rule 73.51, which deals with determining operating power. "The only part worth retaining is a reworded section (e)(1), which would require use of the manufacturer's stated final amplifier DC-to-RF efficiency factor."

The text of the NPRM is on the Radio World website at *https://tinyurl.com/rw-tech-rules*. Interested parties may file comments and replies at *www.fcc.gov/ecfs/filings*. Specify proceeding MB Docket No. 21-263. Comment deadlines had not been published as of late July.

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Writer
Paul McLane
Editor in Chief
Radio World

Freinwald to resign Washington SECC's chair

Though still involved, he steps down from the chair after 25 years

In September, Clay Freinwald will step down from his role as the longtime chair of the State Emergency Communications Committee in Washington state, though he'll remain active with the group.

In 1996, when Freinwald was asked — by Entercom engineer John Price and the late Jimmy Hocutt of the state's Emergency Management Division — to chair the SECC, the task at hand was to help write the state EAS plan, because the FCC was phasing out the Emergency Broadcasting System.

Freinwald continues to work part-time at Northwest Public Broadcasting as a telecommunications engineer. He also provides site services for four American Tower sites around Seattle, does contract work for KIRO(FM) and KING-FM and helps out at Bustos Media station KMIA(AM) in Auburn.

He wants to spend more time on those activities as well as life at home; but said he'll be available to work in other SECC roles if needed.

Right
Clay Freinwald, at left in the photo, is shown with Kenny Gibson at a transmitter installation job for Northwest Public Broadcasting station KQWS(FM) in Omak, Wash.

> **"Among the country's State Emergency Communications Committees, the one in Washington state has been one of the most visible and vocal."**

Freinwald, who for a decade also chaired the EAS committee of the national Society of Broadcast Engineers, received Radio World's "Excellence in Engineering" Award in 2007, and he was honored by the National Association of Broadcasters in 2018 with its Service to Broadcast Engineering Achievement Award.

He's also the rare engineer to receive a "Broadcaster of the Year" award from a state association; the Washington State Association of Broadcasters bestowed that honor in 1997.

New plans in place

In September the Washington SECC will roll out WA-PAWS, for Washington Public Alert and Warning Systems, incorporating updates as well as items required by the FCC for the EAS plan.

Among the nation's SECCs, the one in Washington has been one of the most visible. Freinwald told me the group has historically tried to go beyond EAS by embracing all forms of public alert and warning. "Yes, Washington State's program is different. We do what we feel should be done for the citizens here and are not limited by the FCC's rules."

What might other states learn from the Washington experience?

"One of the biggest problem has been a lack of federal leadership and guidance," he continued. "Some of this is based on the fear and/or respect for states' rights, perhaps. The FCC recognizes this in that when states and territories submit their 'plans,' they get over 50 different approaches. The new Alert Reporting System will certainly help with this problem by providing some structure that has been lacking."

But he noted that some states don't even have a functioning SECC. "The fact that there is not a requirement to have one has not helped," he said. "Clearly Congress was not happy with the [false alert] situation in Hawaii, and this has started the ball rolling."

He feels that the commission now is taking steps in the right direction but that it could do more. And he emphasizes that in Washington, EAS is a team effort of a number of private and government entities.

"We have been blessed, and I am very proud of what we have been able to accomplish," he said. "This is not to say that we are perfect; we are far from it, and have a lot of work to do going forward. There is always room for improvement."

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Invasion of the bees

Why a release pin is so important on crimping tools

John Bisset
CPBE
has spent over 50 years in broadcasting and is in his 31st year of Workbench. He handles western U.S. radio sales for the Telos Alliance. He is a past recipient of the SBE's Educator of the Year Award.

Bee a pal!
Help fellow engineers by sending in your tips to *johnpbisset@gmail.com*.

Steve Tuzeneu is a longtime broadcast engineer and Workbench contributor, and the general manager and CE of WIHS(FM) in Middletown, Conn.

Steve had a problem: a lost satellite signal; but he was able to track the problem to wasps that had taken up residence in the feed horn.

After removing them and their nest from the throat of the feed horn, Steve wanted to stop them from coming back. The photo here show Steve's solution: a plastic cap from a used can of aerosol glue. The cap happens to fit nicely into the feed horn, discouraging any insects from moving in.

Keep this solution in mind, especially if you suddenly lose your satellite signal. As a contractor, I once was called to a station that reported losing its satellite signal every evening at sundown. Yep, you guessed it: Bees had taken up residence; during the day they were mostly away from the nest, but at night they all returned, and their combined body mass was enough to disrupt the signal.

Whether it's a plastic cap or a cut-down 1-liter plastic water bottle, Steve's tip will save you a headache and maybe prevent you from getting stung.

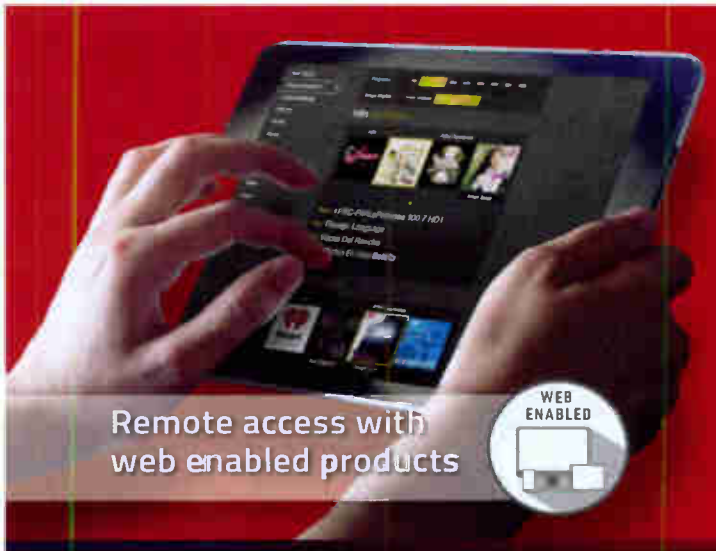
Right
This plastic cap was an inexpensive deterrent to insects that would otherwise nest in the feed horn.

Analog at the edge

I got a followup from engineer Dale Lamm about the AoIP EAS adapter we discussed here in July.

"I'll confess, when I first saw the tip about the AoIP/EAS interconnection, I thought it was an April Fool's article that was somehow delayed," he wrote.

The CATV F connector adapting to an RJ-45 Ethernet plug was something he had never encountered. A clever engineer from WETA found this adapter and used it to solve



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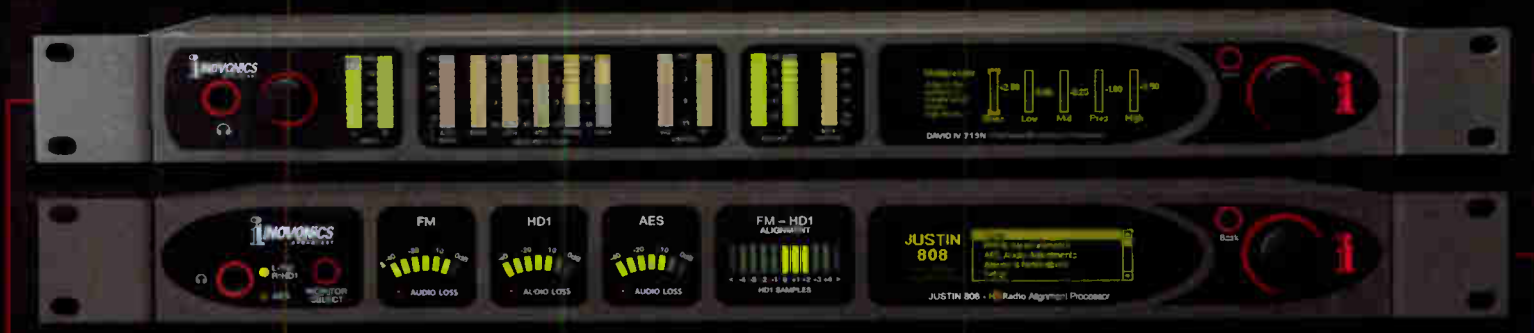

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a problem that had nothing to do with CATV.

But where did this odd adapter come from in the first place?

The story starts with someone who wanted to install a TV set in a room that had nothing in the wall but Ethernet category wiring. There was no RG-6 coaxial wiring in the room.

With a pair of these adapters, you take RF from the CATV distribution amp and send it on one of the twisted pair inside the category cable.

In the room, another adapter takes it to an F connector that is attached to the TV. The 100-ohm twisted pair is close enough to the 75-ohm RG-6 impedance for this to work. Obviously, use a direct category cable connection. Don't expect to shove RF through a network router!

Looking closely at the picture in our original article, it seems only the first pair is used. Moving consumer S/PDIF to professional AES with this adapter solved a problem inexpensively.

Dale's plant makes partial use of audio over IP but has a lot of gear with analog I/O. He was never a big fan of dongles with twin XLR connectors hanging off the back of a dense array of rack gear. He finds it easier to modify a LAN cable — cut off one end, fan out the four pairs and solder the left/right pairs to a couple of XLRs that plug into the analog gear.

Use some tubing or heat shrink to make it pretty and more durable. Running balanced analog through 10 or 20 feet of unshielded category cable is fine.

If you use the hanging dongle method, you'll be soldering an XLR at each end of the interconnection. Dale's method requires an XLR only at the analog equipment end, and results in less wiring congestion.

"Where did this odd adapter come from? The story starts with someone who wanted to install a TV set in a room with no coaxial wiring."

Less dense rack wiring can save time troubleshooting in the future.

Note that LAN patch cables use stranded wire instead of solid if you're concerned about flexure.

Someday, everything will be AoIP-ready or shrunken into a piece of software inside a server. For now, we all have to deal with analog at the edges of our facilities.

Above
Dale Lamm wasn't sure at first that we were serious with our tip about the AoIP EAS adapter in the June 23 issue.

Ouch ouch ouch

Dale "Squeak" Porray, AD7K, really liked Bill Weeks' submission about the LED replacement for fluorescent Circline bulbs but says the website link we gave may not have been right in some versions of the story. It is *www.mpja.com* for Marlin P. Jones Associates.

The site now has over 60 YouTube videos of the products they sell. Squeak has been dealing with them since the 1970s and says they're a fine company.

Since we also were talking about CAT5/6 Ethernet cables, watch the site's YouTube video about the LAN RJ Plug Crimp Tool. It has a built-in cable continuity testerto check cables you've crimped, all for under $30. One notable feature is a ratchet release pin, very important!

Once while helping an engineer crimp cables, we took a break, but as we chatted, he inadvertently put his index finger in the jaws of the crimping tool and pressed down. CLICK — the jaws latched. And there was no release.

I drove him to the emergency room to get his finger freed. Since witnessing that, I've made sure that any latching pliers or crimping tools I use have a release pin. You can't be too careful.

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AEQ codecs bring talent to CNC Medios

Codec leads the way in equipment integration for remote success in Chile

Writer
Marcelo Mendizábal
General Manager, CNC Medios

CNC Medios is the leading communications company in northern Chile, headquartered in the city of Antofagasta. It includes two television channels and three radio stations: Canal95, FM Plus and FM Quiero. We are also members of ARCHI, the Chilean Radio Association, where we are very active with new ideas and projects.

For a long time CNC Media has been a daring company, unafraid to bet on the latest technologies available on the market to improve the way we create our content.

A few years ago we purchased several AEQ Capitol IP digital consoles. Their digital technology offers us a significant improvement in the audio quality of our broadcasts, and their IP technology allows remote control that we had never been able to enjoy until now.

Great timing

In 2020 when the COVID-19 pandemic situation forced broadcasters like us to look at new ways of working remotely, we already had that path in place thanks to the IP connectivity. But we realized that we needed to strengthen our ability to generate dynamic, quality programs, even if the constraints of teleworking didn't make it particularly easy.

That's when AEQ launched its Talent portable audio codec, at the perfect time for our plans.

CNC Media already had AEQ audio codecs such as the Mercury or Venus units in our studios, but they were not the ideal solution for a journalist to operate from home, but the new Talent seemed to offer the optimum solution: small, easy to use, digital quality with IP connection and robust.

In addition, AEQ technicians remotely helped us during the first days to discover all the options and to set them up in the most suitable way for our particular operation.

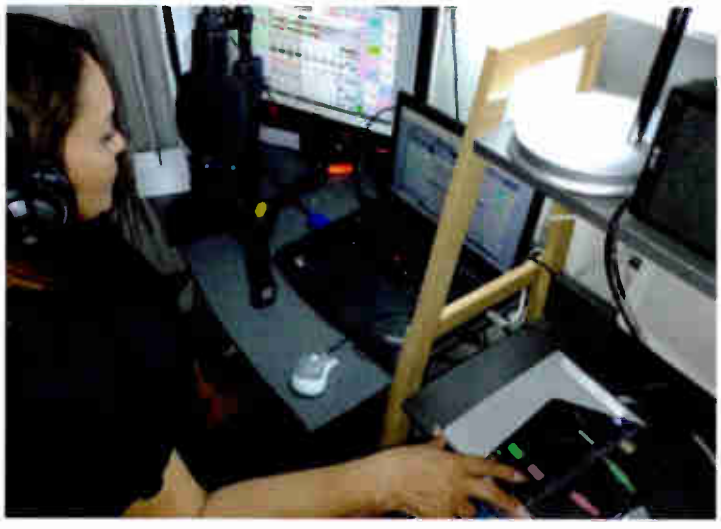
Currently all of our top journalists have one in their homes, and they have been connecting to the central studio for some time now thanks to them. The control surface of the Talent is simple, and with just a couple of button pushes our journalists, even the less experienced ones, can easily connect.

In addition, Pilot mobile phone app gives them the option to operate the Talent directly from their own smartphones. What's even better is that the journalist can carry out live interviews with guests or contributors using Skype or WhatsApp, for example. AEQ's Talent is a gem — such a small thing can do so much.

Finally, at the CNC Medios group's technical center we have a PC where we have installed the AEQ Control Phoenix Multi application. This allows our technicians to supervise the status of all our AEQ audio codecs in real time and, if necessary, intervene to modify any configuration or solve connectivity issues.

This application displays images of all the devices that are switched on and, even better, the exact connection status, including VU meters monitoring the audio signals that are being transmitted through them.

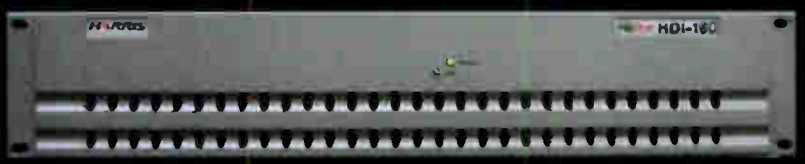
All the AEQ audio codecs we work with include Opus encoding algorithms and also free registration on AEQ's SIP server. This is great since it saves us from having to complicate the deployment of these great codecs and having to set up our own SIP Server.



Right
At FM Quiero, an AEQ Talent compact codec is seen at lower right.

Info

Contact Doug Ferber at Tieline at 1-888-211-6989. For international queries contact Charlie Gawley in Western Australia at 61-8-9413-2000 or visit *www.tieline.com*.



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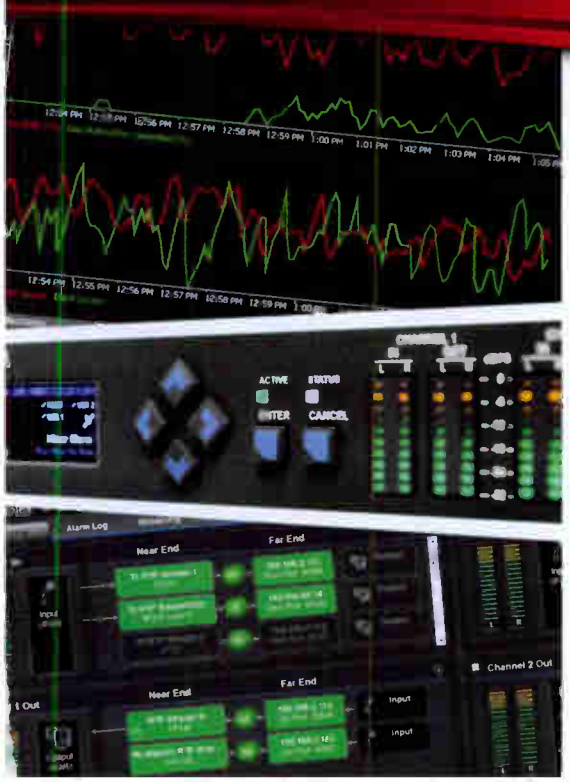

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Writer
Lance McFarlin
General Manager, KTRL/KXTR, Tarleton State University

Gateway delivers flexibility for Tarleton State

Texas university turns to Tieline as a proven performer

Info
Contact Doug Ferber at Tieline at 1-888-211-6989. For international queries contact Charlie Gawley in Western Australia at 61-8-9413-2000 or visit *www.tieline.com.*

I manage two stations at Tarleton State University in Stephenville, Texas, and we have used Tieline's Report-IT app and iMix G3, Commander and Merlin codecs in the past.

Recently we purchased the Tieline Gateway 8 to use for sports and other remote broadcasts on KTRL(FM) 90.5 MHz and KXTR(LP) 100.7 MHz. Some Gateway channels are hooked up to a Logitek console in one studio via a JetStream Mini, and others are hooked up to the Logitek console in our other studio. Codec outputs are networked across to all three of our Logitek consoles, including a production suite.

We selected the Tieline Gateway 8 as it streamlined our setup by using a single codec for remotes on both stations. Tieline's upgrade path allows us to expand channel capabilities via software upgrades in future as required.

My "go-to"

The new Gateway 8 replaces an older Commander codec being used for remote broadcasts across our campus and community. It also replaces a Tieline Merlin in preparation for the football season here at Tarleton State.

We use the Gateway to send live audio back to the station and send station mix-minus audio to the remote site. The Gateway delivers flexibility. We can handle two sports broadcasts on both stations or be doing a remote broadcast on campus on one station, and a sports broadcast on the other.

Tieline is my go-to for remotes. Its integration with older equipment and being able to use the Report-IT app are major reasons. We replaced our iMix G3 with the ViA, and our Athletics department has done the same, so we are using Tieline ViAs for all our remotes nowadays. We will use the Commander and iMix G3 that they replaced as a backup STL.

The transition was pretty simple. Like the Gateway, our Logitek console uses RJ45 for the ins and outs. With the Merlin and Commander we had to use RJ45-to-XLR adapters, but with the Gateway we can get rid of those and go straight in/out.

The university has a fiber-based IP network, and we use AT&T hotspots to connect on-site. Our athletics team uses AT&T and Verizon. Connections are reliable in this area, but with sports broadcasts, that can depend on where an away game is located.

Quality and functionality is the best part about broadcasting using IP codecs. When you compare codecs to a cellphone or POTS line, the overall quality difference with Tieline is undeniable.

During the pandemic we worked with a staff of three, myself and two student workers. We actually used Report-IT, along with our Commander and eventually Gateway more than ever before. It was the best way for us to put students on the air. They can download the TieServer Console and Report-IT apps on their phone and we could put them on the air in a snap.

The Tieline Toolbox Web-GUI for configuration and control is easy to use and very helpful for configuration and control. Tieline's Cloud Codec Controller is also something we plan to use for remote control of equipment. We have a lot of students and play-by-play announcers doing broadcasts who are not very familiar with the equipment, so being able to control everything remotely would be incredibly useful.

Tieline's quality is great. It is the best of any other options we have used in the past and we have had nothing but great experiences with Tieline's technical support. We have had very positive feedback from our engineer and all of the people who use the equipment on a weekly basis. They have been some of the most reliable and best working pieces of equipment we have.

Above Right
Legacy and new Tieline equipment in the rack.

Tech Update

Angry Audio Introduces CallMe

Angry Audio, the self-described broadcast "gadgets and gizmos" company in Nashville, has a collaboration with U.K.-based Vortex Communications Ltd., makers of the CallMe family of IP audio codecs, to offer those in the U.S. market.

Angry's owner Michael "Catfish" Dosch described CallMe: "It sounds amazing, it's simple, and it's perfectly priced." CallMe is a codec ecosystem that enables users to connect in several ways: browser-to-browser, browser-to-hardware and hardware-to-hardware.

In its hardware iteration, the small CallMe-T box is a simple IP codec that Dosch said doesn't require confusing controls, menus or options. It can be used by anyone and is suitable for studios, remote kits or fixed tie-line applications. It has a USB port, so remote broadcast setup just requires connecting a headset.

Meanwhile, the cloud-based CallMe Click & Connect software iteration runs in any standard browser, there are no apps to install. Anyone with a smartphone, the company says, has a broadcast codec in their pocket and they know how to use it. The user can be on the air by emailing or texting a link to anyone in the world.

All versions use the Opus algorithm, which delivers 15 kHz bidirectional audio. It can also fall back to G.722 for compatibility with other codecs.

For information, contact Angry Audio at 1-615-763-3033 or visit www.angryaudio.com.

Writer
Bo Woloszyn
Host, Walmart's "The Bo Show"

Versatility of Access keeps Walmart Radio flexible

Attention, shoppers, you're listening to Walmart Radio via Comrex Access

Info
Contact Chris Crump at Comrex at 1-978-784-1776 or visit *www.comrex.com.*

Walmart Radio was created in the late 1990s. It was discontinued temporarily in 2008, and Walmart stores and Sam's Clubs switched to playing CDs over their PA systems. But a CD can only hold so much music, and it hit the point where store associates knew what time of day it was based on the song that was playing.

In 2015, during a meeting with the CEO of Walmart, a store manager said that they really needed Walmart Radio back. It was reintroduced on the spot.

I am a manager in the corporate affairs and corporate communications team for Walmart and Sam's Club, and my primary job is to oversee the radio aspect of our stores and clubs. I also host "The Bo Show," which airs live in all locations on Mondays, Wednesdays and Fridays in the afternoons.

We run it just like any other terrestrial radio show, except we syndicate in a retail environment. I do interviews with celebrities, shout-outs for associates, take calls from customers, and play games on the air — the kinds of things you'd expect to find on any national radio show. Additionally, my colleague hosts a morning show called "Live with Antonio," and we'll regularly do remote events along with other special programming.

Packing a punch

I've worked in radio for over 20 years, and spent much of that time working in terrestrial radio. In that time, I'd used plenty of Comrex gear, and I really liked it.

During the pandemic, we realized that we needed to upgrade some of our equipment. The TV division of Walmart was using some Comrex stuff already, so the name was familiar. When it was time to shop for new equipment, I thought, "Hey, this is a good company, I know the stuff — let's give it a try."

During the pandemic, when the main office itself shut down, a lot of our associates began working remotely. Our stores were still open, though obviously with limited capacity; and we wanted to be able to do our show, even though we couldn't be at the studio.

We owned a single Comrex Access 2USB unit, but that wasn't enough to handle everything we needed to do since we were all about to be working from home. So we purchased several Access NX units, the newest portable IP audio codec from Comrex, so that we could give them to everyone who needed one.

We also needed a studio codec that could handle multiple remote connections at once. After bit of research, we chose the Comrex Access MultiRack, which can handle up to five connections with any kind of Comrex IP codec simultaneously. Once everything was installed, we were off to the races!

Above Right
In this "fisheye" photo, the Comrex Access NX Portable codec and its accessory mixer are shown in a carrying case.

One of the things I like about the Access NX is that it's small, but it packs a punch. It has a lot of bells and whistles, especially when you add the extra mixer.

I've used it with Wi-Fi, cellular networks and also with a hardwire connection through a cradle point. The battery lasts quite some time, so you can get through a good two- or three-hour broadcast on battery power alone when connected to the mixer. Without the mixer, it can last up to 5 hours.

Having used this gear for a year, I think it's one of the best upgrades we've ever made. It was essential during the pandemic. We could connect from home, and I could also log into the user interface remotely if there was ever an issue. The flexibility on it is just amazing — it's one of the best units I've used in my radio career.

Tech Update

2wcom HDR-CC Is a Small Box With Impact

2wcom says its HD Radio Capture Client (HDR-CC) solution eases configurations not only for audio acquisition but also output for emergency alerts. It plays well with Generation 3 or 4 HD Radio systems.

The palm-sized box can take in one digital or analog stereo audio channel and provide it to an HD importer. The audio is sent compressed with an HD Radio codec via IP. Thanks to the HDR-CC's audio-over-IP capabilities, the device can also put studio or web radio streams (e.g. Icecast) directly on-air over one of the supplemental HD radio channels.

The connection to the importer is established by entering its IP address in the web interface and connecting audio via XLR connectors.

The company says one big advantage is to help broadcast enterprises comply with FCC emergency alerts rules, which had necessitated the use of external audio switches.

Because of a feature implemented by Xperi into the latest Generation 4 importers, the entire emergency alert for all supplemental channels on the transmitter can be provided by a single HDR-CC. It requires a setup that has AES audio connected to the capture client as well as a GPI to trigger the alarm. When the alarm is triggered the HDR-CC logs into the importer and replaces all supplemental channels (HD2–HD4) with the alarm program. After the GPI is released, the HDR-CC logs out and the importer returns to regular operation.

The HDR-CC is powered with Power-over-Ethernet or external power supplies.

For information, contact 2wcom in Germany at +49-461-6628300 or visit www.2wcom.com.

Writer
Bill Dahlstrom
Chief Engineer, Minnesota Public Radio

MPR tackles T1 to IP transition with GatesAir

Intraplex IP Link 200 codecs facilitate legacy equipment, future signal paths

Info
Contact Keith Adams at GatesAir at 1-513-459-3447 or visit *www.gatesair.com.*

Legacy T1 circuits have long provided radio broadcasters with a reliable way to contribute and distribute program audio. The telecom industry's transition to IP has introduced challenges to broadcasters with existing T1 infrastructures.

While many of these TDM-based networking and transport systems remain in service, the price of T1 circuits continues to rise while quality of service has grown uneven. Telcos have also shortened contractual renewals for these circuits, with an obvious eye toward a T1 sunset.

Minnesota Public Radio and American Public Media, with 46 public radio stations and 41 translators serving listeners in eight states, are among those that retain a high-performing T1 infrastructure for audio contribution and distribution.

We currently operate a hybrid infrastructure that includes IP codecs from a mix of vendors.

Management of our long-distance connections to the PRSS NOC is among my key responsibilities. Our APM program portfolio, which includes BBC World Service, C24 and Marketplace, reaches nearly 17 million listeners each week. To maintain that level of listenership we need to ensure our programs reach ContentDepot in Washington, and for this we have long relied on GatesAir Intraplex T1 equipment.

With T1 services fading, we are transitioning these circuits to IP with GatesAir. We now uplink a number of live streams using Intraplex IP Link 200 codecs. Full-time 24/7 streams include the BBC World Service and our own C24 Classical Music Service. BBC is delivered from London, while we originate C24 in our St. Paul studios.

The reliability of IP-type circuits is proven, but giving up the circuit diversity that T1 offers was a concern. We have found that the IP Link 200 does the job well, including the transatlantic hop from London.

We have also established a bidirectional link between Washington and Los Angeles, and we intend to serve more points from St. Paul with additional codecs. We expect to have more than 20 IP Link 200s in service before long.

We've gained experience with codecs over the years, and the IP Link 200's feature set is impressive. It's ideal for our deployment strategy with its advanced functionalities, including two bidirectional feeds and additional front-panel monitoring/GUI features when needed.

Most important is GatesAir's Dynamic Stream Splicing software, which lets us send multiple identical streams over two separate paths to borrow data from each other in compensation for packet loss. We also use Intraplex LiveLook software to monitor stream performance and network conditions. Both systems, notably DSS, have been invaluable to our daily operations and stream reliability.

The DSS software adds even more value when using public internet. Experience has confirmed that the IP Link 200 performs reliably and consistently over two public internet circuits with stream splicing. I expect that our first IP-based STL will be GatesAir as well.

Our initial goals with the T1 to IP transition have been modest. We wanted to efficiently and reliably deliver program audio from point A to point B, and show our staff the potential these units offer as we expand our contribution and distribution services. The IP Link 200 has encouraged us to look beyond T1 and transition more of our contribution and distribution services to IP.

Tech Update

Telos iPort High Density Offers 64 Codecs in 1RU

Telos says that its iPort High Density Multi Codec Gateway allows broadcasters to license up to 64 codecs in one rack unit.

The company says networks use iPort for both distribution and contribution spanning multiple time zones. Now, it says, the more powerful iPort High Density transports multiple channels of stereo, mono, and dual-mono audio across IP networks including private WANs, IP radio links and over good public internet connections, suitable for large-scale distribution of audio to single or multiple locations.

iPort High Density comes with eight bidirectional stereo codecs, configurable to run in MPEG or Linear PCM mode. Broadcasters can license additional codecs up to 64, as well as add Enhanced aptX encoding. iPort High Density connects to existing Livewire networks using a single Ethernet cable (Cat-6 recommended) for all I/O.

Coding algorithms include AAC, AAC-LD, HE-AAC (plus v2), MP2, MP3, linear PCM and optional Enhanced aptX. MPEG offers 24 to 320 kbps while standard fixed rates for Enhanced aptX, and 24-bit PCM at 48 kHz, mono or stereo are supported. Dual, diverse-path, end-to-end connections are available for reliability and redundancy. Built-in streaming servers use Shoutcast/Icecast formatting at the output.

iPort High Density offers MPEG-standard ancillary data transport, up to three transparent control and metadata channels per codec and direction, and enhanced GPIO options with up to 20 end-to-end GPIO channels per codec and direction, bundled and synchronized with the respective audio content.

An optional Content Delay feature allows independent local storage and scheduled delayed playout of any or all coded audio channels.

For information, contact The Telos Alliance at 1-216-241-7225 or visit www.telosalliance.com.

Writer
Avery Ditmars
Chief Engineer, The Joy FM

Info
Contact Barix at 1-866-81S-0866 or *www.barix.com*. For international queries contact Reto Brader in Switzerland at +41-43-433-22-11.

Barix powers critical infrastructure for The Joy FM

Robust and cost-effective codecs handle multiple duties in separate locations

Playing the best in Christian Contemporary Music, listener-supported The Joy FM has been serving Florida, Georgia and Alabama for over 30 years. As part of the Radio Training Network family of stations, The Joy FM also supports multiple sister stations including WAFJ(FM) in Augusta, S.C., as well as KWND(FM) and KWFC(FM) in Springfield, Mo.

With more than two dozen transmitter sites in five states, audio-over-IP solutions are essential components of our multilocation infrastructure. Barix's Instreamer and Exstreamer product lines are our "go to" codecs for a variety of critical use cases.

Backhauling EAS

Sister station LF Radio offers positive alternative, pop and hip-hop music, while our Joy Worship station supplements worship during the week. Joy FM supplies Joy Worship and LF Radio as HD2 and HD3 to six cities from our Sarasota, Fla., headquarters.

Of course, EAS must match between all of the subchannels at each site, so the same EAS that's on HD1 must also be on HD2 and HD3. We run all of our HD importers for Joy Worship and LF Radio virtually in Sarasota, so we use Barix Instreamer 100s and Exstreamer 100s to backhaul the EAS from each location back to Florida.

At each of those six transmitter sites, a Barix Instreamer takes in the EAS from the HD1 and analog channel as well as GPIO from ControlByWeb, which provides Ethernet IO for remote relay control. The combination of Barix and ControlByWeb is ideal, as both are reliable and robust. Barix sends the EAS and GPIO to our Florida office, where we use Axia Pathfinder to do the logic switching between sources to provide the HD importers with either the music feed or EAS feed.

We also use Barix for another HD Radio use case. WAFJ in Augusta offers its own worship channel, The Song. We use Barix codecs to bring The Song down to our importers in Sarasota, so WAFJ listeners get The Song as HD2 (instead of Joy Worship) and LF Radio as HD3.

Secondary STL

We also use Barix codecs for our backup STL at most of our sites. We have nine independent stations in Florida alone, each with its own traffic breaks, liners, IDs and other elements that make them local. Each station is created and mixed in Sarasota, where a 1RU system encodes 14 Livewire feeds to AAC+ streams that are sent to an external server.

A Barix Exstreamer at each transmitter site pulls the stream, which then goes through level converters. The backup STL stream is always on, rather than on-demand, and a Broadcast Tools Audio Sentinel automatically switches transmission to the Barix-decoded stream if the main audio path fails.

All of our sites have at least two internet connections, if not more, with separate ISPs for fault tolerance if one of our internet providers has an outage. Our backup STL workflow has worked very well, as the Barix devices are so reliable and easy to work with.

Preferred choice

I use Barix codecs for other applications, from confidence monitoring for PPM to simply distributing audio from my office throughout our extensive facility. Whenever I have a new need to get audio from Point A to Point B via an IP network, I'll grab a Barix box. They're robust, they're cost-effective, and they can pretty much do whatever you need on the first try.

Tech Update

WorldCast Ramps Up APT Codecs With 4.0 Release

WorldCast Systems has released SR 4.0 for its APT IP, AoIP Multichannel and MPX Multichannel codecs.

Designed for MFN, SFN and STL applications, the APT Codec 4.0 includes APTmpX and SynchroStream technologies.

WorldCast describes APTmpX as the market's only nondestructive MPX/composite compression algorithm, designed to save network bandwidth (with 900 kbps or less bandwidth requirement) while maintaining the original composite signal quality.

It said SynchroStream is a new APT technology for precise and stable time-synchronous IP transmission and playout of audio content. It says it is an effective tool for optimizing analog FM-SFN networks with precise time alignment. SynchroStream allows broadcasters to manipulate "mush zones" in the narrow steps of less than 50 meters in the field.

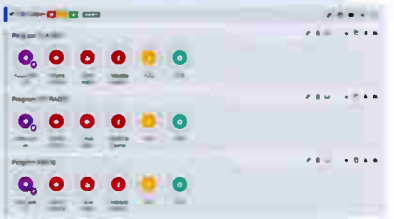
Both are available as software options.

Other enhancements include a precision clock module for GPS, NTP for content time alignment along with NAT transversal connection mode.

For information, contact WorldCast Systems in Florida at 1-305-249-3110 or for international queries WorldCast Systems in France at +33-5-57-92-89-28 or visit www.worldcastsystems.com.

Tech Update

Ferncast Updates Aixtream Software



Ferncast has released aixtream 2.2 software. With this release, all aixtream solutions support Asynchronous Serial Interface input and output.

This allows users to input audio via ASI and connect it to a Dante or AES67 network without additional hardware. Moreover, the development of ASI support is accompanied by improvements of the overall DVB implementation.

Improvements include enhanced compatibility with non-Ferncast products, including nonstandards-compliant proprietary solutions.

The third major addition is support of LATM and LATM/LOAS AAC (Low-overhead MPEG-4 Audio Transport Multiplex and Low-overhead Audio Stream) according to MPEG-4 ISO/IEC 14496-3. Besides being low on overhead, they are error-resilient, which the company says is a major advantage in the diverse field of DVB applications.

For information, contact Ferncast in Germany at +49-241-99034567 or visit www.ferncast.com.

BROADCAST EQUIPMENT EXCHANGE

BROADCAST EQUIPMENT EXCHANGE

Writer

Ryan Star

is co-founder and CEO of the social audio company Stationhead.

Comment on this or any story. Email *radioworld@futurenet.com*.

Talk hard: The future of radio is social audio

Social audio is to licensed broadcasters what Uber has become to taxi drivers in New York

As the social audio phenomenon continues to evolve, traditional radio managers need to recognize that social audio isn't just another social media format, or another way to stream audio content — it's simply the future of radio.

The industry's legacy players are becoming obsolete as new platforms seek to democratize the space for creatives and artists. Gone are the days of program directors playing the hits. It is now time for artists, creatives and fans to break the hits and take control of the airways.

To date, traditional radio has been monodirectional and controlled by gatekeepers — but in the new world of social audio, revolutionary new platforms are allowing anyone and everyone to become a radio DJ or talk show host and be their own program manager. Creativity and control are now in the hands of the artists and fans who now have the resources and access needed to someday become the next Joe Rogan or Howard Stern.

Authentic connection

If we have learned anything this past year, it is that the desire to connect has never been higher.

Our eyes are exhausted from Zoom meetings and scrolling through our phones. People are turning off screens and engaging in different ways: through their voice and the music they love. Audio has become a first-class medium, much like video did a decade ago.

Through the renaissance of audio, audiences and creators are realizing the power of their actual voice and the ability to connect to others without a "filtered" version of themselves. When people connect over audio, it's completely authentic and without the pretensions that dominate every other social platform.

Fans are taking back the airwaves and changing the way we celebrate our favorite artists.

The technology of social audio democratizes radio so everyone can win. It creates a level playing field where the audience and creators can share content they're passionate about in real time.

For example, in May 2021 more than 400,000 fans came together on Stationhead for a live streaming party for K-pop supergroup BTS' new single "Butter," which has been at the top of the Billboard charts since its release. Most bands or musicians would have to go on a three-year

Right A tweet from the band BTS promoting their streaming party on Stationhead.

> **It is now time for artists, creatives and fans to break the hits and take control of the airways.**

world tour to reach a comparable audience to the fans that showed up for that same event digitally.

Since then, we have seen thousands of fan-driven radio stations launch to celebrate their favorite artists and build community around the music.

Radio managers, listen up

In looking at other industries that have recently undergone similar cycles of digital innovation, we can see how the present disruption in audio will ultimately give power back to consumers who are ready for change.

A recent example beyond media of how technology has helped put power back in the hands of the consumer is the rise of ride sharing apps. Social audio is to licensed broadcasters what Uber has become to taxi drivers in New York City who were beholden to an outdated and unfair "medallion" system. Social audio — and especially the creators within the space — has given the entire ecosystem the freedom to make the choices that are right for their audiences and personal brands.

Within this period of change, there is opportunity for existing broadcasters large and small to meet a new generation of listeners where they're ready to engage.

Radio managers today need to jump on board and consider their audience's evolving format preferences or risk losing a generation of listeners and talent.

The emotional connection between an audience and the creators they follow is intimate and powerful, and is amplified when the audience is a part of the show itself. Much like the new generation of video stars born from YouTube and TikTok, the future of audio is starting today on these revolutionary new platforms.

Genset reset rethink

The advice that appeared in a March Workbench column about resetting a generator fault remotely (*radioworld.com*, search "Genset Reset") is something I discourage strongly.

Besides clearing the fault and possibly the run-time and error logs, cycling the DC power to the controller may also clear the real-time clock and reset the exercise timer, and may leave the generator in an off-line state until the clock and timer are manually set.

As stated in the tip, you have no idea why it faulted in the first place. Attempting a restart without an inspection or a person present could result in catastrophic damage to the genset, a fire (if there was a fuel leak), or even harm to a technician who might be working on the unit and could have even been the cause of the fault or shutdown.

If there was a mechanical failure, running the engine without repairing the damage first could make things even worse.

I bet a generator technician reading the tip would cringe. Of course your local generator sales person would love to take this opportunity to sell you a new generator.

My own home standby generator, a Kohler 14RESA, resets just the clock and exercise timer if the battery is disconnected; the run-time and error logs are maintained in non-volatile memory. But it won't run until those two items are set. For safety reasons they tell you to disconnect the incoming AC power as well as the battery whenever you service the unit, but I find it more convenient to do neither of those things but just press the OFF button when doing the annual maintenance (oil, spark plugs, and filter changes).

Bob Meister, WA1MIK
Hamden, Conn.

Tell Us What You Think

Radio World welcomes letters to the editor about any article or relevant radio industry issue. Email *radioworld@futurenet.com* with "Letter to the Editor" in the subject line.

Bending the rules

Radio World recently quoted the late Bob du Treil Sr. as saying, "I'd bend the rules but not break them. Though the FCC may disagree with that."

A man after my own heart. I had a few clever "Gumbyizing" moments myself.

The station was KAAP(AM/FM) in Santa Paula, Calif., part of the Oxnard-Ventura market but with a city of license best known for its lemon and avocado groves. The husband-and-wife owners tried every way they could to bury that part of the legal ID; at one point they had TM cut a jingle with the words "Santa Paula" a significant number of dB down from the main, then back-timed its start so that it would be buried by the old drumroll intro to the news from the American Information (ABC) Network.

When I got there, I handled the city of license "problem" by building it into the newscasts' weather formatic: "Ventura County weather: (read forecast) ... Current area temperatures from KAAP AM and FM: Santa Paula 82 degrees, 70 in Ventura and in Oxnard 72. Now more of Ventura County's favorite music on FM 97 and AM 14 (jingle)."

The FCC eventually turned up after monitoring us all morning and "not hearing" a legal ID (I suspect a competitor had "turned us in"). I let them sit in the control room while I did the weather after the noon ABC news, but even then they didn't catch it. It wasn't until I pointed out the ID in the copy book that they saw, then claimed I was violating "the spirit of the rule." I countered that because the ID met the requirements as specified in §73.1201 they couldn't issue a NAV for "spirit violation." They did not leave happily.

The husband co-owner laughed for a full five minutes when I related it to him. I suspect Mr. du Treil would have been proud of me.

K.M. Richards
Van Nuys, Calif.

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The APT IP Codec 4.0 release is now available.

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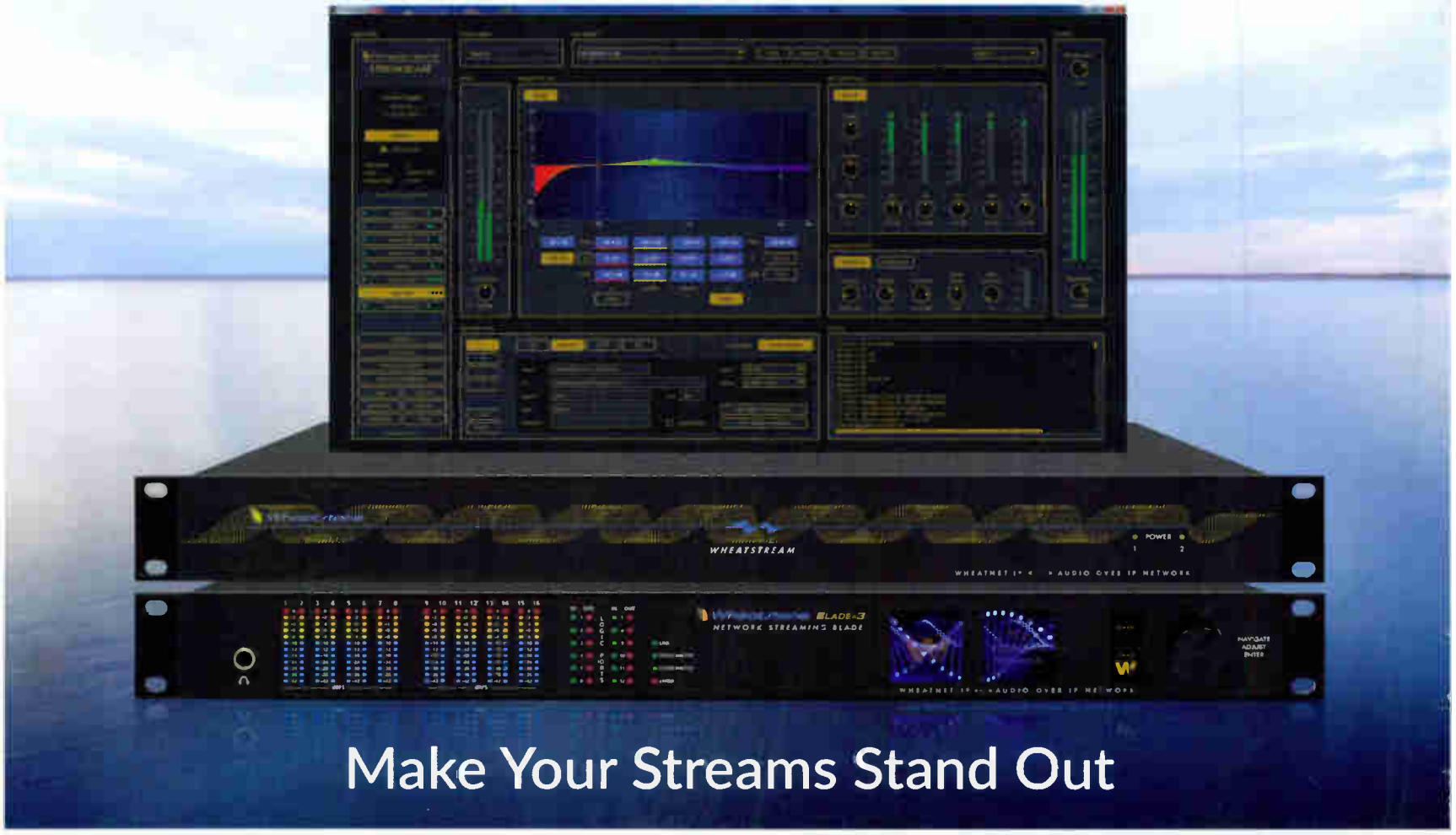

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