RADIOWORLD

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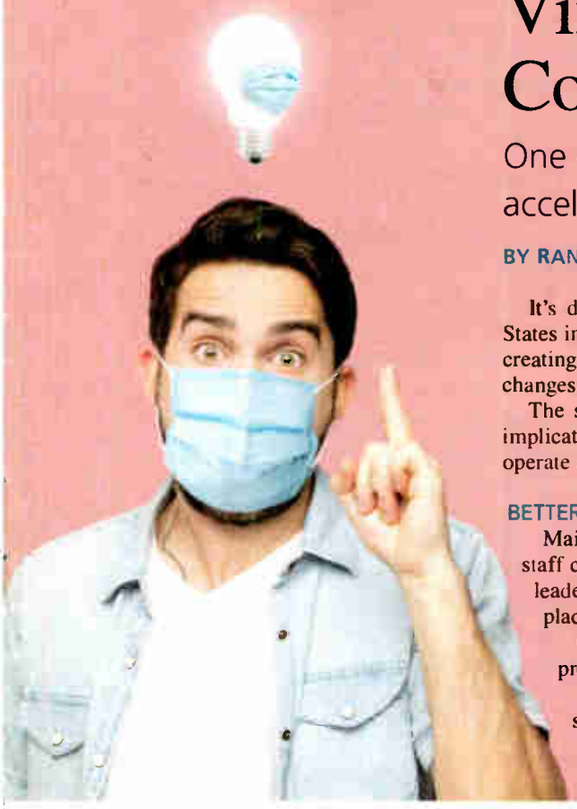
Virtualization and Cloud Come to the Forefront

One outcome of the health crisis is to accelerate adoption of new tech approaches

BY RANDY J. STINE



It's doubtful that any of the major radio broadcast groups in the United States included a pandemic on the list of emergencies they worried about when creating preparedness plans. Yet the coronavirus outbreak quickly demanded changes in operations at most stations.

The solutions that broadcasters have adopted are likely to have long-term implications. Managers say these new workflows will influence how stations operate after the pandemic ends.

BETTER THAN IMAGINED

Maintaining critical infrastructure during the emergency, while coping with staff cuts, furloughs and medical absences, certainly challenged engineering leaders. Most broadcast groups also froze capital expenditure spending and placed numerous projects on hold.

One chief technology officer told Radio World his company's buildout projects were "paused but not cancelled" pending a recovery.

The use of remote technology for air staff accelerated early in the crisis as broadcasters faced social distancing guidelines and stay-at-home orders.

One veteran broadcast engineer said in some cases, "Entire air staffs at radio stations are working from home, and working better than anyone imagined," which leads him to believe "these short-term fixes could turn into long-term strategies."

The versatility of the cloud also is being stretched in new ways, including ingesting production remotely through virtual private network capacity.

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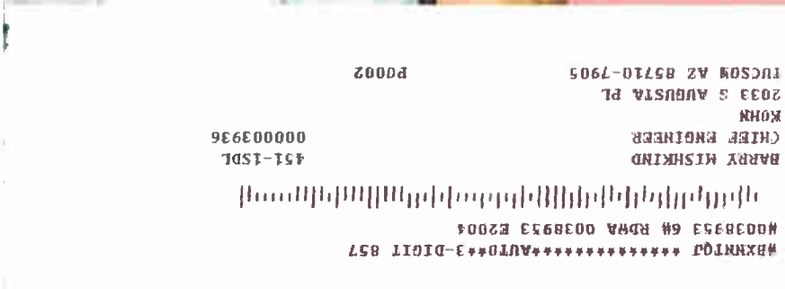

FCC Seeks to Keep the Wheels Turning

We checked in with Al Shuldiner, head of the Audio Division

NEWSMAKER

IEEE BTS

Masked person: Getty Images/Khosrork; Composite: Sam Richwood

Radio World talked with Al Shuldiner, chief of the FCC's Audio Division, about how the commission was coping during the coronavirus shutdowns, as well as about various regulatory issues before the commission.

The commission effectively shut down its headquarters and moved to teleworking, like much of the radio industry. It sought to provide some relief to broadcasters, granting a series of waivers and extending the deadline for the quarterly issues and programs lists. It also eased the public file requirements placed upon broadcasters.

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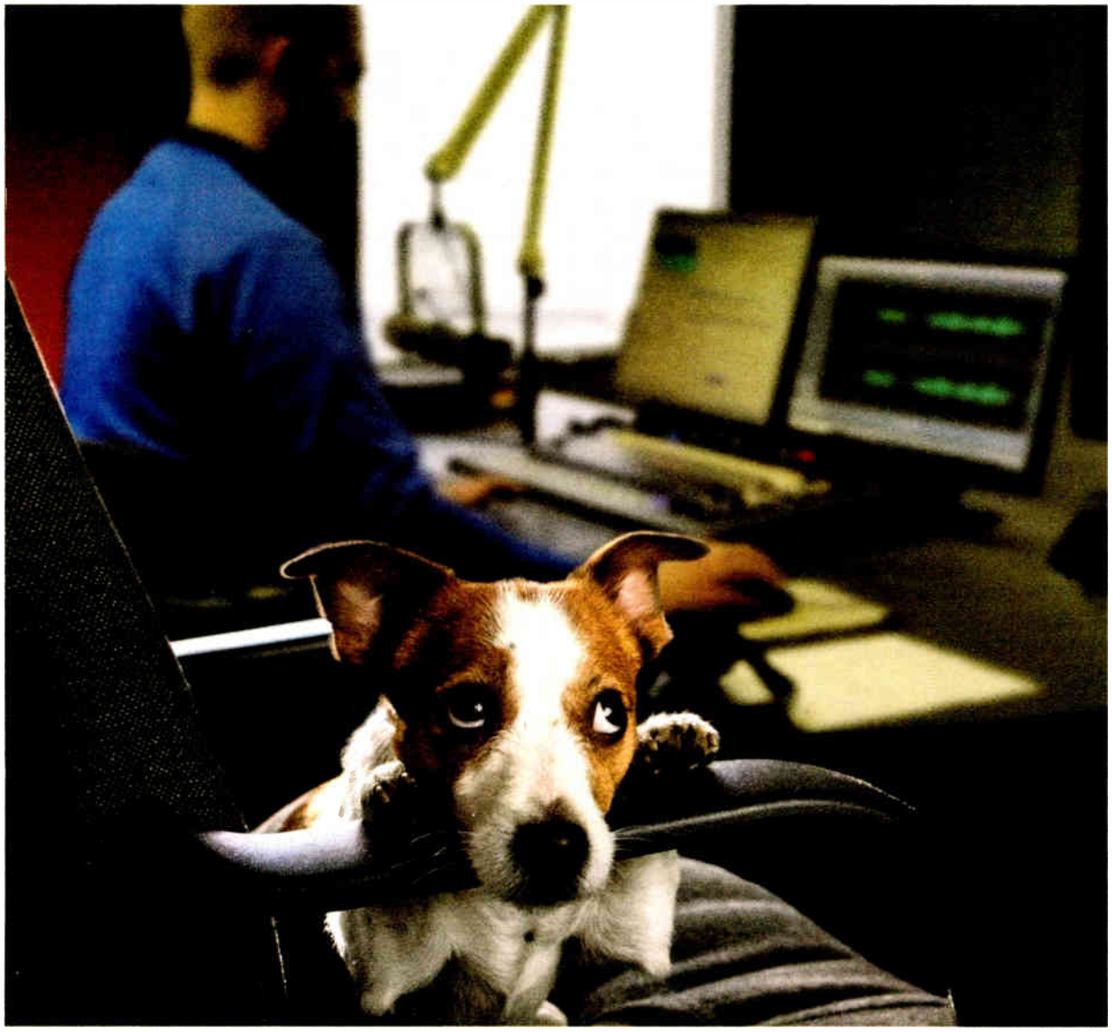

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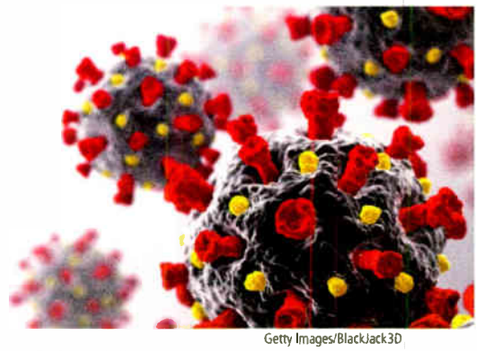
Disinfecting Studios in the Age of COVID-19

How can broadcasters ensure that their facilities remain virus-free?



Getty Images/BlackJack3D

BY JAMES CARELESS

The COVID-19 crisis has forced many broadcasters to send their employees home, minimizing infection risk to vital employees while keeping programming, engineering, sales and back office functions in service.

This approach is a responsible ad hoc response to COVID-19, but it doesn't address a long-term issue: How can broadcasters ensure that their facilities remain virus-free or at least as minimally contaminated as possible?

The answer to this question is disinfection: Using cleaning techniques developed for schools and other institutional settings, broadcasters can kill COVID-19 and other threats that may be on their premises and equipment today or be brought in by employees and clients tomorrow.

The information in the following article explains how to achieve this goal. It is drawn from various sources, including a detailed and helpful webpage hosted on CloroxPro.com.

CLEANING IS ONLY THE FIRST STEP

The road to disinfection starts with cleaning, namely removing obvious surface dirt and grime from surfaces, equipment and floors. It ensures that germs are not hidden in dirt or organic matter from the disinfectant when it is applied.

As a result, broadcasters need to proceed with their existing cleaning regimes, but they must do more, including keeping food and drinks out of control, production, office and engineering spaces as much as is humanly possible. Since on-air talent often needs to refresh their parched throats, liquids should be allowed in reusable water bottles. But the days of eating lunch over the console have to end.

Warning: Once something has been cleaned, it has to be rinsed to remove the cleaning solution so that it does not interact with the disinfectant. Otherwise, toxic gases can occur. For instance, when an ammonia-based cleaner interacts with bleach, it can produce deadly chloramine gas. Similarly, mixing vinegar and bleach can create toxic chlorine gas.

DISINFECT AFTER CLEANING

After surfaces have been properly cleaned, it is time to disinfect. This means using the right cleaning fluids to do the job, such as CloroxPro and similar bleach-based professional products, Lemon Quat (Quaternary ammonia) and Virox 5 liquid/wipes (accelerated hydrogen peroxide).

The secret of using these products is time: Liquid disinfectants have to be left on surfaces for a certain length of time and then wiped away for the germs to be killed. A case in point: The free downloadable disinfection chart offered for CloroxPro and Clorox concentrated bleach products specifies a wait time of five minutes before rinsing.

Once the disinfectant has been applied, it will have to be rubbed into the surfaces to ensure proper distribution. To minimize wear and tear on cleaning staff, try handheld surface scrubbers.

Remember: The staff who apply disinfectant will require gloves, eye shields and breathing protection. In some cases, protective clothing may also be needed; check the manufacturers' labels for information before usage.

WIPE, DON'T SPRAY

Disinfectants need to be applied using reusable, washable microfiber cloths or disposable paper towels/wipes, not sprayed. Spraying disinfectant can dislodge germs from surfaces and put them into air. This can lead to these germs contaminating already-disinfected areas and being inhaled by cleaning staff and others in the immediate vicinity.

The only exception to this rule is when the entire area can be safely disinfected at once. When this is the case, a spraying option like the Clorox Total 360 System with electrostatic spray gun can be used, without the need for rinsing afterwards. Electrostatically charging the bleach droplets (and firing them using compressed air) ensures that the spray will cling to all surfaces consistently for maximum disinfection power.

WHAT ABOUT COMPUTERS?

Electronics including computers don't take kindly to having cleaning solutions dumped into their circuits.

In many cases, products like Clorox Disinfecting Wipes and Lysol Disinfectant Wipes can be used for disinfection wipe downs — but only after broadcasters have verified this assumption with equipment manufacturers (who may have their own products and procedures to suggest). As well, the equipment needs to be powered off first.

In a pinch, rubbing alcohol on microfiber cloths can be used to computer keyboards, mice and touchscreens, but only after this assumption has been

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Broadcast Continuity in a Pandemic

Engineers shared ideas about workflows during a special TWiRT episode

Getty Images/mindscanner

BY TOM VERNON

"Always have a backup" has been a mantra of radio engineers since the earliest days of broadcasting. Much time and energy has been spent developing disaster recovery plans that outline responses to fires, floods, tornadoes and other cataclysmic events.

But the outbreak of COVID-19 required most station employees, including air staff, to work at home for extended periods of time, a contingency that some engineers might wish they'd spent more time considering.

Lessons learned in the first weeks of the pandemic were discussed in an interesting episode of "This Week in Radio Tech (TWiRT)," hosted by Kirk Harnack, senior systems consultant for The Telos Alliance, and Chris Tobin, IP solutionist. They convened a special edition to talk about "Broadcast Continuity in a Pandemic," sharing experiences in adapting station workflows and technology.

CODECS AND CHROMEBOOKS

Geary Morrill is regional director of engineering at Alpha Media USA, an early adopter of the WideOrbit 4.0. He said that platform was being used by those working at home for remote access to the station via iPad and iPhone apps, mainly for recording and voice track activities.

Robbie Green, director of technical operations at Entercom Houston, said his employer created a work-from-home protocol for most staff, although air talent was still in the building. Should it become necessary for them to leave, equipment was set up so they can voice track from home. For the sports staff, he purchased a number of Comrex Opal IP Audio Gateways, as well as refurbished Chromebooks to equip remote kits.

Green that the cluster's building includes 600,000 feet of rentable space, of which the station occupies half. If someone working there were to become infected, building management would have to close the building for decontamination, so plans were developed for that eventuality.

A challenge facing many broadcasters, including Green, is how to handle the generation of logs. "Our traffic people have been working remotely for over a week, and program directors can also do logs remotely. We have a secure portal where they can dump everything into our WideOrbit system."

Tom McGinley, chief engineer at KUFM(FM/TV), engineering manager at Townsquare Media in Missoula, Mont., and Radio World technical advisor, said that a global pandemic occurs about once every hundred years. If this outbreak had happened 20 years ago, he said, broadcasters wouldn't have had the internet and IP connectivity we have today. The challenge would have been much greater for stations merely to stay on the air.

With no confirmed cases of COVID-

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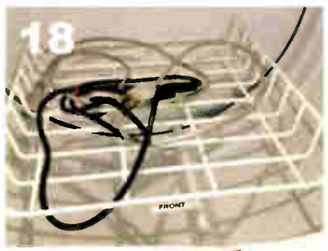
THIS ISSUE

MAY 13, 2020



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DISINFECT

(continued from page 3)

checked with equipment manufacturers. Again, turn off the device first and use liquids sparingly.

FINAL POINTERS

Disinfection is just the beginning. Wherever possible, broadcasters need to do whatever they can to minimize the risk of COVID-19 infection.

A case in point: At iHeartMedia, before staff was dispatched to work at home, "we gave staff their own removable foam microphone covers, for use in the studio," said Charles Wooten, director of engineering and IT in Panama City, Fla.. "We also kept gallons of hand sanitizer everywhere and encouraged everyone to maintain social distancing at all times." Whenever radio returns to "normal," it seems likely such practices will be a standard part of everyone's operating procedure.

As well, you can hire outside cleaning companies with the expertise and equipment to disinfect broadcast facilities and equipment properly, using electrostatic spraying and steam cleaning machines.

"Once the full disinfection has been down, stations can do maintenance themselves to keep germs down," said Reuven Noyman, owner of NYC Steam Cleaning in New York City. (One of his disinfectant products, Noroxycliff, is used by hospitals to kill the C.Diff virus in just two minutes. It also works on COVID-19.)

"We recommend keeping a sign-in logbook in each room, by the way, so that management can see who's been using the space in case an outbreak occurs."

ENGINEERS

(continued from page 4)

19 in his area at the time of the podcast, McGinley said buildings were still accessible for talent. Traffic was being managed off-site through an internet connection. Plans were underway to do live shows remotely via Comrex Access gear, along with RCS NexGen iPush and Remote. McGinley added that the stations were already planning an upgrade to RCS Zetta, which has more flexibility for remote broadcast.

"THIS IS WHAT WE DO"

Consultant Gary Kline applauded the efforts of broadcast engineers worldwide. Rising to unexpected challenges and having solutions ready before management knows to ask is "what we do," he said. Kline praised codec manufacturers whose shipping departments worked overtime in March and April to make sure broadcasters got the tools they needed to stay on the air.

He said that while there has been growing awareness in recent years of the need to prepare for disasters, not all contingencies have been addressed.

"Many stations would have emergency generators as well as backup IP and internet facilities," he said, describing conversations with clients, "but I would ask 'What if you have to leave your building?' and they weren't so sure about that. Next time, we'll be so much better prepared for something like this, so there is a silver lining to the story."

Jim Armstrong, director of eastern U.S. sales at the Telos Alliance, has fielded a lot of questions about accessing equipment such as consoles off-site.

"I tell everyone, it's just a remote broadcast, only from your home." One aspect that sometimes gets overlooked is that most AoIP consoles can be operated remotely, and routing switchers can also be controlled off-site.

Several software products are available to fill these needs. There's third-party software from IP Studios in Paris that runs IP tablet software. He discussed Axia SoftSurface, a program that connects to an engine or console to control the mix bus and faders, and Axia Pathfinder Core Pro, a development tool that allows users to create a virtual Fusion console.

He praised radio engineers for their handling of the situation and joked that a person is not really in radio until they've slept at the station, a rite of passage.

Bill Bennett, media solutions manager for ENCO Systems, talked about how stations could access and use their automation playout systems remotely.

For some time, he said, automation has meant servers in the studios plus some form of offsite backup. The cloud has experienced explosive growth over the past 15 years. Engineers have gotten comfortable with the idea of the cloud as a place to store data offsite and as part of their backup plans.

ENCO's current automation playout system has a web interface, the front of which is HTML5-compliant so it can run on a browser. At the same time, the software is running on a virtual machine in the cloud. Another bit of software keeps the virtual machine in synch with the studio machine over a VPN line.

An important consideration is keeping viruses that might infect the studio machine from reaching the virtual machine in the cloud. Harnack noted that Rivendell 3.0, the open source automation playout system, is capable of running from the cloud during disasters.

With this type of system in place, all that is necessary in emergencies is to access the virtual machine via a laptop, and route a stream to the transmitter.

Also participating in the conversation were Mike Sprysenski, regional director of engineering at iHeartMedia, and Bryan Waters, chief engineer at Cumulus Media, Atlanta. The podcast can be seen at *http://thisweekinradiotech.com*.

Chris Tobin had the last word, talking about understanding workflow solutions. Air talent may be accustomed to working in front of a console and a stack of three audio devices and hotkeys to fire things off. They won't have those at home and may experience initial stress if everything is different. The goal of the engineer should be to know the workflow of your announcers off-site, and try to make it as similar to the studio environment as possible.

> **I tell everyone,** it's just a remote broadcast, only from your home.
>
> — *Jim Armstrong*

LIGHTNING ROUND

At the end of the TWiRT session, Harnack asked panelists for words of wisdom that could fit in 30 seconds or less.

Bill Bennett — Use two-factor authentication for network authentication and file access. Yes, it's more complicated and slows things down, but much more secure.

Gary Kline — Ask yourself who is your backup if you become sick or quarantined. Formally designate someone if you need to.

Geary Morrill — Keep an even keel and be patient with staff as they adapt to the unfamiliar. People will feed off your emotional state.

Jim Armstrong — Have essential spares on the shelf. Remember that you don't really need it until you need it, and then you really do.

Mike Sprysenski — Remember to take care of yourself as you're taking care of everybody else.

Bryan Waters — Keep it simple. Give people what they need to work from home, but don't overwhelm or complicate.

Robbie Green — Create documentation that's written for the non-technical person. Have someone do a test drive with it before you distribute.

Tom McGinley — Look for the silver linings as this situation winds down. Expect a new level of competence from stations as they revise disaster recovery plans.

PEOPLE NEWS

James Leifer and Ralph Beaver

Elevated to Fellow membership by Society of Broadcast Engineers

Alex Roman

Was promoted to chief technology officer of MediaCo New York Radio, which includes Hot97 and WBLS 107.5.

Mike Kernen

Joins Crawford Broadcasting as market chief engineer for Detroit

Chris Tarr

Joins Magnum.Media as group director of engineering

NEW TECH

(continued from page 1)

"This was like having a day or two to plan for a hurricane, since some studios were emptied out the same day a staff member tested positive for Covid-19," said a corporate engineer. "We were mapping major technical changes that had to happen within 24 hours in many cases. It got 'real' really fast."

Another engineering executive said it was "like going from 100 on-air studios to 4,000 home studios," all with the same network security concerns. Most broadcasters established VPN or other remote access protocols for employees to connect to station servers from home.

Gaps in cybersecurity became a major focus of radio technical staffs worried that audio feeds could be hijacked from home computers protected by less-robust security systems, according to several engineers.

When we rebound — which I believe radio and audio will — virtualization, software-based solutions and cloud initiatives will be the forefront.

— Jason Ornellas

"Our first focus was getting everyone out of our buildings," one said. "Beginning with sales then programming. Then you're faced with moving the air staff to at home work and that's the heavy lift, especially with live shows. Fortunately we can voicetrack the music stations. Everyone was VPN'ing in from distance. In some cases people just yanked the desktop from their work desk and took it home."

It was a big job for many broadcasters. In Washington, WAMU Director of Technology Rob Bertrand said that by late April, "We finally got everyone out of the building. Hosts, producers, engineers, call screeners, editors, reporters … from national talk shows to regional podcasts … all from home," he wrote in an email. "It's been great to be able to breathe a sigh of relief that everyone is safe and we are able to keep going while the dust settles around the question of when and how to reopen everything."

VIDEO CONFERENCE TOOLS

Video conferencing is the new norm, and remote broadcasting from home studios has become routine for many broadcasters.

"The Bert Show," a syndicated morning show distributed by Westwood One, used BlueJeans video conferencing to bring members of the morning show together on air.

At least one broadcaster utilized StreamYard, a live streaming studio app, to allow for the simultaneous stream distribution of remote content to YouTube, Twitch, LinkedIn and Facebook, which they hoped would stimulate listener engagement.

Mike Cooney, CTO and executive VP of engineering for Beasley Broadcasting, said the company's immediate focus was getting everyone home, especially in clusters with employees that tested positive for Covid-19.

"The transition to home was fairly smooth. I would say probably better than I could have hoped. We have a lot of people working on their home computers, so we had to implement a lot of security changes and installed a lot of VPNs," Cooney said.

Beasley was not immune to the job cuts that have affected many companies. It eliminated 67 positions, including five broadcast engineers, in early April, according to a company announcement. That included one "corporate-level IT person," Cooney said.

Operations at stations have continued without much interruption, Cooney said, even though the overall "on-air sound at times hasn't been totally smooth."

Beasley utilized remote gear "from some of our largest sports stations currently not being used" to supply some

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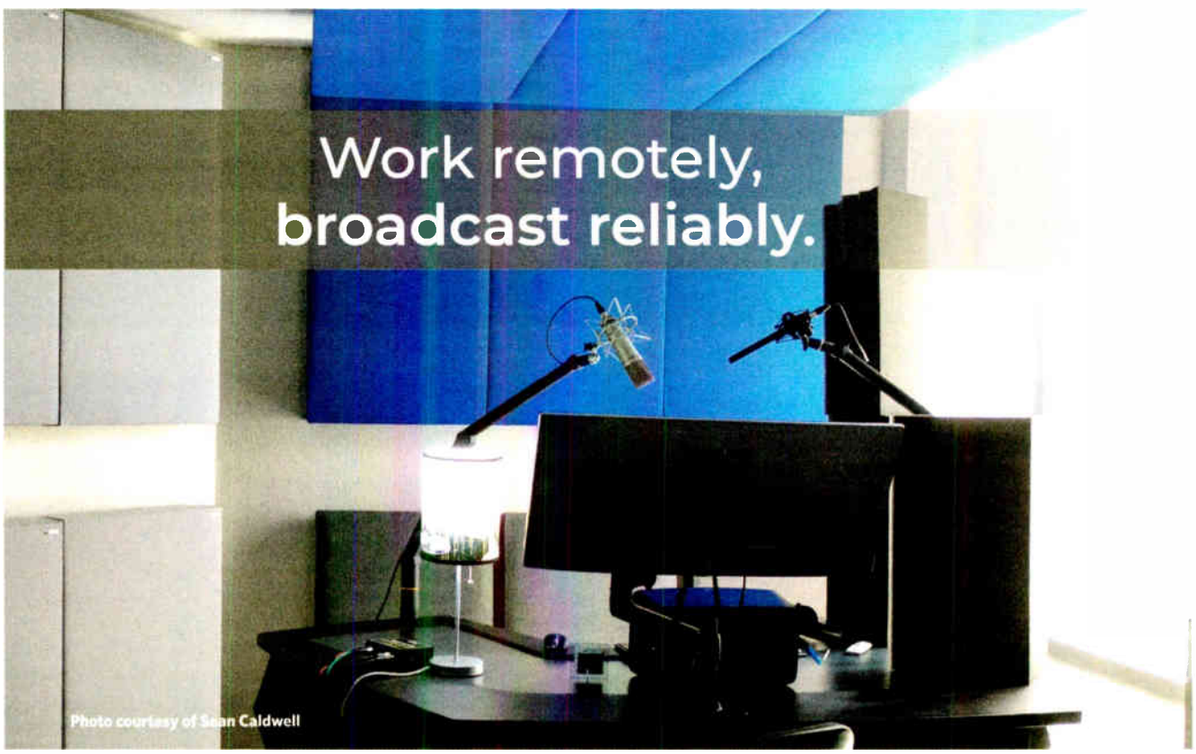

NEW TECH

(continued from page 7)

air staff with home studio equipment, Cooney said. "We did purchase about 10 additional Comrex units for air staff to use from home," he said.

Cooney said that in the future he expects to see more "reciprocal agreements" among radio competitors within markets, to work together during a crisis.

"I think radio needs to stop competing against each other during a crisis like this pandemic. The landscape changes when things like this happen. I see a day when resources are shared, and that maybe even means sharing studios. It could bring some further consolidation, but groups could share generators, towers and maybe even engineering staff. But radio stations could still compete," he said.

"I see a few things coming out of this — a more collaborative environment between radio groups, more shared workspace for employees and many more staff working from home."

Cooney chairs the NAB's Technology Committee and says the developments lend urgency to the group's work dealing with the cloud.

"We have spent a lot of time focused on the ability for broadcasters to do more in the cloud, and looking at EAS and PPM encoding. We know you can do automation and processing in the cloud, but we think being able to remote control EAS and PPM encoding is a logical step," Cooney said. "It would give a broadcaster the ability to easily run a broadcast facility from another market during an emergency."

A MORE REMOTE WORKFORCE

Jason Ornellas, director of engineering at Bonneville International, said even though engineers typically look for "solutions and answers, it's hard to imagine such a scenario" as a pandemic.

Bonneville, which owns 21 stations in six markets in the U.S., quickly transitioned all employees in administration, sales, marketing and digital to remote work through VPN and Microsoft 365 in the cloud.

"We ordered remote home studio broadcast kits to make the home studio as turnkey as possible for our on-air talent's convenience to make them feel comfortable and safe from their home. Tutorial videos were produced to show unpacking and setting up the equipment as well as using RCS Zetta2Go," he said. "The file servers are providing everyone with a sense of being on the network from home."

> **Radio needs to stop** competing against each other during a crisis like this pandemic. The landscape changes when things like this happen.
>
> — Mike Cooney

The home studio kits included an EV RE320 microphone with stand, XLR cables, RodeCaster Pro Board, Tascam headphones and Comrex BRIC Link II. (The Sacramento cluster is one of the case studies featured in Radio World's "Broadcasting From Home" webcast series, found on the Resources page at *radioworld.com*.)

Bonneville said in a press release in April it did not anticipate staff cuts. Ornellas said technical staff is needed now more than ever.

"I think long term you will see a lot more remote workforce. When we rebound, which I believe radio and audio will, virtualization, software-based solutions and cloud initiatives will be the forefront. Our vendors recognize that," Ornellas said. "There is nothing like a real emergency to get things moving in a creative way. Some of our technical priorities have changed."

Some industry observers expect there will be newly discovered cost savings and efficiencies as a result of the new virtualization adopted by broadcasters, which corporate owners might be anxious to implement.

"This crisis is likely to change the way we think about every single radio position in the building, including sales and programming. It is likely owners and managers will take a hard look at what lessons we learned," said one corporate technical employee.

Remote work in general "will likely increase for broadcasters because everyone is going to be accustomed to a new normal," another engineer said

"This pandemic has forced everyone to think about how they do their jobs. Everything has been hyper-focused right now on how to do things as efficiently as possible and I think some of that will hold over once this is over," he said. "So the first step is getting through this crisis and then putting everything back together."

Bertrand of WAMU said, "It was remarkable, while working to transition the live products of our talk show teams and local hosts to their homes, to walk through a fully vacant newsroom and then hear a record volume of content on the air and see it on our websites. It does make me wonder if we might adopt a more distributed work model for our journalists in the long term."

He said WAMU grappled with questions about how, why and when to deploy automation functions, but decided that emergencies are when a live and local voice is more important than ever to its audience. "Even if that voice is simply checking in between network elements, they are a reassuring companion for so many people who are seeking a foothold in this time of crisis."

For WAMU's complex national and local talk shows, he said it was a feat to move to 100% remote production, but he doesn't foresee that being a new normal.

"Similarly, we have now proven that complex live newscasts are possible from home; and while this model might be helpful in storm responses in the future, it has also been challenging. I'm not sure that we would attempt to permanently distribute our entire journalism operation to quite the extent that has happened; but we have proven that it is possible," Bertrand said.

"It does make you start to think about the cost of real estate per square foot, versus the alternatives. My dream is that this opens up new collaborative opportunities across the public media ecosystem; that we might all be stronger together in the aftermath of this pandemic."

How do you think our industry and its technical workflows will change in the long term due to the coronavirus crisis? Email radioworld@futurenet.com *with "Letter to the Editor" in the subject field.*

RADIO AND THE PANDEMIC ON RADIOWORLD.COM

Getty Images/demaerre

Keep an eye on *radioworld.com* for coverage of how the radio industry has confronted the pandemic and its implications on our business. Here is a sampling of recent posts.

"This Is Not the Time to Raise Fees" — State broadcast association writes "impassioned" letter to the FCC commissioners in face of revenue declines of 60 to 70%. See *radioworld.com*, keywords "Rotella fees"

"Alexander Broadcasting Honors Selma First Responder" — Local broadcasters stepped up to honor a first responder who had died. See *radioworld.com*, keyword "Skelton"

"Check Out These Unexpected Uses for Unlicensed Radio" — Theater events, factories, a county jail. Keyword "unlicensed."

"How Fox News Radio Is Working From Home" — Staff members were given remote access to Adobe Audition, Amazon Workspace, Slack, Zoom, iNews for writing and editorial newsgathering, and VPN access to the broadcaster's ENCO automated audio systems. Keywords "Fox News"

"AES Kicks Off $500,000 Fundraising Initiative" — The society reached out to members and fans in the absence of revenue from its usual big events. Keywords "AES initiative"

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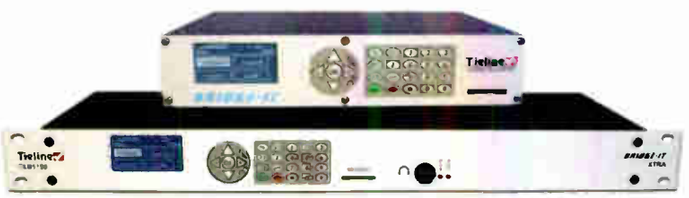

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FCC Tweaks LPFM Technical Rules

Michelle Bradley comments on what the commission did and what it didn't do

LOW-POWER FM

BY PAUL McLANE

The FCC in April modified the technical rules covering low-power FM stations. It expanded the permissible use of directional antennas; permitted waivers of protections of television Channel 6 by a specific group of reserved channel stations; expanded the definition of minor change applications for LPFM stations; and allowed LPFM stations to own boosters. Read more about the changes at *https://tinyurl.com/rw-lpfm-6*.

Michelle Bradley, founder of REC Networks, is an engineer and longtime LPFM advocate.

KXSU Seattle University

***Radio World:** What's your overall assessment of the outcome and the scope of its impact in the LPFM community?*

Michelle Bradley: While the FCC did not address three major issues that are impacting LPFM stations right now — the ability to address building penetration issues, the ability to reach "local" listeners in rural areas and the disparity in how LPFM stations protect FM translators vs. how translators protect LPFMs — the changes will benefit current LPFM stations by giving them more flexibility in moving locations, reduce the need for waivers and improve LPFM service in the southern border region. It will also open some additional opportunities for new LPFM stations in the next filing window.

***RW:** A concern was raised during the process that LPFMs might be required to conduct a proof of performance in order to use directional antennas, which would would be too costly for most of these stations. What was the outcome?*

Bradley: The proof of performance issues came up as a result of concerns that LPFM stations would not properly install directional antennas correctly. The need for this language was a carryover from our proposals that involved the use of contour protection to protect other stations (which in most cases were rejected in the commission's decisions to not allow for 250-watt LPFM stations or the use of contours to protect translators).

As we were getting very close to the adoption of the Report and Order, I did work very closely with the commission to address the issue of the proofs and verification, especially since the commission had previously allowed directional antennas for state highway public safety departments (there are currently no stations using directional antennas) and second-adjacent-channel waivers.

In those specific cases, staff stated that because the public safety stations still had to meet minimum distance separations and second-adjacent channel short-spacings had a remediation policy, those concerns were already addressed, such as the rule language around second adjacent channel interference remediation.

I had stated that in the case of stations near Mexico, recourse was already available through international notification process and that directional antennas installed for that purpose were not to protect specific stations. The FCC staff agreed. This is what resulted in the three exceptions to the proof rule for public safety, second adjacent and international agreement.

I do note though that for the previous concepts of LP-250 and proposed rules to allow LPFMs to use contours towards translators, I asked for a similar remediation rule to the one that FM translators use right now for LPFMs that decide to use contours. That was never addressed in the Report and Order.

***RW:** How many LPFMs do you think are likely to take advantage of the directional antenna option?*

Bradley: Very few LPFM stations would benefit from directional antennas. This includes a subset of LPFM stations near the Mexican border and those where the directional characteristic of the antenna would benefit in a second adjacent waiver. New or modified LPFM stations proposing operation in the "reserved band" (88.1–91.9) could use a directional antenna to protect a full-service or low-power TV station on Channel 6. Despite that, the FCC is now allowing LPFM stations to obtain consent from the affected Channel 6 TV station, consistent with the current rules for FM translators.

Directional antennas could also be engaged in very rare cases of mutual interference between two properly spaced stations and could serve as a method for LPFM stations planning to use solar in order to reduce their transmitter power output (power consumption).

The use of directional antennas overall should be few and far between.

***RW:** What is the benefit of permitting waivers of protections for Channel 6?*

Bradley: The waiver for Channel 6 puts LPFM on a more level playing field with FM translators. I originally proposed that LPFMs use the translator rules for Channel 6. The FCC's original proposal to eliminate all Channel 6 protections was a complete surprise. The rejection of the total elimination of Channel 6 protection was spearheaded by ABC (WPVI) in *ex parte* after the comment period closed. I also note that the issues of FM to Channel 6 protections (and vice versa) are also being discussed in a separate proceeding for "Franken FM" stations. The waiver process is consistent with what I originally asked for. ABC also asked that any LPFM station seeking a waiver send a notification letter to the affected Channel 6 station. This was supported by NAB. After consideration of the issue and the number of potential waiver requests, I agreed it was a reasonable request. FM to Channel 6 will likely be revisited at a later date.

***RW:** The mention of boosters stands out; is that something you see a lot of demand for?*

Bradley: Boosters in LPFM only impact an extremely small subset of stations that have large lobes in their protected service contours due to what I call "foothill effect," but because of terrain are unable to put service into those areas.

Currently, there are only four stations, all in southern California, that have been authorized boosters, all of which I was involved with. One of those boosters is already on the air.

Boosters are very complex, especially in areas where terrain is not has "hard" as Southern California, where synchronization would need to be used. In addition, most of the country has much smaller service contour lobes and it would be impractical to squeeze a second signal inside the LPFM service contour. My request for codification was to assure the stability of the existing southern California LPFM boosters and to have a process in place and in those rare cases where a booster would help fill in coverage for a terrain challenged LPFM, the option is available without waiver.

***RW:** What else should we know?*

Bradley: I do remain concerned that the FCC does not want to pull the "training wheels" off of LPFM and let those who with the resources to have access to the more flexible methods allowed to other secondary users of the broadcast spectrum while still remaining in compliance with the statutory requirements of the Local Community Radio Act.

At one time, getting a contour study done normally involved a high-dollar engineering firm. In this day and age, with the use of various resources including those provided by the FCC, the ability to do contour studies has become more accessible, with less dependence on topo maps, slide rules and five-figure software packages.

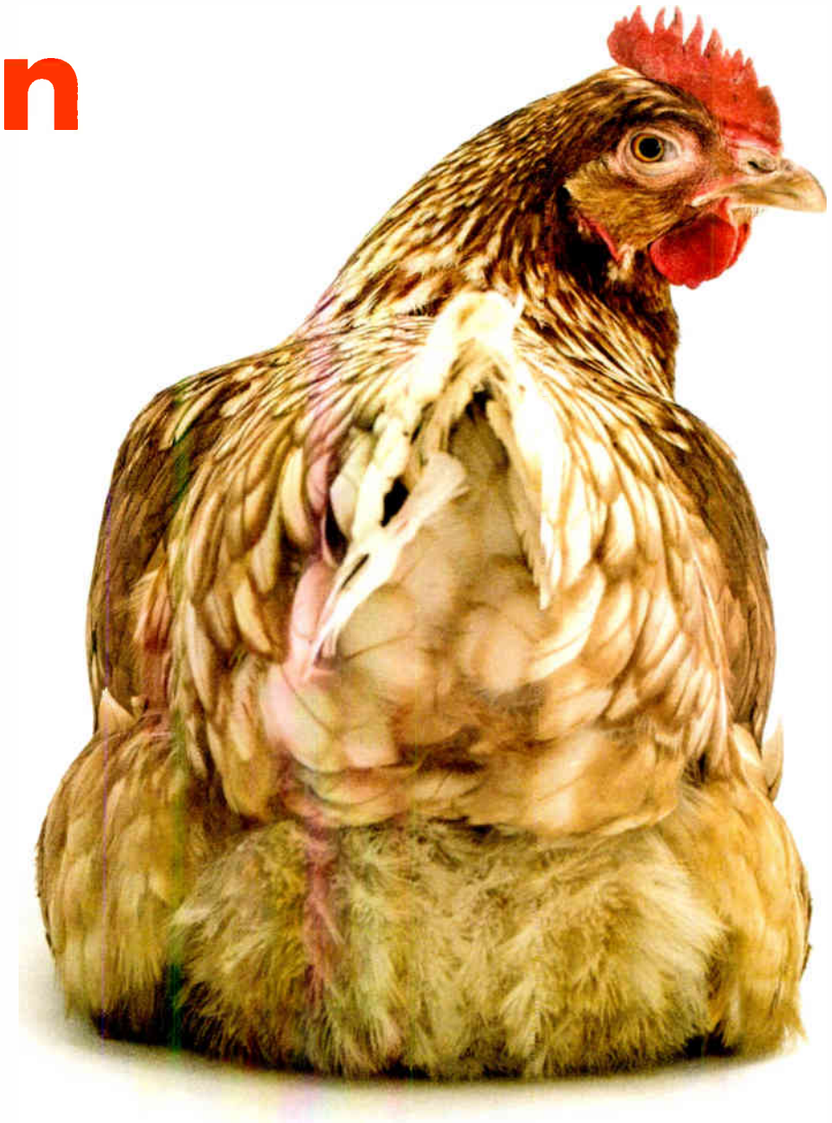
While I understand that they want to keep LPFM simple, it's important to realize that more than half of the LPFM applications filed in the 2013 window were assisted with "hired help." This tells me that the resources to do contour studies are out there and within reach of LPFM applicants.

The use of consultants and/or engineers became necessary in 2012 when in implementing the Local Community Radio Act, the FCC allowed LPFM stations to use the *Living Way* method of waiving second adjacent channel protection rules. As I told the commissioners a while back, the LPFM service has evolved and matured, and it is not the same service that former Chairman William Kennard pictured back in 1999 when LPFM was first proposed. Yet, for some reason, the current FCC seems to want to hold it back.

#MisheardLyrics

Submitted by: Tom Godell, WUKY.org
Submit yours at Facebook.com/TelosAlliance

"She's got a chicken to ride."



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GroundLinx Advocates for New Approach

LaBarge says industry suffers from antiquated modeling and outdated assumptions about grounding

BY PAUL McLANE

Tom LaBarge is CEO of GLxT Holdings and its manufacturing subsidiary GroundLinx Technologies. The company makes a system called Gradiance that it promotes as providing a new approach to electrical grounding.

Radio World: *Don't we know pretty much what we need to know about grounding?*

Tom LaBarge: The necessity for electrical grounding has indeed been well known for over two centuries. But well known and well understood are not always synonymous.

Tom LaBarge

Significant research is now available that shows dissipation of dangerous fault currents can be accomplished very successfully if novel combinations of new materials and electrode structures are employed.

— Tom LaBarge

The current industry specifications to achieve compliance in a grounding installation are woefully outdated and dangerously anemic with respect to the electronics-rich culture of contemporary society. Even "enhanced" grounding systems exclusively rely on a humble ground rod — inspired by Ben Franklin — which, in fact, has only a single point of primary dissipation for fault currents, as well as no capability for high-frequency dispersion.

Regardless, engineers continue to specify not only antiquated technology, but also inaccurate models of grounding performance and on point-in-time resistance-to-ground measurements made with low-voltage, low-frequency test equipment.

These meters cannot capture the dynamic characteristics of an entire fault event. Thus, the limitations of basic ground rods, combined with grounding system designs built only to achieve snapshot-quality resistance measurements, result in much less than optimal protection of the broadcasting plant.

However, significant research is now available that shows dissipation of dangerous fault currents can be accomplished very successfully if novel combinations of new materials and electrode structures are employed.

Such designs can properly manage high frequencies in these currents, as well as more efficiently disperse all aspects of a fault pulse over time through better management of differences of impedance in elements of a grounding system.

Existing technology — as discussed within the broadcasting industry for many years — is not able to achieve these essential results, thus causing increasing failures of critical equipment.

In fact, there is a tremendous amount of new information to review and understand with respect to effective grounding — particularly as the financial and operating demands of broadcasters evolve.

RW: *You've said systems can fail "in spite of their adherence to commonly accepted design standards." It sounds like the standards themselves need to change, no?*

LaBarge: We absolutely advocate for standards to be changed — based on a new understanding of fault current characteristics, dramatic limitations of present grounding technology and the shortcomings of contemporary grounding system analysis techniques.

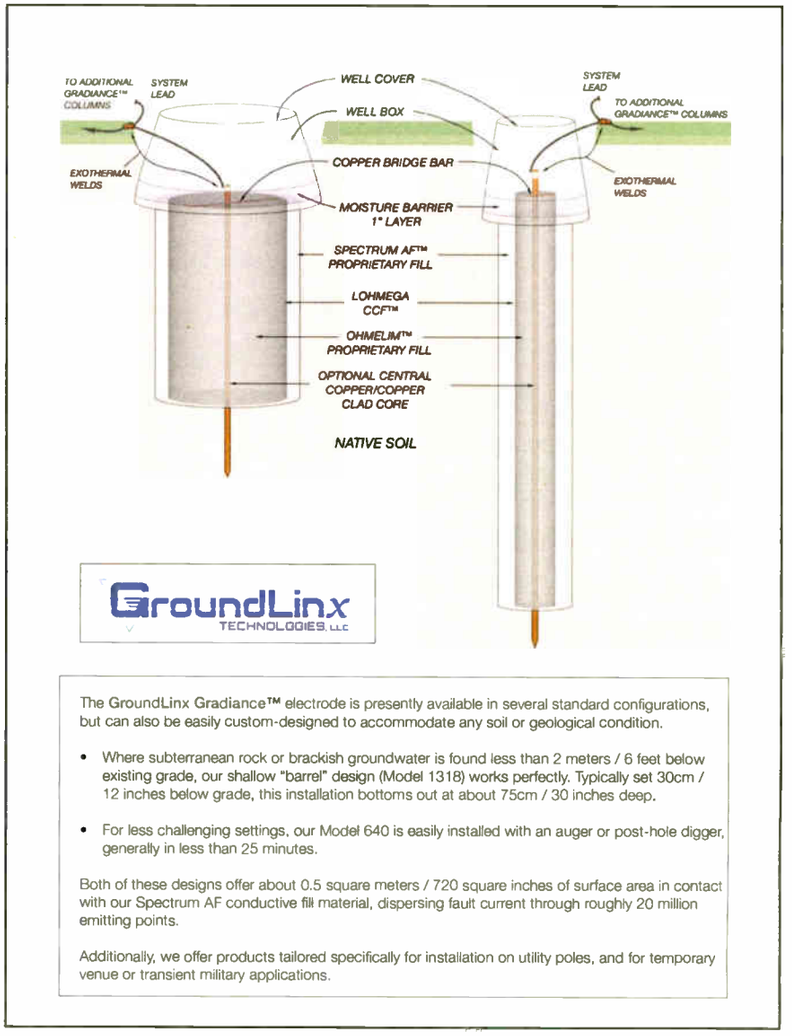
The quantity and sophistication of electronics required in broadcasting of any type, whether commercial, public safety, industrial or transportation, among many other uses, has leapfrogged the published performance goals of traditional grounding. We seek to be the change agents toward substantially improving protection of expensive equipment, and reduction in injuries and loss of lives.

RW: *Your GroundLinx Gradiance system aims to provide a solution. What is it?*

LaBarge: Through the use of novel combinations of materials not previously found in grounding devices, these products are capable, first, of non-sacrificially dissipating current frequencies exceeding 60 MHz, the point where copper begins to lose effectiveness, and second, creating an "impedance gradient" that dramatically reduces the possibility of reflection of a fault current, throughout the event, back into systems and devices that a grounding strategy was designed to protect.

Traditional ground rods are not able to offer these protective features. With GroundLinx Gradiance systems we've reimagined and redesigned the "business end" of grounding to protect the super-sensitive electronics of the contemporary broadcast plant at a significantly higher level.

RW: *What are the major deficiencies in common grounding systems?*



An image from the GroundLinx Gradiance website.

LaBarge: In a nutshell we can group major causes of the significant deficiencies into two mega categories: absence of research and development over several decades, and a general lack of understanding of the physics behind grounding performance overall. Additionally, within the world of traditional grounding, there is little consensus on system design standards.We've heard it said that if one puts 10 grounding design engineers in a room, 11 opinions will emerge.

In terms of industry codes, grounding has always been an exercise, necessary to achieve a stated resistance-to-ground target — which is of very limited value with respect to true, full-fault-event dissipation. This rote activity is repeated all over the world. As a result, the U.S. insurance industry alone reports over $1 billion in lightning losses every year. (This excludes fire damage initiated by lightning.) European Union organizations site "billions of Euros" lost annually due to lightning and fault current events.

Due to antiquated modeling, inaccurate representations of fault current behavior and a "We've always done it this way" attitude, the use of everything from highly insufficient conductor size or deployment, to exclusive reliance on soil moisture, to creation of "ground loops" that allow fault currents to return to structures and equipment, the range and amount of dangerous errors in grounding system design are rather amazing.

As an example, at a recent site inspection at an eastern U.S. larger-market television tower, three chain-link fence posts embedded in concrete were being used as grounding for this tower more than 1,000 feet tall. Not surprisingly, the facility suffers equipment damage exceeding $50,000 annually.

Reviews at smaller-market radio facilities nearly always show major disregard for grounding necessities. As a result, off-air time, or signal disruption events at a minimum, are far too common.

In all cases, the throttling of major fault currents into small ground rods, regardless of quantity, that have a huge disparity in impedance relative to surrounding soils (and possibly amendments) far too often results in completely insufficient dispersal of the fault, and therefore equipment damage, or worse. We see this situation in well over 90 percent of the sites we review.

In our experience, U.S. broadcast facilities of all types and applications are generally designed to achieve compliance with the current published standards and codes. They are often tested and certified to comply with specified static/point-in-time resistance-to-ground readings. However, as I said, such measurement is only a snapshot of system performance made with simple test meters — which cannot emulate the performance of a grounding system over time during a major fault event where over 30,000 amps and 250,000 volts at frequencies exceeding 200 MHz may be encountered.

Broadcasters need to up their grounding game, and do so quickly.

***RW:** What else should we know?*

LaBarge: Steep waveforms at the initiation of lightning strikes and fault surges are now understood to contain a simultaneous mélange of frequencies that often exceed 100 MHz. It is the inability to deal with this toxic onslaught that is often to blame for signal loss, equipment damage and worse. Immediate dissipation of the high-frequency barrage — before its reflection back into equipment can occur — is paramount. Unfortunately, copper is only optimally effective up to 60 MHz, and loses effectiveness quickly above that level. Therefore, rethinking of grounding system materials and structures, and overall grounding strategies, is necessary.

Quite simply, the "criticality" of greatly improved grounding in broadcasting operations through attention to fault frequencies and grounding impedance mismatches cannot be overstated. For operating consistency and financial prudence, we encourage radio broadcasting engineers to become far more "acquainted" with grounding systems of their facility.

Information about the company's grounding systems can be found at www.groundlinx.com.

Radio World welcomes comments on this or any story. Email radioworld@futurenet.com *with "Letter to the Editor" in the subject field.*

SHULDINER

(continued from page 1)

Chairman Ajit Pai said the commission was "acting quickly to make decisions" to help manage. During an online workshop in April, he said, "If there's one area where bureaucracies struggle most, it's doing anything fast. But during a pandemic, delays can be deadly. So the FCC has put a premium on making decisions as quickly as possible. We're talking days, not months or years."

Shuldiner said the chairman empowered the FCC's division leaders to make regulatory decisions without the layers of review typically needed.

He spoke with Radio World's Randy Stine in April.

Radio World: *You spoke with NAB members recently in an online chat about what the FCC has been doing publicly and behind the scenes in regards to coronavirus. Radio has been especially hard hit. What should radio broadcasters know?*

Al Shuldiner: The FCC staff is very aware of the impact of the coronavirus pandemic on broadcasters and the severe economic impact this is having on the radio industry. We are looking at ways that we can provide additional regulatory flexibility to help broadcasters navigate through this crisis.

Where stations have been able to provide us with specific information that the pandemic has impacted their operations, such as where stations have been forced to stop construction because key personnel have been infected and are quarantined or where parts have been delayed due to supply chain disruptions, we have provided regulatory relief where we can.

Similarly, we have worked with stations facing extreme economic problems to adjust their operations to save money. I encourage stations that are facing problems to contact us if they have approaches that might help save jobs or avoid taking a station off the air.

We have not provided relief in response to generalized requests based simply on unspecified impacts of the coronavirus, but we are prepared to respond quickly when broadcasters provide specific information and documentation that they have suffered a significant impact. And stations do not need to worry about making formal proposals. A number of stations have contacted me informally by email, and we have been able to provide prompt relief with minimal administrative delays.

RW: *Will the FCC forgive or delay collection of regulatory fees, for radio stations hit by the economic downturn? How about the current license renewal process?*

Shuldiner: We are looking at options to help broadcasters get through this economic downturn. I know there have been questions about regulatory fees, which Congress requires the commission to collect. While we are unable to waive these fees, the Media Bureau has been working with the commission's Office of the Managing Director to help stations implement payment plans and to develop other relief to address cash shortages.

RW: *Are there other postponements of deadlines or other regulatory processes? Are there Public File implications?*

Shuldiner: The Media Bureau delayed the deadline for stations to upload first quarter issues/programs lists to their online public inspection files. For stations that were required to file renewal applications by April 1, 2020, we did not grant a blanket extension of time, but we addressed extension requests on a case-by-case basis. We processed about 25 of these requests and in all cases, each was granted the day it was submitted.

We and the Video Division will monitor developments leading up to the June 1 renewal application deadline. I expect we will address any problems for that date on a case-by-case basis as well. Similarly, we have been able to handle a few construction tolling requests on an individual basis. I think the biggest current outstanding question about deadlines is the status of FM translator construction permits scheduled to expire in January 2021.

We are looking at the ability of AM stations to make those investments right now and understand the need to provide more guidance on this issue well in advance of the deadline. I hope to have input for broadcasters early this summer.

RW: *Do the FCC modernization initiatives continue during the Covid-19 outbreak, like possibly streamlining the license renewal process?*

Shuldiner: We are fully engaged in all our work, including ongoing rulemakings. I am not aware of any changes that have been proposed to the renewal process, but we are actively working to complete our rulemaking on the local public notices that broadcasters must provide for renewal and other applications.

Our Second Further Notice of Proposed Rulemaking proposed a number of changes designed to streamline our existing rules. We received a lot of supporting comments from interested parties and expect to release revised rules before the summer. In conjunction with the ongoing work in that proceeding and in recognition of the impact of the coronavirus pandemic on broadcasters, we recently waived the requirement for broadcasters filing renewal applications in June 2020 to provide pre-filing announcements of their renewal applications.

We plan to continue to advance our important media modernization initiatives and to continue to provide the industry with regulatory relief where possible.

RW: *The pandemic has led to a number of churches and other organizations doing local broadcasts to their parking lots. Have there been cases where you have relaxed Part 15 compliance?*

Shuldiner: We have encouraged churches and other organizations that have asked us for permission to broadcast to an audience to use streaming or call-to-listen services, or to partner with an existing broadcaster rather than relying on Part 15 devices.

I was very interested to learn recently of an initiative where a broadcaster is working with local schools in the communities it serves to air lessons on AM and FM stations during part of the day to ensure children without access to the internet can continue to complete their schoolwork. Using existing stations for this effort avoids the need for special authorizations.

Also, often low-cost Part 15 equipment being offered to churches and other organizations is not legal for use in the U.S. A properly certified and labeled Part 15 device comes with a permanent, manufacturer-affixed label certifying that the device complies with Part 15 of the FCC rules and displays an FCC ID number. Those devices should be able to provide a service radius of up to 200 feet under ideal conditions. Anything claiming to provide service beyond that distance is likely in violation of FCC rules.

Although we have provided a very limited number of special authorizations for governmental entities and medical centers with a public health need to broadcast using power levels that exceed Part 15 criteria, we are not able to provide other organizations with licenses for larger coverage areas, due to the public safety and broadcast interference concerns.

> "We recognize the transition from CDBS to LMS has not been a smooth one. No one is more frustrated with the pace of the transition or the glitches we have experienced than me."

RW: *If the FCC allows that option, what can you say to radio broadcasters concerned about possible interference?*

Shuldiner: We review all requests to ensure they are on channels that minimize the potential interference. Any special authorizations we provide are on a noninterference basis. And the stations we have authorized at this point are operating at power levels that are extremely unlikely to cause interference. However, we remain prepared to address any interference that arises and will work with broadcasters to address any problems they experience.

RW: *New rules were put in place last year to streamline the sometimes contentious process of working out interference complaints around FM translators. Can you report on how that's going? Has the frequency of complaints changed?*

Shuldiner: We have seen some additional claims from stations, but my sense is that the volume is pretty consistent with what we have seen for the last few years. The new rules have not created a spike in complaints but have helped us weed out some of the less sustainable complaints.

In our experience, most interference problems can be resolved by the stations, and our new rules strongly encourage stations to attempt to resolve problems without the FCC. But there are cases where we have found real interference problems and taken appro-

(continued on page 16)

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SHULDINER

(continued from page 14)

priate action to remedy the problem.

In the most contentious cases, the parties often do not act reasonably and engage in an endless war of pleadings and accusations. This is not an effective way to work with commission staff or to resolve the matter. I encourage all parties to work with us to find productive solutions.

RW: *We've seen at least one ruling where it appeared that the company raising a complaint had provided documentation but that the petition to deny was refused because they didn't follow every letter of the process. Is it possible the system is too stringent now?*

Shuldiner: I don't want to comment on the merits of a particular case, but we think it is important for stations filing interference claims to comply with the procedural requirements we adopted. We believe that will help avoid invalid claims and avoid wasting time and resources for all parties.

RW: *The comment period on allowing all-digital on the AM band has closed, and most of the comments were clearly in support. It seems likely that the FCC will confirm its tentative plan soon. What can you share with us?*

Shuldiner: There were a number of comments and reply comments filed in that proceeding. It's a little premature to share the staff's thinking on the outcome of the proceeding, but the staff members responsible for that item are reviewing the comments and hope to have more guidance for AM broadcasters later this year.

RW: *What is the status of the FM Class C4 proposal? Is it possible a waiver approach could be used in the interim for those FM stations interested?*

Shuldiner: Although a number of broadcasters have expressed support for a rulemaking on Class C4, there also has been significant opposition from other broadcasters, particularly on the issue of Section 73.215 of the Commission's rules.

We do not view waivers as a workable solution for something as significant as a new class of service, particularly when there is an open rulemaking on the same topic. We will continue to study this issue to see if we can determine a way to proceed.

RW: *We are told by broadcasters they feel as if they are struggling with regard to Media Bureau databases for FM. Many filings have transitioned to LMS, but many CDBS records and fields apparently have not made the trip. Some broadcasters have found it necessary to run searches using both databases to be sure they pick up on all potential records, allocations and applications. What is the plan for completing this transition?*

Shuldiner: We recognize the transition from CDBS to LMS has not been a smooth one. No one is more frustrated with the pace of the transition or the glitches we have experienced than me. I can assure you the Audio Division staff has put in a lot of hours to design and test the system, but sometimes we cannot anticipate all the problems.

It is important to note that information flows from CDBS to LMS but not the other way around. CDBS is still the best place to find older information, but anything that has been filed in LMS will not appear in CDBS.

Even with all of us teleworking, we are making good progress on the next phase of the LMS transition and hope to have the assignment and transfer forms working in LMS in the second half of the year. After that, we plan to transition our AM forms and historical information. As we move more and more functionality to LMS, the need to check CDBS will go away. But right now, it is best to check both databases for completeness.

I say thank you to all our users who have shown tremendous patience during this transition. But please do not suffer in silence — if people are experiencing problems, they should let us know so we can address them.

RW: *One of the important tasks the Audio Division does is to process assignment and transfer applications for station sales. In January, one of your well-known attorneys who was responsible for supervising station sales, Mike Wagner, retired. Who in the Audio Division is taking Mike's place, and have there been any issues with the transition?*

Shuldiner: Mike Wagner's retirement was a big loss for the Audio Division, but I spoke to Mike recently and was pleased that he is enjoying his retirement. In March, we were very lucky to have Chris Clark join the Audio Division from the Media Bureau's Industry Analysis Division. Chris is our newest assistant division chief and has taken over responsibility for the assignment and transfer application process. He also is involved in our ongoing license renewal process and other matters.

The staff's move to full-time telework in March made the transition a little complicated for us, but the overall transition has been pretty smooth, and the feedback I have received from broadcasters indicates our processing has not been an impediment to completing transactions. We are fortunate to have a skilled group, headed by Annette Smith, that can keep the process moving forward, even while working remotely. Chris and Annette are available to the public to answer questions and resolve problems relating to pending applications.

RW: *The FCC was scheduled to move from the Portals to a location north of Union Station in Washington, D.C., this summer. What is now the status of that, and do you expect to have any attrition of Audio Division personnel from the move?*

Shuldiner: We were told the FCC's move has been delayed from the end of June until the end of the summer, but we are waiting to see if the pandemic has any further impact on that schedule. I don't expect any significant attrition as a result of the move. I know we have a few people that are getting closer to retirement age, so we may see a few retirements in the future. But we have been fortunate to have had a few engineers and attorneys join the Audio Division over the past year and a half. With that additional staff, we are well positioned to continue to handle our work even if we experience a little attrition from the move.

RW: *Reasonable, accommodating and flexible. Several communication attorneys have used those words to describe the FCC in recent weeks. Do you sense a change in how some broadcasters perceive the FCC?*

Shuldiner: I like to think that the Audio Division is always responsive and helpful. We have a tremendous group of talented and dedicated individuals. We cannot accommodate every request we receive, and sometimes we have to deny requests or take enforcement action against bad actors. But we try to be fair and reasonable.

The pandemic has allowed us to have more detailed discussions with broadcasters about individual needs and situations. And it has given us the room to be creative to find solutions to unusual and extreme problems. I hope we will be able to maintain that approach when we return to regular operations and that the radio industry will continue to view us as a resource that is looking for reasonable solutions.

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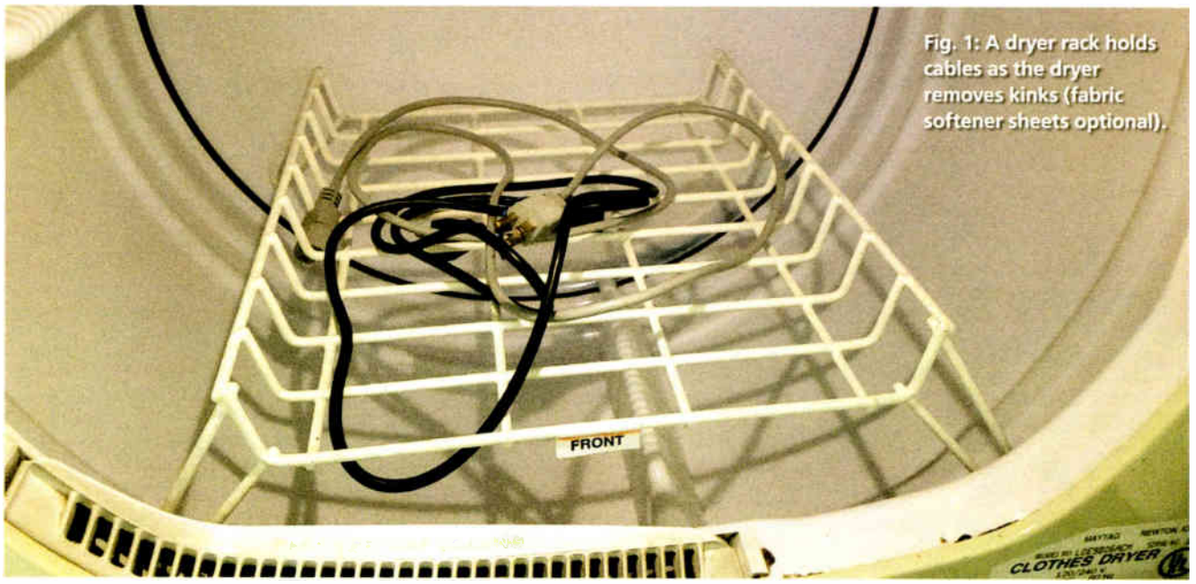


Fig. 1: A dryer rack holds cables as the dryer removes kinks (fabric softener sheets optional).

Let Your Dryer Work Out the Kinks

Also, learn the interesting history of the MacKenzie Program Repeater

WORKBENCH
by John Bisset
Email Workbench tips to johnpbisset@gmail.com

Bill Fike writes in to say that quite often he will receive, with a new piece of equipment, a power or audio cable or some other special connection cable. More often than not, the cable has been folded and tightly tied with a cable tie. Even after removing the tie, some of these cables will remain kinked indefinitely.

Bill has read that a heat gun can be used to warm up the cable and remove the kinks; but that's a lot of work to go over the length of a long cable. Bill also worried about the risk of melting the inner conductors; some heat guns can get very hot.

Bill came up with an easy alternative method to relax the cable so it can be coiled or wrapped. His clothes dryer has a rack for drying sweaters, sneakers or other items that can't be tumbled. He places the cables on the rack in the dryer, sets the dryer to high and runs it for about 10 minutes (Fig. 1). Some cables may need longer dryer time.

When you pull out the cable, it's warm and relaxed. It can then be coiled or wrapped properly, and it won't have kinks.

The first time Bill did this, his wife asked why the drying rack was out. When she heard the answer, she just slowly shook her head and walked away. Some people don't appreciate a good idea when they see one.

By the way, Bill is an Audible Approved Producer. Audible defines this as "a master of the craft, the best of the best; they excel in audiobook production, performance, generate positive customer reviews, and provide the Author and Rights Holder with a professional and smooth production experience. They typically submit audiobooks that do not require a resubmission by QA, and their titles are not terminated for reasons related to the production or their professionalism. Audible Approved Producers are hand-selected by the ACX team for their skill."

Fig. 2: The Sparkos Labs website offers some interesting finds.

Engineering consultant Frank Hertel is always solving problems. Recently, he found an interesting link while searching for an older two-lead virtual ground IC.

The link takes you to a 2000 Engineering Application Note by Bruce Carter of Texas Instruments. Titled "A Single-Supply Op Amp Circuit Collection," it is ideal for those engineers who still fabricate special devices, instead of buying something "off the shelf."

This in-depth article provides useful information regarding the design and use of op-amps, especially in single voltage supply applications. The author explains that one of the biggest problems for designers arises when the circuit must be operated from a single voltage supply rather than a dual +/–15 VDC supply. The application note includes working circuits that should be helpful.

The full URL is *www.add.ece.ufl.edu/4924/docs/TI_SingleSupply.pdf*. We created a shortcut for you at *https://tinyurl.com/rw-opamp*.

Speaking of op amps:

Dan Slentz writes that though he is far from the best bench tech, he has replaced his share of op amps over the years. At WHIZ in Zanesville, Ohio, the AM/FM studios were in a different building, and Dan had a static or ground issue where he was constantly

replacing op amps.

Dan alleviated the problem by adding an odd diode to the input/output of the op amp. This didn't affect the audio, but did discharge anything over 1V to ground. This greatly reduced the replacement of op amps in his distribution amps.

As Dan was researching the issue, he came across "discrete op amps" that sounded interesting. A video associated with the site describes these devices as being better sonically. The company is Sparkos Labs; they use layered surface-mount devices mated to the familiar eight-pin DIP (Dual In-line Package) to create an op amp alternative. In addition to a full data sheet, there's a white paper on why discrete op amps are superior to ICs. Check it out at *www.sparkoslabs.com*.

PS: Dan keeps an eye via social media and enjoys seeing what "cotton-headed ninny muggins" are up to. (If you don't know that phrase, watch the movie "Elf.")

Today's award winner is a hobbyist who built an FM transmitter powered by the 12 VDC of a car. With that kind of power, there's small chance of this individual's transmitter causing an interference problem. But what caught Dan's eye was his closing statement, seeking referrals for upgrading to a higher-power transmitter!

We'll wrap up this issue with a little history lesson that Dan found.

Prior to the advent of the tape cartridge machine was a device called the MacKenzie Program Repeater. As one of the first designs of continuous loop tape playback devices, the MacKenzie Program Repeater was used by top 40 radio stations starting in the late 1950s.

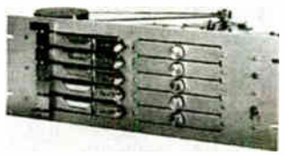
The MacKenzie Model 500 featured five decks stacked — though other models included up to 10 — all with a common capstan. Two independent tracks per magazine deck gave a total of 10 messages that could last up to 14 minutes. Tape was contained in mounted metal magazines.

Read about it at the ReelRadio website, which includes a drawing of how the tape was wound in the magazine. See *www.reelradio.com/reports/mackenzi*. Note there's no "e" at the end of the URL.

Though the repeater found its way into top 40 radio, according to the article it was used initially at Disneyland and in Hollywood filmmaking. Louis G. MacKenzie, inventor of this device, received a technical citation for developing a selective sound effects repeater at the 1962 Academy Awards.

John Bisset has spent over 50 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He holds CPBE certification with the Society of Broadcast Engineers and is a past recipient of the SBE's Educator of the Year Award.

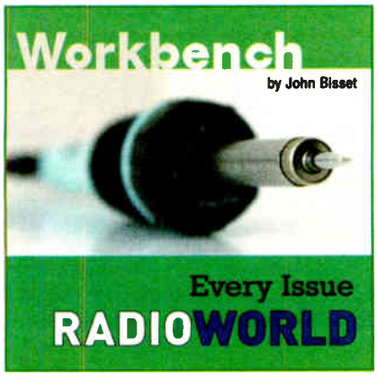
Mysteries of the MacKenzie Repeater Revealed!



MODEL 500

The MacKenzie program repeater was offered in numerous configuations - with as many as 10 decks in a unit. The popular **Model 500** (shown) featured 5 decks and independent audio outputs for each. The unit used a common capstan, much like the **ITC 3-Deck** cartridge machines that became so popular in the '70's. A front panel volume control was provided for each deck. The tape itself was mounted in a metal "magazine", and sat on a hinged deck secured with a thumbscrew. Loosening the screw allowed the deck to "swing open", providing access to the magazine.

Fig. 3: Read about the MacKenzie Program Repeater at the ReelRadio website.



Cloud-Based Automation Is a Reality; Now What?

It's the challenges of "Big C" that must be overcome before we can truly virtualize and untether radio

BY ADAM ROBINSON

The author is vice president of operations for DJB Radio Software Inc.

Virtualization. Cloud. Untethered Radio.

A couple of years ago I was invited to give a chat at my local AES chapter about remote broadcasts. As a lifelong radio guy I have stories aplenty (as most of us do), and the AES folk were fascinated by my tales of "guerilla engineering."

On this particular occasion I gave a humorous history of radio remotes starting from the days of literally bringing the radio station to the remote site via a cargo van (or horse-drawn carriage) to today's more rational events. These might include a small mixer, a couple of mics and a laptop or two, but are still firmly rooted at a table and plugged into a wall.

I then got all "what if" and I started talking about the radio remote of the future. I envisioned the radio host as a one-man band, going from place to place in a shopping mall with nothing more than a tablet strapped to their arm and a headset mic (Bluetooth, of course) on his or her head. I raved like a lunatic about cloud-based this and virtualized that with AES67 to deliver audio and AES70 managing control protocols. No wires or other obsolete shackles to hold our fearless host back — no broken folding table and threadbare chairs — just untethered freedom!

Little did I know my seemingly far-fetched Roddenberry-esque model would start coming to life in short order but it would also become a model for brick-and-mortar radio stations — not just remotes.

Virtualization is here. Cloud is here. The question is — how do we make it work?

LITTLE C, BIG C

In 2018 I took on my current position with my lifelong friend Ron Paley at his second automation venture, DJB Radio Software. Among the challenges presented was to come up with a cloud model for the newly minted DJB Zone radio automation platform.

No problem! We'll go get some space at AWS, spin up a cloud server and off we go. Right? Well … partly.

If all we want to do is run an automation system in the cloud, DJB Zone, or any of the popular automation platforms, can accomplish the task by simply using the cloud to house data or to run the software virtually on a cloud-based server. An HTML interface or third-party remote access software can get you to the dance, so to speak, and virtual sound drivers can send audio back to your studio or direct to your transmitter site. Let's call that model "Little C" cloud.

Expectations are high among the decision makers in the industry that we can further rationalize operations by employing this wonderfully cost-effective place called "the cloud" to replace expensive brick and mortar studios. We'll call that model "Big C" cloud and it is a complex beast.

SHOWING BACKBONE

If what we need is something that resembles the traditional radio model of mics and phones and multiple audio sources and codecs with a host (or hosts) in multiple locations all contributing to one broadcast without so much as a single physical fader, we've got quite the hill to climb. Getting automation in and out of the cloud is one thing, but what about the backbone?

First and foremost, there's the issue of reliable internet connections — even the most robust fiber pipe suffers from downtime. Next, we have to tackle multipoint latency not only in audio but in LIO controls. And then there's the issue of a virtualized, cloud-based mixing console that can handle inputs from all over the place and sync all of this disparate audio.

"It works for the streaming services — why not for traditional radio?" asks the most vocal member of the peanut gallery.

For starters, radio has a very different business model — it is not an on-demand service, nor is it entirely "canned" content. It also has a fickle audience — for generations now, radio listeners have been trained to be impatient. With that in mind, I generally respond to our vocal friend with the following — if it takes a few extra seconds for Apple or Spotify or Pandora to buffer, the average listener happily sits there watching the little wheel or hourglass go around. If a radio station disappears for a few seconds, that same listener will hit seek and move on to the next available frequency that IS playing something.

Live. Local. Immediate. The three hallmarks of radio since the dawn of the golden age. Lose those and we may just lose radio as we know it. This is the challenge facing not only the software companies but the hardware manufacturers too.

"Little C" cloud-based automation is a reality — there are some rough corners to smooth out yet, but we're getting there. It's the challenges of "Big C" that must be overcome before we can truly virtualize and "untether" radio. In the meantime, we can happily enjoy the many benefits of virtualizing radio automation systems in a central TOC or a cloud platform, saving money and increasing synergies among markets. Let's invest those reclaimed resources in coming up with a new model for radio that will see it into its second century.

Adam Robinson is a 25-year radio veteran who has worked on both sides of the mic. An early adopter of radio automation and AoIP systems, he is now VP operations for DJB Radio Software. Contact him at adam@djbradio.com.

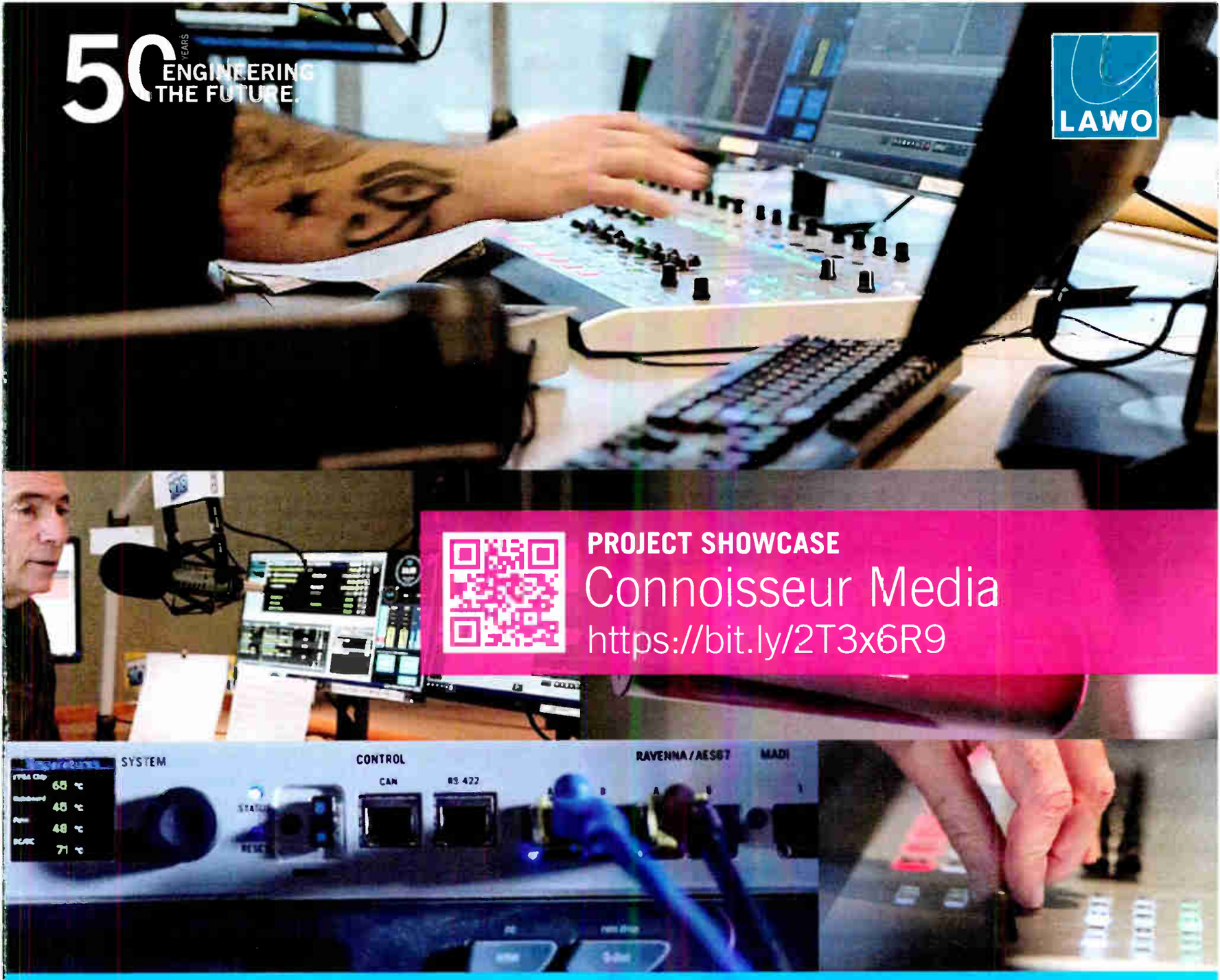
MARKETPLACE

Sofia Updates: Inovonics has released new firmware for its Sofia line of SiteStreamer+ remote monitoring receivers. Models 565, 567 and 568 are the recipients of the free upgrade.

Leading the new items is a restricted login setting for casual users. Inovonics describes this as a "Look but don't touch" setting allowing users to see readings and operate the units but not make any setting changes.

UDP streaming has been added as well, joining analog, AES3, AoIP (AES67) and Dante streaming options. Instructions for firmware updating are available at the website.

Info: www.inovonicsbroadcast.com



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Radio Martí Begins Shortwave DRM Transmissions

USAGM aims to help drive development of low-cost DRM receivers

BY HANS JOHNSON

Radio Martí began Digital Radio Mondiale (DRM) shortwave transmissions on Feb. 4. Part of the U.S. Agency for Global Media (USAGM), Radio Martí broadcasts news and other programs to Cuba. The DRM shortwave transmissions are from USAGM's Greenville, North Carolina, site.

USAGM has transmitted in DRM before. There were some transmissions from Briech, Morocco, in the early 2000s. Greenville tested DRM in 2009 in partnership with what was then known as HCJB Global Technology. So why are they back now after an absence of over a decade?

"We want to experiment a bit with different modes and services available on DRM. We also want to help push the development of low-cost receivers and the best way to do that is to put some transmissions on the air, explains Gerhard Straub, director of USAGM's Broadcast Technologies Division.

Greenville is using a Continental 617-A transmitter, along with a Transradio DMOD3 DRM modulator and RFmondial content server. The antenna is a rhombic aimed at 174 degrees. The average power on DRM is 5,000 W. The schedule is daily from 1700–0200 UTC on 7345 kHz.

The Radio Martí broadcasts are in xHE-ACC, the latest and standard DRM codec. "We need the lower bitrates because we are running pretty low power and we are trying to keep the signal robust," explains Straub.

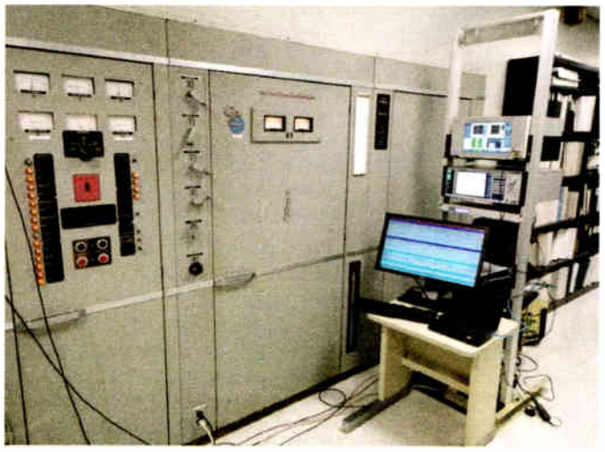
Although these are regular transmissions, USAGM is making adjustments along the way. The first few days tests consisted of two audio streams, with Voice of America in English in addition to Radio Martí. Now Radio Martí is the sole audio service. The transmissions are using the text box and there are plans to transmit images (MOT Slideshow) and Journaline, an RSS type feed.

For the time being, Greenville will be the only USAGM site broadcasting in DRM.

As for Greenville, "There is no definitive time period for the transmissions. We will continue the transmissions until we need to devote resources to other projects or feel we have achieved what we needed," said Straub.

Hans Johnson has worked in the shortwave broadcasting industry for over 20 years in consulting, frequency management and sales.

Gary Koster, U.S. Agency for Global Media broadcast radio technician, Gerhard Straub, USAGM director of broadcast technologies division, and Macon Dail, USAGM chief engineer at Greenville are pictured in front of the transmitter and other equipment being used for the DRM transmissions.



Left and above: An RFmondial reference receiver is shown with a Transradio DM0D3 DRM exciter and an RFmondial Livewire audio router. The large screen is the user interface for a 1RU content server situated behind the screen.

MARKETPLACE

NAUTEL ACQUIRES LOOKINGGLASS

Nautel has acquired LookingGlass, a specialized FM monitoring product created by Leif Claesson and Alex Hartman.

The company stated on its website that it was "wowed" by the capabilities of the product when it was demonstrated at the spring NAB show a year ago. "We are pleased to say it is now the Nautel LookingGlass, manufactured and supported by Nautel."

According to Nautel Product Manager Matt Herdon, LookingGlass was acquired from Modulation Arts. "Nautel felt that it was a strategic fit and a valuable contributor to our mission of 'worry-free transmission' for our customers." Terms were not disclosed. Co-creator Alex Hartman now works full-time for Nautel.

LookingGlass is a 3 RU unit that monitors, records and analyzes up to 30 discrete frequencies simultaneously. It captures the spectrum of analog FM; then a powerful processor and 13 TB hard drive turn the airwaves into recordings, to be analyzed with software tools available on the front-panel touch screen or remotely using its Windows-based software.

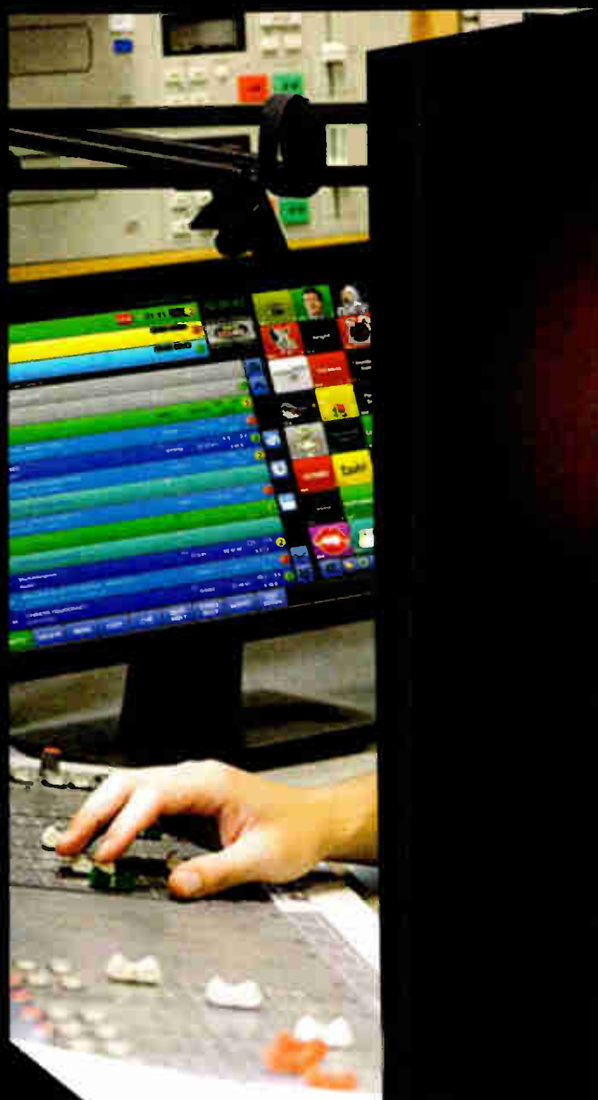
"We believe people will find even more creative uses for it once they get their hands on one," Herdon said. "The likely fit is larger organizations and consultants, but let's see what happens. Two ways you could view the usage are inward and outward facing: You could use it monitor your own stations or analyze the eco-system your stations operate in."

"The original design by Modulation Arts was excellent, so Nautel's value-add is production, QA, distribution and support," Herdon said. "The beta units were manufactured at our Hackett's Cove facility. Over time we will expand its functionality, but for now let's see what people use it for and then show us where they want it go."

The original system was priced from $15,000 to $23,000 depending on configuration. The Nautel system is in beta and its pricing has not been finalized. Herdon said a limited run of beta units are available.

Nautel conducted a webinar to introduce it in early May; find it at *nautel.com*.

Open the door to *your* possibilities!



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Pags Uses Comrex LiveShot to Break Barriers

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USERREPORT

BY JOE PAGS
Host
"The Joe Pags Show"

Joe Pags (center), news anchor Cari Laque (left) and technical director Polo Cuellar (right) in studio.

SAN ANTONIO — I began my broadcasting career 31 years ago, working in local radio. My career took a detour into television when I became the main news anchor at the local NBC affiliate in Saginaw, Mich. I stopped doing radio for a while and did television news anchoring for about 13 years.

But radio is my first love, and I especially love talk radio. So I found a way to get back into it — first in Albany, N.Y., then on a morning show in San Antonio, at WOAI(AM) 1200 kHz. I took a big pay cut, but I did it because I love radio.

I've been there for 15 years now, and in that time, I've been able to shape the show into something that felt right for me. We shifted to an afternoon spot and more toward talk radio, and we started syndicating. "The Joe Pags Show" (*www.joepags.com*) is now heard on 130 stations through Compass Media Networks.

People love our show because we don't fit into a traditional talk show mold. I'm in this industry because I'm an entertainer, so we focus on that first and foremost. We integrate music and other segments to maintain a lighthearted tone but also bring straight news and information expected by our core listeners. We offer a morning show feel in the afternoon, one that appeals to people in demographics that aren't typically consumers of talk radio.

About 10 years ago, I was diagnosed with cancer. I wanted to get back to work as quickly as possible, so I began building out my own studio, which is closer to my home. Since then, I've been doing the show primarily from my studio.

For about nine years now I connect to WOAI by using my Comrex BRIC-Link codec. So much of my career has depended on me being able to connect quickly to affiliate stations or for doing fill-in spots for other nationally syndicated hosts, and BRIC-Link has made this possible. In the last several years, I've only had to set foot in the WOAI facility a handful of times.

I've always believed it was possible to be a broadcaster, in the truest sense of the term. I've never been a TV guy or a radio guy or an internet guy — I'm a guy who wants to broadly cast what I do. I think that all of broadcasting can be utilized in one show. Given that belief (and my experience in television), I've always wanted to incorporate a visual element into our show. I want people to have the option to listen to "The Joe Pags Show" live and also as a podcast, and to make it possible for them to watch it as a live video stream. Letting people see the inner workings of the radio station while I'm doing the show is pretty cool.

Several years ago, I purchased a Comrex LiveShot

(continued on page 25)

ABOUT BUYER'S GUIDE

Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased the gear. A Radio World Product Evaluation, by contrast, is a freelance article by a paid reviewer who typically receives a demo loaner. Do you have a story to tell? Write to **brett.moss@futurenet.com**.

TECHUPDATES

ENHANCE VISUAL RADIO WITH ENCO CLIPFIRE

ENCO says its visual radio solution is powered through automation-controlled video production workflows that help stations deliver complete multimedia experiences. The company has enhanced its visual radio operations with ClipFire, a flexible platform that works as a main automation system or a supplement to an existing one.

The integration of ClipFire allows for instant access to video clips for quick insertion into talk segments, and establishes a more engaging foundation for commentary on news segments and online videos. New automation features in ClipFire allow radio stations to maintain visual programming after hours, without requiring an interface with another program or the need to turn off video feeds.

ENCO DAD automation users can accept library assets shared through ClipFire, including music videos and interstitials (e.g., targeted ads and promos).

ENCO's visual radio offering solution maintains interoperability with leading production systems to assure that radio broadcasters can support an entire video workflow. Additional new features include the ability to load camera and video mixer commands into the array, allowing for picture-in-picture, manual camera switching and PTZ control presets to be single-click operations.

For information, contact ENCO in Michigan at 1-248-827-4440 or visit www.enco.com.

(continued from page 24)

to do live video broadcasts with NewsMax TV. It has worked very well for us — we experienced very little delay and found the video quality to be amazing. It was easy to set up. Granted, I am a technical person, so I more or less know what I'm doing, but I think LiveShot would be easy for someone with less experience too. There's a video/audio input, an output, and once it's connected, that's it — you're ready to go. Plus, the LiveShot Control App has made it easy for me to monitor connections from my smartphone, so I could make adjustments without fuss.

We did a show from the studio with U.S. Sen. Ted Cruz as a guest, and I found it to be startlingly easy to use. We were live on the radio, and also connected with live video to NewsMax TV. I hooked up two cameras — one for me, and one for the two-shot. The broadcast went off without a hitch.

I think it's vital that we, as radio broadcasters, don't lock ourselves into one format, because we'll be left behind by technology if we do. We have to be thinking about how to play to a new, younger audience — a more diverse audience than we traditionally expect to have. How do you keep them connected? Fifteen year-old kids spend much of their time on TikTok and Snapchat, which are heavily video-based. There's constant visual stimulus, and I think we'd be remiss if we didn't provide that also. I appreciate that Comrex technology has given me the flexibility to work from home and explore more of these avenues.

For information, contact Chris Crump at Comrex in Massachusetts at 1-978-784-1776 or visit www.comrex.com.

RadioPix Creates Visual Radio Shows

All-in-one package aims to engage listeners and viewers

SPECIAL REPORT

BY JEFF ADAMS

LAKELAND, FLA. — For the past 20 years, I have been involved in a variety of roles within the radio broadcasting industry, both in front of and behind the mic. Through my experiences, I have grown to appreciate and value the experience that radio creates for the listener. As the industry continues to evolve, so have the challenges for radio stations that feel the pressure to produce more engaging shows with video content while working with limited budgets.

There had to be an easier way than using the piecemeal systems everyone has been cobbling together, so earlier this year, I partnered with Broadcast Pix out of my passion to simplify the video streaming process for both the radio host and the station's producer. This has enabled me to help create RadioPix, a turnkey video streaming solution designed for radio stations, large or small.

I now "take my own medicine" and use RadioPix every day in my role as broadcaster and producer for the "Shannon Burke Show." As one of the hosts for JVC Broadcasting, we broadcast in three markets, with stations located in Florida and New York.

When I received one of the first RadioPix systems in late March 2020, my plan was to install it in the "Florida Man Show," WDYZ(AM/FM) 660 kHz/105.5 MHz, studio, but the coronavirus outbreak caused me to change my plans, installing it instead in my home studio, from where I now broadcast.

It took less time than I expected. RadioPix is an out-of-box solution that is easy to install with your current radio setup. The small form-factor server was indeed plug-and-play.

It includes PTZ cameras and a dedicated user interface. I connected my mics via Dante and the system output to our IP switch and I was streaming. Besides Dante, the system also works with Wheatstone WheatNet and Axia Livewire protocols.

The behavioral intelligence software works as advertised, by using mic activity to trigger the preconfigured visually aware macros, my voice is all that was needed to trigger camera moves, videos, lower-thirds and more. It is really that simple.

My personal favorite is the "boredom" macro that automatically triggers if my guest is speaking for longer than a minute. It starts a sequence of video production moves; the camera shot pulls back, brings up the lower-third title graphic, goes to a wide shot, and then goes back to a closeup. It's great and lets me stay focused on my guest, while RadioPix automatically creates entertaining live video.

I now use on RadioPix every day and so far, I am impressed by its ease of use and dependability — the system just runs by itself. By pushing the "Live Stream" button, my show is streamed live to Facebook, YouTube, LinkedIn or Periscope. It has significantly reduced my workload; more importantly our viewers really seem to love it. We have been getting some great feedback.

We created RadioPix to be the perfect way to create live visual radio streaming, easy to install and set up in any existing radio station environment and our plan is to continually refine its features and content.

Jeff Adams is Executive Producer for the "Shannon Burke Show" and RadioPix product manager for Broadcast Pix.

For information, contact Tony Mastantuono at Broadcast Pix in Massachusetts at 1-978-600-1100 or visit at www.broadcastpix.com.

TECHUPDATE

WIN-GROUP WINCAM BRINGS VIDEO TO RADIO STATIONS

Win-Group says its WinCam video solution is designed for radio broadcasters.

The automatic IP video switcher features graphic insertion, titling and logos, graphic composition and display of messages coming from social feeds. It can record the signal in HD and stream to several sources simultaneously, and supports main camera PTZ control protocols on the market.

The system is equipped with a specifically designed camera that features an HD sensor that is remote-controllable via IP. According to the company, the camera is able to capture wide angles and requires only the typical lighting of a radio studio, without the need for additional lighting elements.

The automatic WinCam interface manages fader starts as well as mic levels. WinCam can be interfaced through IP with AEQ, Axia, DHD and Wheatstone mixers, or via its optional audio bridge to connect to any other analog console.

WinCam automatically selects the most suitable camera angle and manages tight or wide-angle shots. In order to avoid untimely switching when several speakers talk simultaneously, the system alternates wide shots or "picture-in-picture" type compositions where several cameras appear at the same time.

WinMedia said it developed this interface so that it resembles human operation as closely as possible to guarantee accurate video coverage of each speaker.

For information, contact WinMedia Group in France at +33-494-102-101 or visit www.winmedia.org.

TECHUPDATE

MULTICAM ADDS THE AIR BRIDGE

MultiCam Systems' new Air Bridge visual radio solution can be used as a standalone system or together with MultiCam Radio and Studio systems.

Air Bridge is a video solution for including remote guests in radio shows or conferences. Four guests can be live at the same time, with up to 12 on the waiting list. All that is needed is for a link to be sent to intended guests. Upon opening, the guest will automatically be connected to the show.

Air Bridge allows show producers to control guests' audio and video, delivering mix-minus audio feeds for each guest. Guests' picture settings and audio levels can be controlled for establishing a homogenous AV mixing look and sound. This creates a professional remote experience for guests and a look for viewers, according to the company.

MultiCam Air Bridge uses WebRTC, which lets guests connect directly from any device. It is integrated with MultiCam workflow, is AoIP compatible and can use NDI, SDI and Dante outputs.

For information, contact MultiCam Systems in Maine at 1-207-352-1784 or www.multicam-systems.com.

COMING UP IN BUYER'S GUIDE

June 10, 2020
Smartphone/Tablet Apps for Radio Technology

July 8,2020
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WANT TO BUY

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Wanted: real plate reverb. abgrun@gmail.com.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condition. Contact Bill Cook, 719-684-6010.

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

MISCELLANEOUS

WANT TO SELL

UPGRADE consoles to international specs with world standard Weston 30B illuminated 4" vu meters. 4 in like-new condition. GramOphone@earthlink.net

I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's – 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

SPACE IS AVAILABLE!

WANT TO BUY

Wanted: ITC interconnect cables between ITC cart machine and record amp. Manual and idlers for Harris CB-1201 turntables. Don, k8drs1@gmail.com

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for KTIM, AM,FM radio shows from 1971-1988. The stations were located in San Rafael, Ca. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

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The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

MISCELLANEOUS

WANT TO BUY

Looking for KSFX radio shows, Disco 104 FM, 1975-1978. R Tamm, 925-284-5428.

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

Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

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

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

Johnson Electronic SCA880 module, 67/92 Khz, 417-881-1846.

WANT TO BUY

AM Stereo radio. Call 417-881-1846.

RECORDING & PLAYBACK HARDWARE

WANT TO BUY

1960s-vintage MacKenzie Repeater machines, magazines, spare parts and manuals, complete or "parts" machines considered, James, 870-777-4653.

Schnader telescriptions 16 mm musical films produced in the early 50s. Bill Cook, 719-684-6010.

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

Standard Short-tune series. Bill Cook, 719-684-6010.

(2) LPFM radio stations for sale, located in the NW part of central Florida on the gulf coast, covers the county, get out of the cold weather, come to Florida, call or write for particulars, 352-613-2289 or email boceey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.

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WANT TO SELL

RF CONNECTORS & GADGETS – Parts, Products & More! www.W5SWL.com

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Several Optimod 8100As available for sale. In working condition when removed with little or no cosmetic blemishes. $500 or best offer. May require recapping and alignment. Steve Tuzeneu 704-973-0438 (9 a.m. to 4 p.m. Eastern, Monday-Friday) or stuzeneu@bbnmedia.org

QEI FMQ 30000B. Working when removed. Make an offer. Steve Tuzeneu 704-973-0438 (9 a.m. to 4 p.m. Eastern, Monday-Friday) or stuzeneu@bbnmedia.org

BE 35kW FM. Make an offer. Working when removed. Steve Tuzeneu 704-973-0438 (9 a.m. to 4 p.m. Eastern, Monday-Friday) or stuzeneu@bbnmedia.org

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The New Normal for Programming, Personality & Promo

Thoughts for programmers and content managers about radio best practices in this new environment

COMMENTARY

BY TRACY JOHNSON

The author is president and CEO of Tracy Johnson Media Group.

Everyone knows the world has changed in the past few weeks. Life has been disrupted, and there's no timeline for returning to normal. The current crisis has had a lasting impact on everyone.

So now what? What's our new normal?

In a recent webinar, Ken Benson of PI Media Group, Dave "Chachi" Denes of Benztown and I shared best practices and ideas for the current environment, provided guidance for the near term, and offered our forecast for the long term.

Here are some of the highlights from the webinar.

THE NEW NORMAL: PROGRAMMING

In contrast with recent surveys indicating listeners say they are listening to radio more, early ratings results show AQH has declined significantly in most markets. Listeners are now forming new habits, which may or may not be similar to previous habits. The longer folks are at home, the more difficult it will be to re-attract them to our stations when society is more mobile.

Listening to AM/FM radio via streaming and smart speaker usage is higher. Programmers who have not converted to Total Line Reporting to consolidate over-the-air and online listening into one ratings number should do so immediately.

Stations should focus on connecting with listeners emotionally, providing an escape from anxiety and renew efforts to reflect the local community.

In times of stress, listeners seek comfort. Consider adjusting the music mix to play fewer new songs and more popular library titles. This is a great time to become more nostalgic, familiar and comfortable.

THE NEW NORMAL: PERSONALITY

Air talent plays a vital role at this time. Most shows should remain calm, generally upbeat and positive. Don't ignore the crisis, but find ways to relieve listener stress.

Personalities should continue to be themselves, with a few subtle adjustments. Some segments that were hilarious a month ago (like prank calls) may seem mean-spirited now. Be a little more sensitive with a little less less edge.

Keep your sense of humor. The number one most desired trait listeners seek from radio personalities is someone that makes them laugh. That may be even more important now. But be tasteful. There's plenty to have fun with, but it's probably not a good idea to make jokes about the disease itself.

Personalities having a hard time finding content ideas should consider just being the show that listens to the listener. Many personalities are finding connections just by asking "How are you doing today?"

THE NEW NORMAL: PRODUCTION

It makes no sense to spend marketing or contesting budgets now. If it hasn't already been taken out of the budget, save it for when life returns to normal. However, play games on the air. You don't even need prizes! Just have fun.

Most stations report phone and text activity is virtually non-existent, but social media engagement remains strong. Use that leverage. Create videos. Take listeners behind the scenes into your new normal. Some should consider starting a podcast now.

Plan now for the future. It seems a long way off, but this will end, and life will return to normal. Be ready to take advantage of it. Brainstorm ideas for being at the center of your city's celebration when life resumes.

FORECAST AND RECOMMENDATIONS

From Tracy Johnson: Just when you thought the radio industry had no more room to cut, the COVID-19 event has made it necessary for more changes. This is a painful time for everyone in radio. Some stations will never recover. Some may simply go off the air. There are two major challenges ahead. One is re-attracting listeners to your radio station. The other is finding new sources of revenue, because we can't assume advertisers will automatically return anytime soon.

From Dave Denes: Radio is going to struggle well into 2021. Smart managers will apply the principles in the Stockdale Paradox by maintaining a balance of reality and optimism. This is the time great leadership steps up to keep their teams positive and inspired.

From Ken Benson: The world has changed as much as it did after 9/11. We need to step back and take a new look at the industry and realize there's an opportunity for radio to shine. This is the time to pull together and make major differences in listener lives. This could be one of the most exciting and meaningful times in your station's history.

The webinar is available on demand via https://tinyurl.com/johnsonbensondenes. *For more ideas, visit the Coronavirus Radio Idea Facebook Group established by Benztown and PI Media Group.*

READER'S FORUM

TAKE CARE WITH PART 15

I enjoyed reading Eric Hoppe's discussion "Look for FCC Certification When Choosing a Part 15 FM Transmitter" at *radioworld.com*.

With the rampant availability of non-compliant, non-FCC certified FM transmitters on venues such as eBay or Amazon, it's too easy for a less-than-knowledgeable person to get themselves in trouble with the FCC. These imported junkboxes are known for throwing out spurious emissions in addition to being grossly overpowered from what's allowed under Part 15 regulations.

With the PIRATE Act passed into law, well-intentioned Part 15 broadcast enthusiasts could get thrown under the bus if they fail to carefully choose a transmitter that is both FCC certified and compliant with Part 15.239.

The tide of illegally imported equipment should be prohibited from landing on the shores since we already have laws on the books, Section 302 of the Communications Act of 1934, as I mentioned in my June 2018 Radio World article "PIRATE Act Misses The Mark."

I had attempted to bring this to the attention of FCC Chairman Ajit Pai and Commissioner Michael O'Rielly in addition to other issues that affect Part 15 radio broadcast operators, but my multiple communications across email, snail mail and social media were met with crickets, suggesting these issues aren't very important, even while those illegal FM transmitters enable new pirates every day to interfere with licensed broadcast operators.

Something that Eric overlooked is that while Part 15-certified FM transmitters are usually compliant with the regulations, there can be massive variances across manufacturers and even across production runs by the same manufacturer.

On my HobbyBroadcaster.net website, I've performed performance measurements on various Part 15 FM transmitters using my Potomac FIM-71. Some transmitters might be set to a field intensity well below what is legally allowed under Part 15.239. On the other hand, some may exceed the allowed field intensity once cabling to attach an audio source is connected to the device.

The degree of signal increase depends on multiple variables such as the device's construction, with higher-quality transmitters with shielded metal cases most often showing little to no increase while those with plastic enclosures show more than an residual increase.

All in all, the majority of compliant FM transmitters do provide a signal limited in use where a sensitive radio, such as a car radio, would be needed to receive the signal and any appreciable distance to the transmitter's incidental radiator (i.e., antenna).

Bill DeFelice

The author is webmaster of HobbyBroadcaster.net, CampusBroadcaster.net and History of Westport Connecticut Radio. He is a former AM engineer.

READER'S FORUM

PROOFING THE NET

I enjoyed the article "Proof of Performance, 1970s Style" by Tom Vernon (*radioworld.com*, keyword 1970s).

As a youngster with a sensitive Emerson seven-tube radio it wasn't unusual for me to wake up at 4 a.m. and scan the AM band. In the 1960s and '70s it wasn't unusual to run across a 1 kHZ tone early in the morning. Not very exciting, but Lesson #1 in understanding how to put a quality product on the air.

I spent many weekends sitting in the control room of our local station asking about everything I could think of, as an 11-year-old will. That's when I learned that the best proof of performance was done from an input on the main console all the way through the transmitter.

The first station I worked for was WSAY in Rochester; this photo shows our BC-4A on-air console. In 1966 it didn't look much different.

I learned that when we did our proof there, the tone generator was connected at the input of the transmitter, bridging the output of the main RCA BC-76 console, through which this console ran. You can bet our station at the time sounded pretty bad.

Another example of "proof" was accidental and happened when I was at WENE in Endicott/Binghamton, N.Y., an ABC Contemporary Network affiliate. It wasn't unusual at random times to put the net in cue just to make sure it was there. Our circuit also fed the other three ABC networks so it was common to hear interesting things while "MacArthur Park" played.

At one point I happened upon a series of tones on the net. At that moment Jack Fischler, our chief engineer, walked in; I asked and he looked it up in the ABC manual. This was the network checking out the frequency response of the circuit from New York.

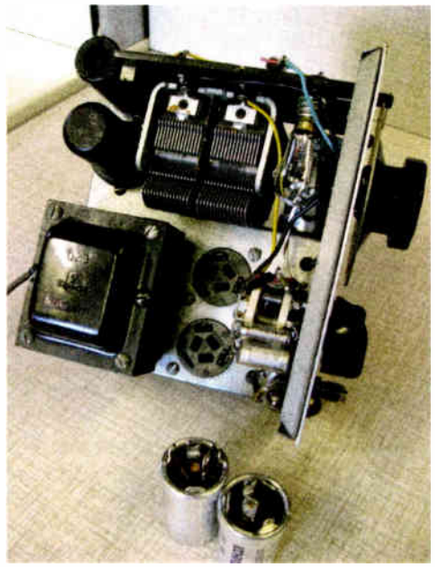
The training I'd received in the Army was enough to know how to read a VU meter (the dB scale) and I realized that the network circuit was -7 dB at 5 kHz. It was obviously lacking in something when the ABC manual said our circuit should be +/-0 at 5k.

Mind you this was 1971, and I'd first worked there in 1968. The network had never had much punch to it — until we contacted ABC and they got it fixed. Much better network audio!

I don't know what the requirements were for network circuits during a proof, but Fischler and his crew did a great job of keeping things on the up and up, when they knew about it.

Dave Mason
Pledge host
KPBS(FM/TV)
San Diego

SOCKET TO ME



A comment on "Proof of Performance, 1970s Style":

The caption under the photo on page 4, regarding the layout of the Waveforms S10-B signal generator, wonders why more manufacturers didn't use aluminum electrolytic sockets.

It is not really a mystery. Notice that there is no aluminum electrolytic "Hold Down" feature on the chassis pictured. It can readily be seen that one drop to the floor, and the capacitors will fall out of the sockets! I have also found that the quality of these capacitor sockets are notoriously unreliable.

Robert Klacza
Lifetime General Class FCC License
Retired Quality Engineer

DRM FOR GEO-TARGETING

Paul I hope you are well and keeping so in these uncertain times. I have read with great interest the article "Tech Company Asks FCC to Allow Geo-Targeted Radio Programming."

I believe digital radio provides a better answer to geo-targeting. The solution described might be a poor substitute for the ability of Digital Radio Mondiale to target areas with an accuracy of within 7 km x 7 km.

Ruxandra Obreja
Consortium Chairman
Digital Radio Mondiale

Write to RW

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

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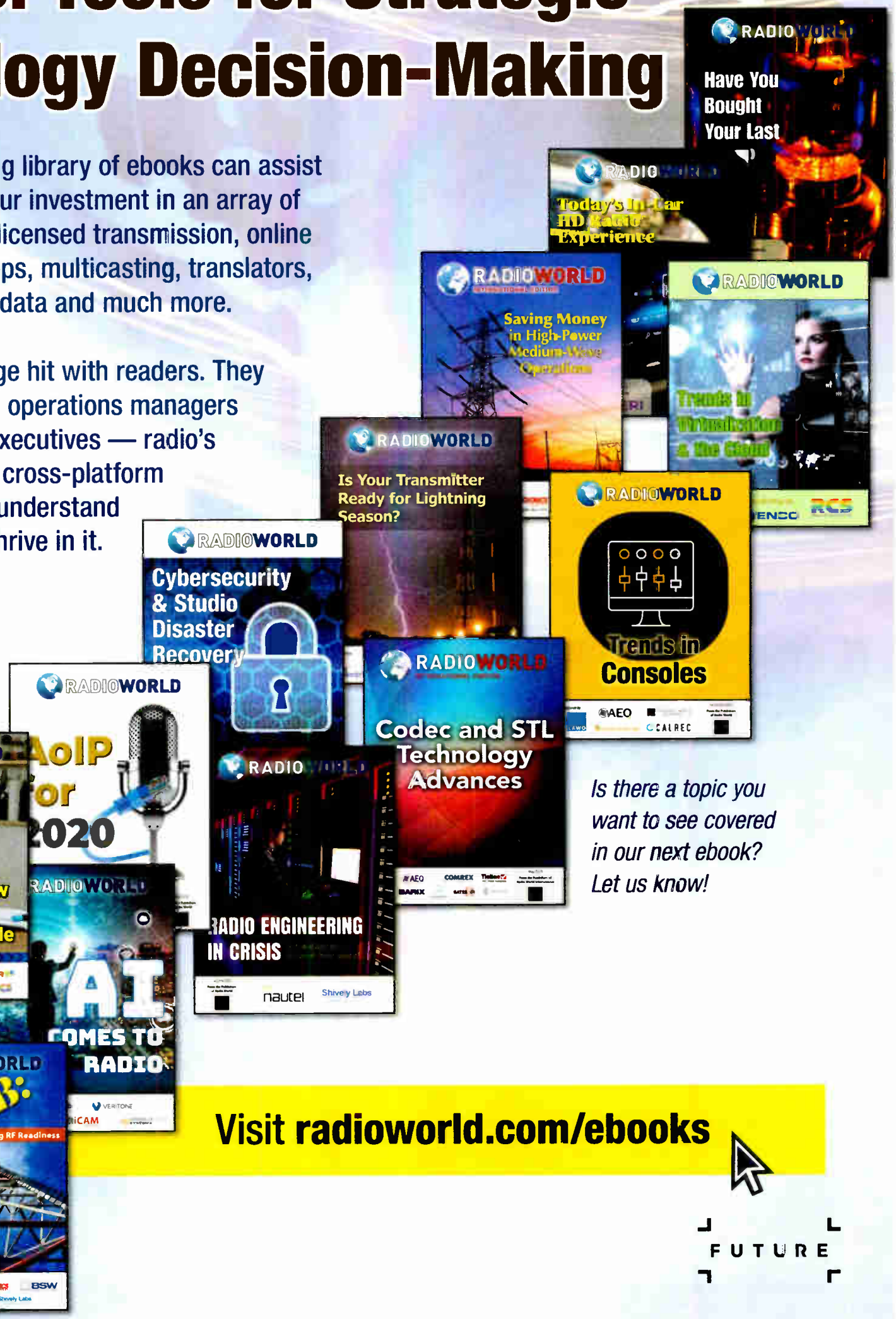

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