NewBay

NATE & NRB SHOW PREVIEWS — Page 20

ENCO
BOOTH N3824 ENCO.com/NAB
ADVERTISEMENT

RADIOWORLD

FEBRUARY 14, 2018 | The News Source for Radio Managers and Engineers | $5.00 | RADIOWORLD.COM

**Tower Industry Meets in Music City**

page 20

# Second Wave of Stations Move Public File Online

## Smaller-market stations and all noncoms now must put documents in the cloud

BY RANDY J. STINE

**WASHINGTON** — More U.S. radio stations can soon begin saving on file cabinet space as a second wave of broadcasters moves to the FCC's online public file system.

There have been some growing pains to date with the rollout of the cloud-based system for radio broadcasters, but most observers say the program is performing as expected.

The Online Public Inspection File or OPIF is being phased in and to date has replaced the Broadcast Public Inspection File process at radio stations with five or more full-time employees in the top 50 Nielsen markets. For most, that transition was completed by December 2016, according to the FCC; the TV industry transitioned earlier.

Beginning March 1, the next radio wave goes online. That's when non-commercial stations, commercial stations in the top 50 Nielsen Audio markets with fewer than five full-time employees, and all commercial stations outside the top 50 markets must begin placing new public and political file materials in the online database.

This group also must preload all existing public file documents that pertain to the current broadcast license term, including Quarterly Issues Programs Lists, Annual EEO Public Inspection File Reports and Time Brokerage or Joint Sales Agreements. There is no six-month grace period, as there was for the first wave when they transitioned to the cloud.

Political file material that exists as of the transition date can remain at the station until the two-year retention period expires, according to the FCC, but newly created radio station political file material must be uploaded to the online public file.

### SOME BURPS

Anecdotal evidence collected from several station operators point to several

(continued on page 10)

# Radio News Retains a Central Industry Role

## The format and the career path remain viable, though challenged from several directions

BY JAMES CARELESS

By some measures, radio news — and radio news employment — are holding their own in an increasingly web-dominated world.

The Radio Television Digital News Association/Hofstra University Survey into radio newsroom staffing levels found that in 2016, about 75 percent stayed the same from the year before, while about 15 percent had an increase in staff size, said RTNDA Executive Director Dan Shelley. For 2017, the most recent year for which data are available, about 77 percent were planning to keep staff size the same and 12 percent were planning to increase it.

Meantime, news or news/talk leaders like WTOP, WBBM, WCBS and KFI regularly appear among the list of top-earning stations in the country according to annual revenue estimates from BIA/Kelsey.

Industry biggie iHeartMedia considers news important, with "more local news people in more places than

(continued on page 8)

#BXNTQT **********AUTO**1-DIGIT 857
#0038953 6# RDWA 0038953 E1801
BARRY MISHKIND 697-15DL
CHIEF ENGINEER 000005429
KOHN
2033 S AUGUSTA PL
TUCSON AZ 85710-7905 P0002

Touch. Swipe. Fade. Mix. Create.
Radio Your Way.

Logitek HELIX

Learn more at logitekaudio.com

World Radio History

Wheatstone

# You Wear a Lot of Hats at Work...

SNOW REMOVAL ENGINEER

ACTUAL RADIO ENGINEER

LANDSCAPE ENGINEER

EXTERMINATION ENGINEER

INVESTIGATIVE ENGINEER

UM???

TRAFFIC COP ENGINEER

CONSTRUCTION ENGINEER

PLUMBING ENGINEER

MAGICIAN ENGINEER

# IT Professor Shouldn't Have to Be One of Them

PACIFIC RESEARCH & ENGINEERING

2017 NAB SHOW BEST OF SHOW WINNER

AoIP networked. AES67 compatible. Wheatstone engineered, supported and loved. Connect two or more studios together using CAT6 cables – no graduate course needed.

Designed and built in the USA

DMX

PRE.COM/DMX1

Exclusively Distributed in the U.S. by

SCMS INC.
BROADCAST EQUIPMENT SOLUTIONS

800-438-6040 · 704-889-4508
scmsinc.com • sales@scmsinc.com

World Radio History

RADIOWORLD

Vol. 42 No. 5 February 14, 2018

www.radioworld.com

FOLLOW US

www.twitter.com/radioworld_news

www.facebook.com/RadioWorldMagazine

CONTENT

Managing Director, Content Paul J. McLane, pmclane@nbmedia.com

Senior Content Producer — Technology Brett Moss, bmoss@nbmedia.com

Content Manager Emily M. Reigart, ereigart@nbmedia.com

Technical Advisors Thomas R. McGinley, Doug Irwin

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

Content Director — International Marguerite Clark

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

Production Manager Caroline Freeland

Art Director Karen Lee

ADVERTISING SALES

VP/Market Expert, AV/Consumer Electronics, Education & Pro Audio
Adam Goldstein, agoldstein@nbmedia.com, 212-378-0465

VP/Market Expert, TV/Video/Radio
Eric Trabb, etrabb@nbmedia.com, 212-378-0400 x532

VP/Market Expert, Broadcasting, Cable & Broadband TV
Charlie Weiss, cweiss@nbmedia.com, 212-378-0478

SUBSCRIBER CUSTOMER SERVICE

To subscribe, change your address, or check on your current account status, go to www.radioworld.com and click on About Us, email newbay@computerfulfillment.com, call 888-266-5828, or write P.O. Box 8518, Lowell, MA 01853.

ARCHIVES

This magazine is available for research and retrieval of select archived articles from leading electronic database and search services, including ProQuest. For microform availability, contact National Archive Publishing Company, 800-521-0600, or search the Serials in Microform listings at napubco.com. Back issues are available. For more information, contact www.proquest.com

REPRINTS/PERMISSIONS

This magazine may not be reproduced or quoted in whole or in part by printed or electronic means without written permission from NewBay. To obtain permissions, contact Wright's Media, 877-652-5295.

NewBay

President and CEO Steve Palm

Chief Financial Officer Paul Mastronardi

Chief Revenue Officer Tom Rousseau

Chief Content Officer Joe Territo

Controller Rick Ng

EVP/Content & Business Operations Carmel King

VP/Digital Media Robert Ames

VP/NewBay Plus Joe Braue

Managing Director/Europe Mark Burton

VP/Audience Development Meg Estevez

VP/Content Creation Anthony Savona

VP/Information Technology Anthony Verbanac

Contact: engage@nbmedia.com

28 East 28th Street, 12th Floor, New York, NY 10016

COPYRIGHT 2018, NewBay Media LLC.
All Rights Reserved.

Connectiv

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 28 East 28th Street, 12th Floor, New York, NY 10016. Phone: (703) 852-4600, Fax: (703) 852-4583. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

# New Guide Aims at Alignment Issues

## Ambitious NRSC document gathers industry's collective wisdom in one place

BY TOM VERNON

It has been an engineer's bugaboo since the dawn of HD Radio more than a decade ago.

In theory, when a digital HD signal drops below a threshold at which stable reception is no longer possible, a seamless transition to analog should take place. The reverse should occur when a usable HD signal returns.

In practice, the listener's experience can be more like hitting a pothole in the road. A noticeable switch between digital and analog takes place. To make matters worse, this transition can occur repeatedly as one travels through areas where digital signal strength is marginal.

What's happening is that the time and level alignment between the FM and HD signals are not in sync. This problem was recognized early on but an entirely satisfactory solution has been difficult to come by.

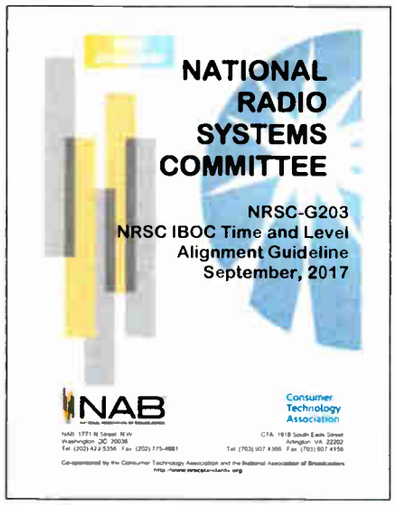
Over time, the industry's brain trust focused its energies on the digital delay quandary. Articles were written for trade magazines, papers were delivered at the NAB Show, documents were circulated within radio groups.

Publication of the NRSC-G203 IBOC Time and Level Alignment Guideline by the National Radio Systems Committee in September of 2017 is another step in dealing with these issues. It represents the first time collective wisdom about the issue has been gathered in one place.

The document discusses the causes of time and level alignment drift and how stations can implement automated methods to keep alignment within a specified tolerance. Though many scenarios can cause drift, it reports, the biggest culprit seems to be separation of the Exporter and the Exciter engine components over a wide area network. The guideline discusses implementation of various hardware and software configurations to address timing instabilities. It concludes that ultimately, "the most effective solution to insure good time and level alignment is automated, continuous, real-time monitoring and adjustment of this alignment so as to reduce or eliminate objectionable blending artifacts."

### MONTHS OF WORK

The work is published jointly by the Consumer Technology Association and the National Association of Broadcasters, co-sponsors of the National Radio Systems Committee.




Those were then submitted to the NRSC with a request that it incorporate the information into an NRSC Guideline.

We spoke with industry experts about the importance of this issue, how stations can put these guidelines to use and how we got to where we are with time/level alignment.

Alan Jurison — a senior operations engineer for iHeartMedia's Engineering and Systems Integration Group and chair of the NRSC RDS Usage Working Group — was a major contributor to the NRSC-G203 document.

He summarized problems that have unfolded over the years with HD timing: "First off, NRSC-5 specifies a timing standard of +/- 3 samples. That was set up in 2005, at the beginning of HD Radio. But it wasn't made clear exactly what the standard meant, or why it was important.

"Another factor was that 10 years ago, HD Radio penetration in cars was

| | Analog and digital audio processors | | Audio processor and Exporter location | | Importer location | | |
|---|---|---|---|---|---|---|---|
| Figure | Separate† | Combined | Studio† | Transmitter | Studio | Transmitter | Comments |
| Figure 5 | ✓ | | | ✓ | (none) | | |
| Figure 6 | | ✓ | | ✓ | (none) | | Preferred |
| Figure 7 | | ✓ | | ✓ | | ✓ | Preferred |
| Figure 8 | | ✓ | | ✓ | ✓ | | Preferred‡ |
| Figure 9 | ✓ | | ✓ | | ✓ | | |
| Figure 10 | | ✓ | ✓ | | ✓ | | |
| Figure 11 | ✓ | | ✓ | ✓ | ✓ | | Single Exporter feeding multiple transmitters† |

† Not recommended
‡ Assumes appropriate data link between Importer and Exporter

**Fig. A: This table in the document shows commonly used HD Radio transmission topologies; automatic correction is summarized separately in the guideline. (Figure numbers refer to the NRSC-G203 guideline; read it at *www.nrscstandards.org*.)**

Audible blending artifacts are the top complaint from automakers and consumers regarding HD Radio; and most of the problems can be traced to broadcast stations, where manual management of time and level alignment leads to drift over time.

So the recommendations were developed by a working group of the NAB Radio Technology Committee, whose members are radio engineers and other tech experts. Engineers involved work for companies including Beasley Broadcast Group, Cox Media Group, CBS Radio, Emmis Communications, Hubbard Media, iHeartMedia and NAB.

miniscule, so the problem wasn't really noticed that much," he said. "Also, we've learned a lot about the technology since it was introduced. We used to say separate audio processors for FM and HD were the way to go. Now, we understand that that having two processors actually causes a lot of the blending problems, and the best thing is to have both signals processed in one box."

Another issue is the standard itself. "NRSC standards compliance is mostly voluntary; the FCC isn't going to fine

*(continued on page 4)*

LEARN MORE HERE

This article is excerpted from the Radio World eBook "New Directions for HD Radio." Find it and the rest of RW's growing eBook library at *www.radioworld.com/ebooks*.

World Radio History

# ALIGNMENT

(continued from page 3)

you for non-compliance with the time alignment specifications in NRSC-5. That being said, good engineering practice suggests that compliance is important, both for the success of your station and the industry as a whole."

Today, Jurison said, getting the timing right is more important because the number of cars equipped with HD Radio has increased dramatically.

"We're now seeing the market penetration of HD-equipped cars at 46 percent of new vehicles sold per year. When these radios abruptly blend from HD to FM and back, listeners usually blame the radio and take the car back to the dealer. But these problems have been created by broadcasters, and we need to fix them."

Rick Greenhut, director of broadcast business development at Xperi Corp., parent of HD Radio, said that from a financial perspective the decision for first-timers to switch to HD is far less daunting.

"When HD started in 2005, first-generation equipment cost around $45,000, and the license was $25,000. A lot of engineering expertise was also required," he said.

"Today, fourth-generation HD equipment costs less than $10,000, licensing fees are a lot less, and installation is largely a plug-and-play operation. In most markets, there are opportunities to lease out your HD3 and HD4 signals, so the payback time is greatly reduced. We expect the costs to continue to drop in the future."

Another driving force is the connected car, where AM/FM signals are the only analog ones left in the entertainment system, and an HD digital signal is really required for a station to be competitive, Greenhut said.

## COMPLEX TOPIC

After opening by explaining important terms and providing background including examples of the problem, the document lists examples of typical HD Radio transmission topologies. These are summarized in helpful table form (Fig. A shown on page 3) and detailed in individual block diagrams (Fig. B). The subject is complex and there is no way to simplify it to a one-size-fits-all solution. The requirements of various stations make for a variety of transmission topologies, some of which work better than others in maintaining alignment. To the extent that an engineer can configure equipment to match one of the recommended schemes, improvements can be made.

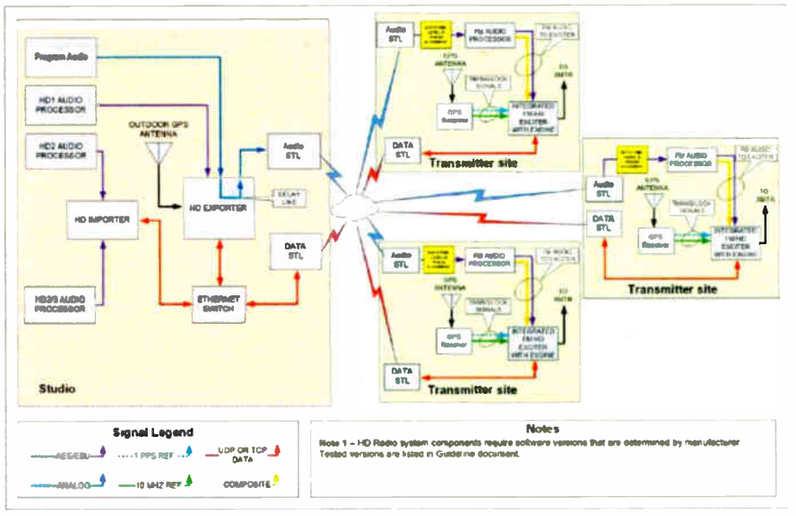



**Fig. B: The document provides good visuals of various use cases — here, a single exporter feeding multiple transmitter sites, corrected by placing in-line alignment device in analog audio path at each transmitter site. To see this and other graphics in detail, read the NRSC-G203 guideline at *www.nrscstandards.org*.**

General guidelines and best practices then are discussed in Section 5. For time, level and phase alignment it says a user should:

- Ensure HD Radio subsystems are running the latest software versions as recommended by the manufacturer.
- Make sure GPS connections are properly installed and operational.
- Co-locate the Exporter physically at the same site as the Exgine/Exciter (in most cases this will be the transmitter site).

(continued on page 6)

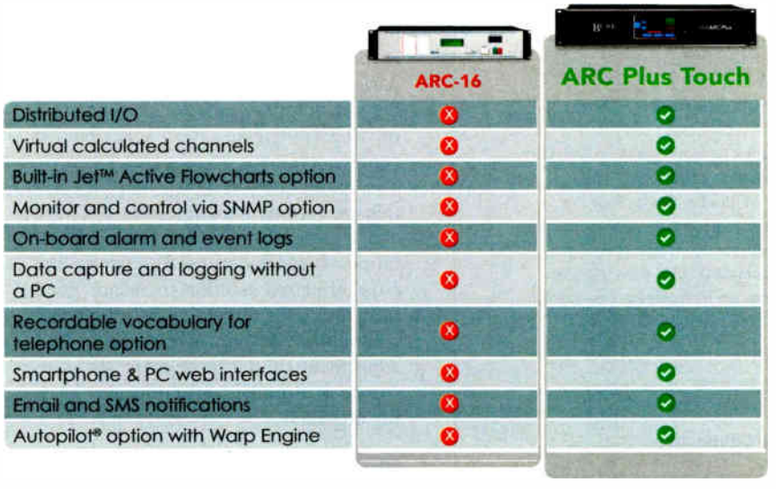
Your ARC-16 was the best remote control for its time and served you well for years. But time and technology march on.

You made a great decision when you bought an ARC-16. Do it again. Upgrade now to ARC Plus Touch, the latest in remote monitoring and control from Burk Technology. Call us today for a free system configuration.

**GET THREE FREE!**

Buy an ARC Plus Touch with RSI and get SNMP Plus, Jet™ Active Flowcharts and AutoPilot® free, a $1485 value.

*Offer valid through March 31, 2018.*




www.burk.com | sales@burk.com | 978-486-0086 x700

BURK TECHNOLOGY

World Radio History

## THIS ISSUE

FEBRUARY 14, 2018

NEWS
Second Wave of Stations Move Public File Online ..... 1
Radio News Retains a Central Industry Role ..... 1
New Guide Aims at Alignment Issues ..... 3
Managing Virtualization and IP Key in 2018, Asserts BBC's Simon Tuff ..... 5
In Case You Missed It ..... 8

FEATURES
Keep Your Security Footage at the Studio ..... 12
WGBH Raises Its Podcasting Aspirations ..... 14
BE Cart Machines: the First and the Last ..... 16

SHOW NEWS
Tower Industry Reunites in Music City ..... 20
Proclaim18 Will Sharpen Broadcasters' Communication Tools ..... 24

BUYER'S GUIDE
"Ask Noah Show" Chooses Tieline ViA for Global Remotes ..... 28
Tech Updates ..... 29, 32, 33
Comrex Access NX Takes the Cardinals Abroad ..... 30
Success on Remote at Rubin Broadcasting ..... 32

OPINION
GEP Is More Than Just a Phrase ..... 36
How Would You Diagnose This Signal Loss? ..... 37
Reader's Forum ..... 37, 38

# Managing Virtualization and IP Key in 2018, Asserts BBC's Simon Tuff

## The industry must creatively drive maturity, understand true cost and manage complexity

*What's in store for the radio industry in 2018? Radio World's Marguerite Clark speaks with Simon Tuff, principal technologist for the BBC.*

***Radio World:*** *What do you see as the most pressing technology challenge facing radio broadcasters in 2018?*

**Simon Tuff:** Our knowledge and use virtualization, micro services and IP connectivity. Especially how we drive their maturity, understand their true cost and manage their complexity.

***RW:*** *What consumer electronics trends will have the most impact on how consumers interact with radio and audio media?*

**Tuff:** I'm sure everybody is suggesting speech control and they could well be right but there are a number of facets to this, some repeat familiar challenges, other presenting us with new ones. For example how does search really work with speech? Say somebody asks their voice controlled device to "play rock radio," how does the AI make a selection based on its algorithms. Will you somehow get a list of options to choose from or will the system make a choice on your behalf? Having a speaker that calls out a list of rock stations, from which you choose one, doesn't sound like a great user experience to me. We might find the real complexity starts when we couple this with the options available to listeners when driving autonomy starts to become a reality!

Simon Tuff

***RW:*** *What do you think will be the prevailing tech trends for the next three years?*

**Tuff:** The impact, expected and unexpected, of increased station format and ownership deregulation. This could increase the motivation to take cost out of running radio, possibly with more automation and networking. There's also the potential move away from net neutrality and the impact that might have on distribution and listening costs on the web, which we'll also need to monitor.

We might also start to do some clever things with data science to inform parts of our program production, allowing us to create new, more relevant, experiences for our audiences. The BBC now has a Data Science Research Partnership to explore these opportunities.

Lastly I suspect most of us have been busy visiting the cloud in the last few years and as our first iterations of cloud solutions mature we'll be looking to manage their transition to the next generation...

***RW:*** *What major technologies are affecting the radio industry on a global level?*

**Tuff:** Many of these are a continuation of existing trends. For our audiences, it's having smarter phones in their pockets, not a radio, while for the broadcaster, its the increased use of commodity IT. 5G technology clearly has huge potential, however I suspect that for many years to come it won't be widely available. Don't believe the hype — it will take longer to have an impact on broadcasting than many would have us believe. We often over estimate the impact of technology in the short term and under estimate it in the longer term.

***RW:*** *Where do you learn about new technology each year, what trade shows*

(continued on page 6)

World Radio History

# ALIGNMENT

(continued from page 4)

- Consider co-locating the Importer with the Exporter and Exgine/Exciter if additional program link channels and LAN extension bandwidth are available.

- Use an integrated, single-box main-channel analog and digital audio channel processor for setting delay and processing for digital and analog audio signals.

Suggestions for manual hybrid FM HD Radio time alignment include:

- After rebooting or reconfiguring HD Radio transmission components, wait before adjusting the time delay. This is important in any configuration that uses Exporter-to-Exciter (E2X) clocking, i.e., when the Exporter is not co-located with the exciter. Most systems take several minutes to several hours to establish a stable delay.

- If available, use a precision diversity delay monitor that can show continuous measurements to detect any drifting before making manual corrections.

- When using an older monitor that provides single-point-in-time measurements, make several measurements over time to ensure the setup is stable before making a manual adjustment.

A detailed table provides current software versions for HD Radio transmission equipment from various manufacturers.

Then in Section 6 the authors turn to methods for automated time and level alignment. They note that there are several available methods for automating time, level and phase alignment to maintain long-term stability and that these fall into two categories, "in-line" and "monitor-based."

Within these categories, choices are available regarding manufacturer and topology; and a subsequent section provides a list of currently available alignment equipment, many of which were evaluated by members of the working group. That table of auto-alignment products is found on pages 37 and 38 of the guideline.

We asked Ben Barber, president/CEO of Inovonics, to describe how an HD alignment processor works:

"It starts with the cross-correlation of 32K samples of the FM and HD signals. That works out to be 3/4 second at 44.1. The firmware in the processor looks for similarities in the audio, and measures the time difference. The best place to put the processor is in the HD1 digital audio feed to the HD exciter or exporter. This gives the processor 8 or 9 seconds to work. The FM is put on a fixed 10-second delay. This gives the processor enough leeway to add or subtract time from the HD signal until the two are perfectly aligned."

He emphasizes that all adjustments and corrections are done very slowly so they are not audible to listeners. Barber said that the engineer's maintenance schedule should include having the processor's log emailed every day for the first week or two after the installation, and checking for glitches. After that, weekly log checks should suffice.

Section 7 of the guidebook contains a table that lists existing monitoring and alignment solutions. Many of these products were evaluated by the members of this Working Group, and software versions of the various components as released by the manufacturers are listed.

An annex provides some of the configuration settings required in the engineering user interfaces of certain specific HD Radio exciter products, for setting up direct clocking from 10 MHz or 1 pps. A second annex republishes Alan Jurison's full paper from the 2016 NAB Show "HD Radio Diversity Delay Field Observations: The Need for Automatic Alignment."

The main part of the document concludes with a description of planned activities for the NAB Radio Technology Committee. These include expanding the guidebook to cover AM hybrid HD Radio systems, which can suffer the same alignment problems as their FM brethren. Another project is to assist in the development of next-generation HD equipment, which will be able to maintain time alignment without external devices.

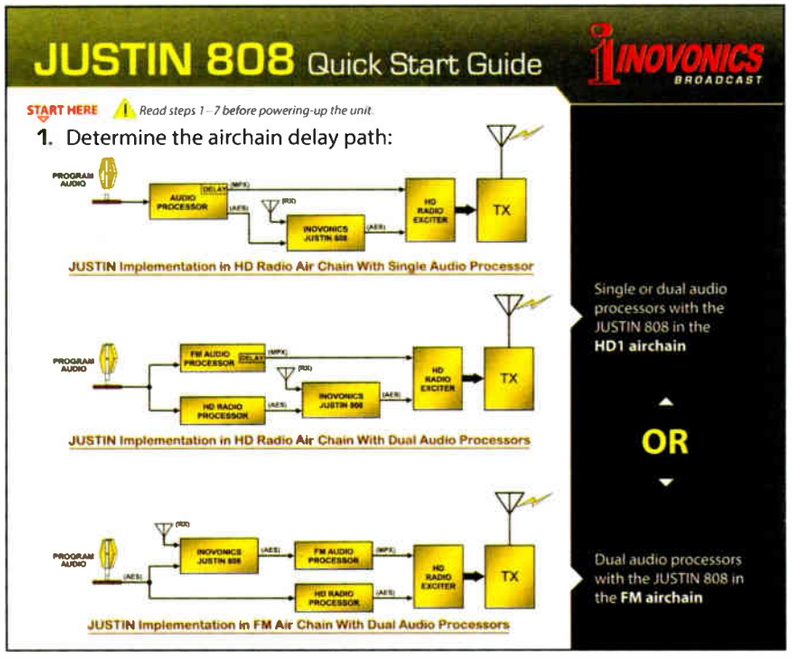
Additional goals for new equipment include lower acquisition and operation costs, which should make the implementation of digital radio more desirable and affordable for the many broadcasters who have yet to participate in this transition.

The guideline is available for download at *http://www.nrscstandards.org/*.

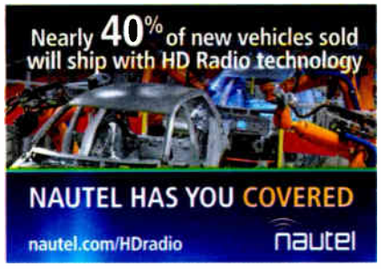
| Figure | Correction Type | Analog and digital audio processors: Separate† | Analog and digital audio processors: Combined | Audio processor and Exporter location: Studio† | Audio processor and Exporter location: Transmitter | Comments |
|---|---|---|---|---|---|---|
| Figure 15 | In-line | | ✓ | | ✓ | Preferred in-line approach |
| Figure 16 | In-line | ✓ | | | ✓ | |
| Figure 17 | Monitor-based | | ✓ | | ✓ | Preferred monitor-based approach |
| Figure 18 | Monitor-based | ✓ | | | ✓ | |
| Figure 19 | In-line | | ✓ | ✓ | | |
| Figure 20 | In-line | ✓ | | ✓ | | |
| Figure 21 | Monitor-based | | ✓ | ✓ | | |
| Figure 22 | Monitor-based | ✓ | | ✓ | | |
| Figure 23 | In-line | ✓ | | | ✓ | |

† Not recommended

**Fig. C: This table shows correction methods and station configurations in the section about methods for automated alignment.**




**An Inovonics product brochure depicts three ways to connect an alignment processor in an FM/HD airchain.**




# TUFF

(continued from page 5)

*or information sources?*

**Tuff:** Conferences and trade shows like IBC, AES, CES, Next Radio and Radio TechCon are useful. The IET's monthly E&T magazine [mostly on paper] but also online publications for both Radio and TV including those from World DAB and the EBU. The BBC media show and click radio programs, plus the Radio Today podcast. I also find myself being increasingly interested in the enterprise IT world through events like IP EXPO. My interests extend to environmentally sustainable broadcast technology and we can learn a lot from the ICT industry.

***RW:** What else should Radio World readers keep on their radar?*

**Tuff:** Watch out for the arrival of Next Generation Audio and the return of binaural... NGA and Object Based Audio are already part of the DVB and ATSC standards for TV. High Order Ambisonics is useful for gaming, 360 media and VR. Increased speaker counts in cinema, home cinema and TV will provide amazing experiences for those sitting in front of a screen. But what is the opportunity for the radio industry here, especially with OBA? At the BBC we have some ideas, which we share via BBC Taster [*www.bbc.co.uk/taster*].

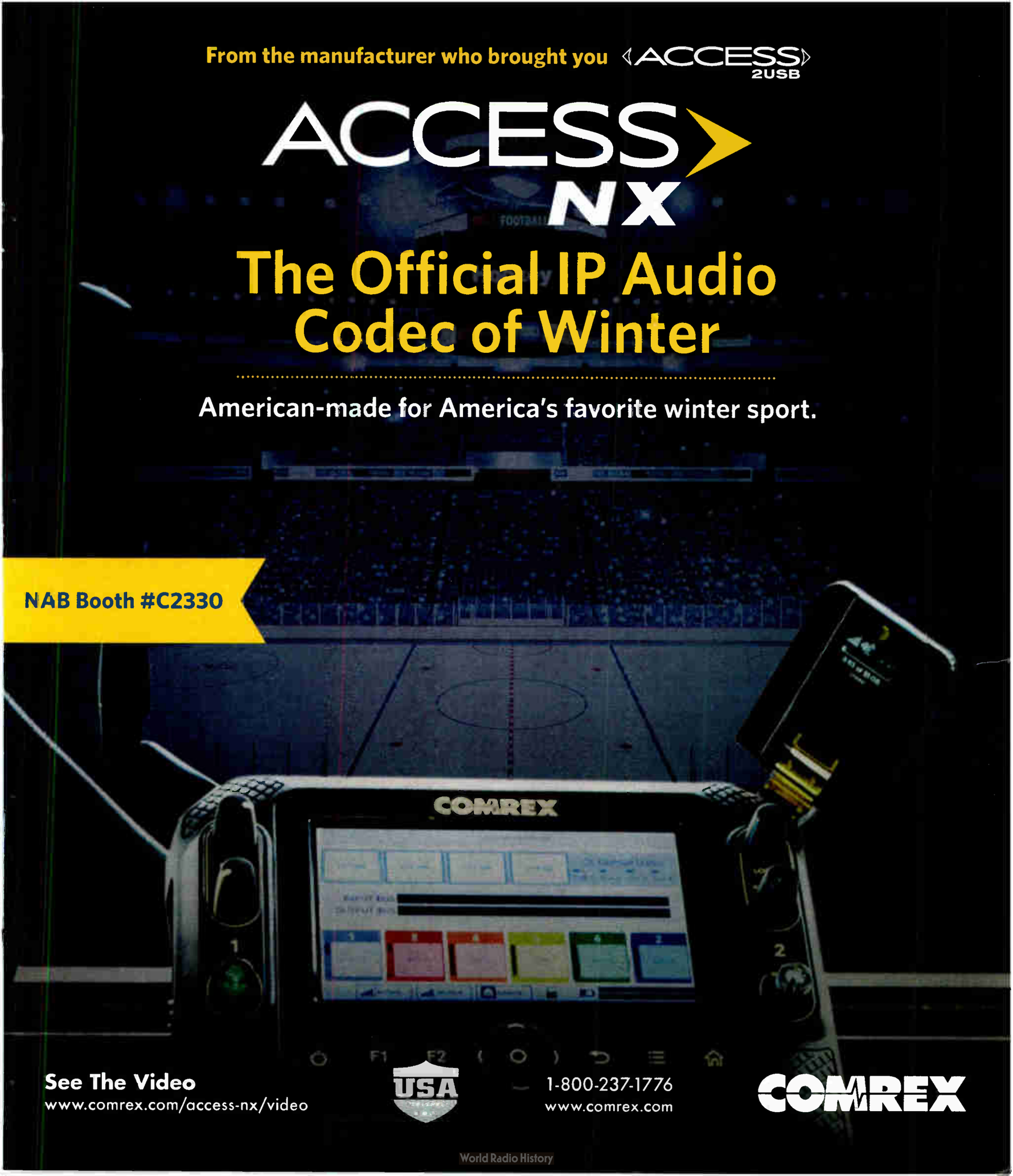
World Radio History

From the manufacturer who brought you ACCESS 2USB

# ACCESS NX

## The Official IP Audio Codec of Winter

American-made for America's favorite winter sport.




NAB Booth #C2330

See The Video
www.comrex.com/access-nx/video

USA

1-800-237-1776
www.comrex.com

COMREX


World Radio History

# RADIO NEWS

(continued from page 1)

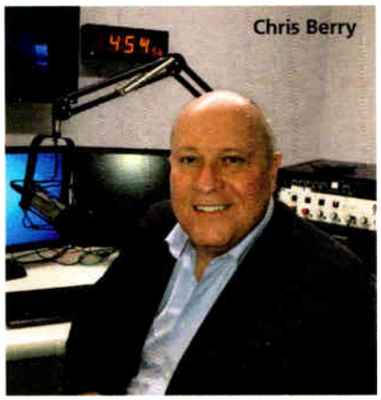
any other news organization in the country," said Chris Berry, its SVP of News Talk and Sports. "We have more reporters than the Associated Press or any newspaper, television or radio group."

That said, U.S. radio operations are the definition of mean and lean. The average number of full-time staff across all radio newsrooms, according to the RTDNA survey, were two staff members per station, while the part-time average was 1.5 people. (For the record, the full-time average at major stations were 4.2 radio newspeople; 2.8 at large stations, 1.5 at medium and 1.3 at small outlets. The part-time averages were 1.7 part-timers at major stations; 1.5 at large; 1.4 at medium, and 1.5 at small.)

## LISTENER TRUST

Steadiness of employment reflects the fact that "radio and radio news in particular has never been stronger, because people in the U.S. are consuming more audio news than they ever have," said Harvey Nagler, former VP of radio at CBS News and now an independent consultant working with radio news operations.

He cited a Radio Advertising Bureau study which said that "Radio continues to be the most trusted source for news, that news consumption increased by 16 percent in 2016, and that 93 percent of Americans still listen to the radio every week; despite the fact that millennials and others have other sources of information."


Chris Berry

U.S. listeners are not alone in considering radio as their most trusted news source. Surveys in Australia (GfK Radio Insights) and the UK (the Radioceontre commercial radio industry group) have produced similar results, namely that listeners in those countries respect radio news most.

At the British Broadcasting Corporation, the public's trust in radio news recently motivated management to cancel $13.3 million of planned cuts to local radio.

"For many years the BBC has been reducing its investment in local radio" as listeners moved to digital platforms, said BBC Director General Tony Hall. "But the rise of digital technology has also seen the rise of fake news, not just on a global level but on a local one as well. That's why the role of BBC local radio is actually becoming more important — not less."

Clearly, the public trusts radio news in an age of web-based information and "fake news." But with great power comes with great responsibility. (Winston Churchill said this in 1906 long before Uncle Ben did in Stan Lee's "Spiderman.") Hence it is more important than ever for radio news to be factually and ethically reliable.

This responsibility is not lost on Steve Jones, VP and GM of ABC News Radio. It serves a total of 1,650 U.S. radio stations of varying formats, with everything from news bulletins to long-form programming during breaking news events.

How does ABC News Radio retain listeners' trust in the digital age? "The fundamentals haven't changed: Accuracy is still paramount," Jones said. "While we very much prize being first to report the news, it's never at the expense of being right."

Berry of iHeartMedia agrees. "As radio journalists we all must be wary of 'fake news,' especially those viral stories that come from unreliable sources," he said. "While most 'fake news' stories are obvious, it is critical that we verify any questionable stories before they are broadcast or posted to our station websites."

## CHANGE OR PERISH

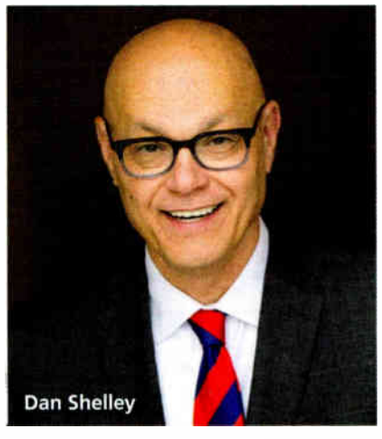
The fact that radio listeners in the United States, United Kingdom and Australia trust radio news doesn't necessarily guarantee its future, Nagler warned. The reason is that there is an increasing number of options for listeners to choose for their news, including popular podcasts that employ in-depth, long-form storytelling.

Not everything on the web is fake, and news consumers know it.

For this reason radio news departments need to assess how they are reporting the news and make ongoing changes to keep their listeners engaged.

"It's all about creating compelling content and doing great storytelling," Nagler said. "That clearly is essential to our survival."

Adding to the challenge is the fact that the web is an always-on medium. No longer can stations hold stories for the next hourly newscast. They have to break the news to the public as soon as possible, which may mean via websites and social media.


Dan Shelley

Steve Jones

A further aspect of radio news change involves mining the web for ideas and news leads, while employing proper fact-checking before going to air/posting stories.

For instance, "we scour social media for individuals who were witnesses or participants when news breaks," said Jones. "We chat to them and we try to get them to join our live coverage." This is where the audio-only power of radio shines through for ABC: Eyewitnesses and participants "don't have to be somewhere where there's a camera," Jones said. "We just need you to be on your phone."

"The internet has so many capabilities that make our job easier," said Berry. "High-quality audio can now be provided from any location by a reporter carrying only a cellphone and the right software. We no longer have to order telephone lines or set up ISDN lines. The cell phone has become a travelling radio studio."

Still, adopting these changes won't matter if a radio news operation ceases being relevant to its audience, said Nagler. Being relevant doesn't just mean being local, but also telling stories that are locally relevant to listeners.

"If you focus on local school board news and your listeners don't care, you will lose them," he said. Conversely, many ostensibly national stories have local hooks, "if they are what your listeners are talking about locally."

The bottom line: Radio news retains an important place in our medium.

"I and the RTNDA remain very bullish about the future for radio news," said Shelley. "Even in the internet era, people are turning to radio for accurate, timely information."

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

## IN CASE YOU MISSED IT

*A sampling of recent headlines delivered to Radio World readers in their free daily NewsBytes e-newsletter. (Click the Subscribe tab at* radioworld.com, *then Newsletters.)*

**➤ FCC Will Consider Creating a New FM Class**
The Media Bureau circulated a notice of proposed rulemaking on whether to create Class C4, Chairman Ajit Pai announced. Proponents believe higher power would help many small Class A FM operators.

**➤ Cumulus Owes Equipment and Service Suppliers**
BGS and GatesAir are among the unsecured creditors owed substantial sums by the big media company as it works through the Chapter 11 process.

**➤ Group Urges C Band Earth Station Registration**
PRSS warned stations that "any FCC action to permit wireless broadband access to C Band spectrum could result in interference."

**➤ NAB Says Yes to Music Modernization Deal**
The chance for a major overhaul to music licensing appeared at hand after NAB gave thumbs up to a resolution at which it had balked earlier. It reached agreement with ASCAP and BMI about what can be introduced as evidence into the rate-setting process.

**➤ Tom Siglin, WHRW's Chief Engineer for Nearly 40 Years, Dies at 70**
We shared a report by Pipe Dream of the passing of Siglin, a familiar face for students at Binghamton University's student-run radio station.

World Radio History

# ASK NOAH. The ViA keeps you on the air...

Wi-Fi
Built-in

"I've done hours of broadcasting with some of the worst internet anywhere in the country and the studio has never had to drop me. My Tieline ViA keeps me on the air, it's that simple."

- Noah J. Chelliah, President of Altspeed Technologies/Announcer for Ask Noah Show.

## Power-up, tap "Connect" and go live!

With ViA's built-in audio processing and compression, the Ask Noah show's entire remote setup consists of headphones, a microphone and the ViA.

- Full duplex stereo program plus separate full duplex IFB communications
- 5 input digital mixer and matrix router (3 x XLR inputs, plus stereo analog line in, or stereo digital in/out)
- Built-in dual band Wi-Fi with integrated web portal
- Dual LAN & USB ports & optional ISDN, POTS or LTE modules
- Schedule, dial & hangup connections automatically
- Input EQ & compression, plus IGC and AGC limiting
- 6.5 hours of power with one internal battery
- Restrict user access with Admin & Basic modes

**Watch Noah's Video:**
**www.tieline.com/videos**

**Join the #ViARevolution**

NABSHOW
Where Content Comes to Life
Booth #N6506

Tieline
The Codec Company

317-845-8000 | sales@tieline.com | tieline.com

World Radio History

# PUBLIC FILES

(continued from page 1)

outages of the FCC public file upload site, which they said had at times delayed participants uploading documents. The commission says such instances have been infrequent. It acknowledged an outage during a "small window in mid-December 2017." Otherwise, the FCC described feedback as "generally positive" in regards to shifting online.

"After learning the interface, radio broadcasters have told us that they find the system easy to use," a commission spokesperson said. "The FCC does have a help desk available for radio broadcasters having issues."

Some observers have expressed concern about the FCC technical system's capacity to host the online public files of so many new entities; the commission says it is confident the cloud-based system will handle the influx of new online participants.

Several major radio groups contacted by Radio World declined an invitation to comment on their experiences with the system. The National Association of Broadcasters said it was unaware of concerns among radio members regarding the online public file input system.

Radio stations transitioning March 1 may elect to start early, according to the FCC, and are encouraged to do so.

"Our advice is not to wait until Feb. 28 to start uploading existing material," an FCC spokesperson said. "The system is user-friendly, but the one-time transition of existing materials can take some time. We also encourage users to review the filing materials on the online file website."

Once a station transitions to the online public file, it must provide a link to the new online public inspection file from the home page of the station's website, if it has one, as part of new public file requirements.

The FCC also has a sub-page designed to help people get started and walk them through the process, the spokesperson said, starting with how to obtain the pass codes that will enable the licensee to access the OPIF system. Online folders are provided on the site for all components of the public file broadcasters need to provide. All documents uploaded to the FCC broadcast public inspection files system are scanned for viruses and then converted to PDF for public viewing.

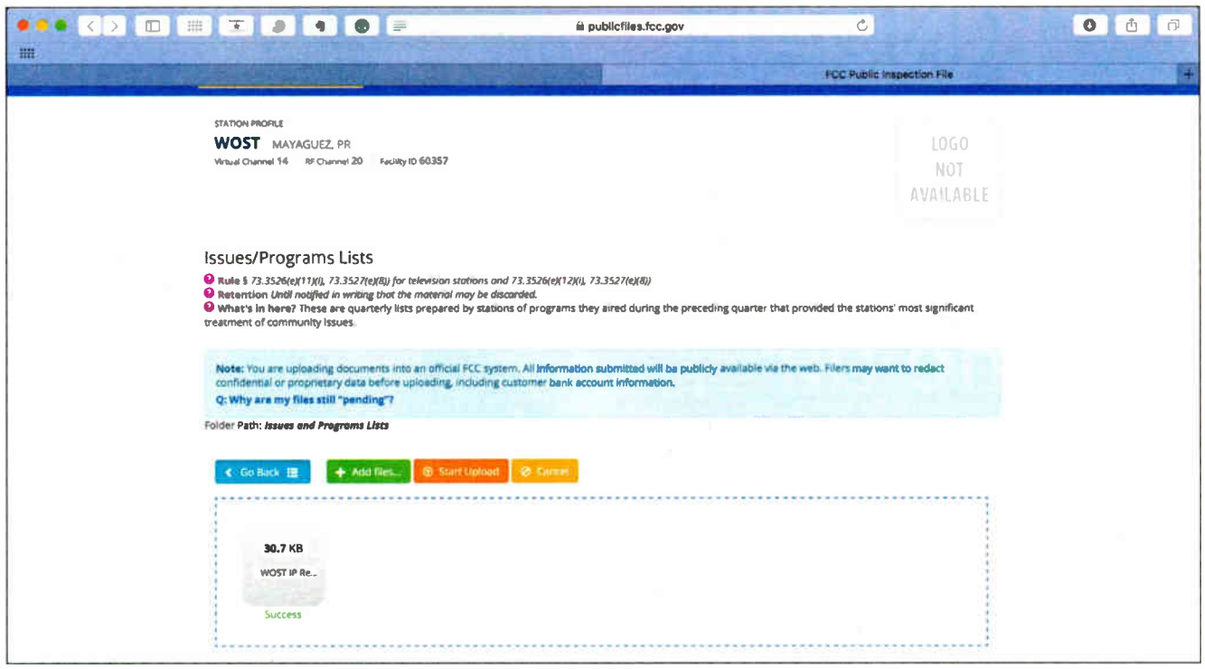



**Image shows the successful upload of a quarterly issues programs list for TV station WOST in Mayaguez, Puerto Rico. Some users have reported upload problems in the process, though the FCC says complaints have been few. One attorney recommends capturing screenshots as proof that documents were uploaded on time.**

## SAVE A SCREEN

Melody Virtue, a principal with Garvey Schubert Barer in Washington, said a few of her clients have reported having uploaded documents "disappearing." She recommends capturing screenshots as proof documents have been uploaded on time.

"The system does get slow, particularly when everyone is trying to upload documents around the same time, which is 10 days after the end of a quarter," Virtue said. "In addition, the history feature for uploaded documents on the public side misses a lot of uploads, so that is not reliable as a means of trying to find out where a document might have been mistakenly filed in the wrong folder."

Virtue said most of her firm's broadcast clients seem to prefer the online public file once they get used to it. "It is a lot easier to maintain. The down side is that stations must be timely or they will need to explain late uploads in their license renewal applications."

Communications attorney John Garziglia of Womble Bond Dickinson (U.S.) said his clients seem satisfied with the online transition.

"My advice to broadcasters has been that the most difficult portion is using the licensee's FRN [FCC registration number] and password to obtain the separate log-in to the online public file. Once the separate log-in is established, everything else is pretty much self-explanatory," Garziglia said.

State broadcaster associations across the country have been active in providing training on the online interface, said Scott Flick, communications attorney with Pillsbury Winthrop Shaw Pittman LLP in Washington.

"What we have been hearing most about are stations having difficulty logging into the FCC's system to upload documents, as opposed to complaints about the volume of documents to be uploaded," Flick said.

Flick described the FCC's online public file database as "not particularly intuitive," which can leave some confused by the log-in process. He recommends checking with the appropriate state broadcaster association for further assistance.

Communications attorney David Oxenford noted on his Broadcast Law Blog that the FCC will grant waivers to some small stations — especially in rural areas where Internet access is limited — who may have trouble in complying with the new rules. The commission will entertain waiver requests, but any waiver that is granted will only be for a limited period of time of no more than two years, at which time the station will either need to comply or obtain another waiver, according to the FCC. The commission adds that the longer a radio station waits to file a waiver request the less likely a waiver request will be resolved by the deadline.

For example, Patrick Pfeiffer, VP/GM of KSJB(AM) and KSJZ(FM) in Jamestown, N.D., requested a waiver citing "resource limitations and a lack of corporate infrastructure and support staff" at the radio stations he runs.

> **"The system is user-friendly,** but the one-time transition of existing materials can take some time."

"We have no HR director, business manager or IT specialist. I should add, as a 53-year-old individual, I am far from technically savvy or proficient … uploading ongoing content to the online public file would fall on me," Pfeiffer wrote in his waiver request.

He continued, "This would take enormous amounts of time that would require me to divert attention from all my other essential duties."

The FCC would not disclose whether it granted Pfeiffer's request.

A complete list of items required to be filed online in the public file is listed on the FCC website. However, one thing radio broadcasters don't need to file online is letters from the public.

Radio isn't the first to make the transition to the online public file database. The FCC says broadcast television completed its transition to the online interface in 2014.

World Radio History

# GREAT SOUND MATTERS MOST

The world's most successful stations have chosen Omnia.
For over 20 years.

But we're not satisfied and we're not resting.
We're raising the bar and making our products better every day.

Why? Because broadcasters depend on us for great sound.

We're obsessed with sound performance. We've worked in radio and we know what it takes to win.
Great sound is the secret weapon. It's a key to ratings and revenue.

That's why we're never satisfied with what we did yesterday. That's why we have the largest team of processing experts in the world. That's why our founder works so late that he sleeps in his office some nights.
That's why we're constantly introducing new techniques and new technologies.

Omnia will never stop innovating.
And we'll never stop making broadcasters sound great.

Omnia

telosalliance.com/omnia-sound-matters

World Radio History

# Keep Your Security Footage at the Studio

## Also, tips for avoiding battery spills — even for sealed batteries

**WORKBENCH**

by John Bisset

*Email Workbench tips to* johnpbisset@gmail.com

Phillip Vaughan is chief engineer of the five-station Entercom Riverside cluster in Colton, Calif. Years ago, Phillip writes, he was working for a station that had security cameras installed at a transmitter site. At some point the building was broken into, and unfortunately, the DVR was stolen along with a few other things. The burglars ransacked the place, leaving a huge mess! Of course, the camera system was useless because the DVR had been stolen.

Recently, he installed security cameras at a couple of his sites to help protect against vandalism and copper theft. Because of the lesson learned earlier in his career as well as changes in IP technology over the years, he almost always backhauls the video feeds to a DVR located off site, primarily at the studio.

Because most stations have some kind of wireless IP bridge between the studio and transmitter site, keeping the DVR at the studio should not be a problem. Even the cost of installing an unlicensed set of radios would be worth looking into to make sure your site stays secure.

Phillip adds this note about site security cameras: Make sure you set up the "email upon disconnection" feature. This will send you an email or text message when one of your cameras becomes disconnected, allowing you to know instantly if your system is being stolen or vandalized.

**Fig. 1: Battery acid spill from "sealed" UPS batteries.**

We'll put this in the "duh" category: Be careful when changing out UPS batteries.

So-called "sealed" batteries can become "unsealed" after a few years. Seasoned broadcast engineer Kirk Chestnut found this out the hard way.

The unit in question went four years on the same set of cells. Kirk thought he was being careful as he removed the batteries but never noticed that the electrolyte was dripping on his trousers, as shown in Fig. 1 — and the liquid was not condensate in the battery tray, either.

Kirk adds that the fumes can be just as hazardous, so use caution.

**Most stations** have some kind of wireless IP bridge between the studio and transmitter site, so keeping the DVR at the studio should not be a problem.

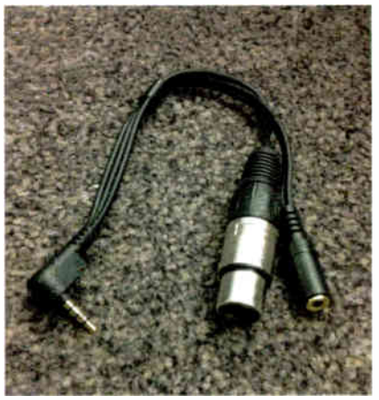


**Fig. 2 A handy adaptor for the iPhone.**

**Fig. 3: The adaptor is 10 inches long but is also available in a 10-foot version, shown.**

Jim Arcaro, WD8PFK, read our recent tip about using an eraser for contact cleaning. It's been Jim's practice to follow that process by cleaning the area with a cotton swab dipped in 91 percent isopropyl alcohol to remove any residue.

And if the area being cleaned was larger or needed scrubbing, Jim uses a clean toothbrush or Crocus Cloth — still available at local hardware stores.

Jim uses the 91-percent alcohol everywhere, *except* where there is existing heat or flame. If heat is expected, let the surface dry first before applying power. Also, make sure there is adequate ventilation to air out the fumes.

Fig. 2 shows an adaptor that project engineer Dan Slentz found. There is also a longer version, shown in Fig. 3.

The LyxPro TRRS to XLR connector has an XLR female that allows you to connect a professional microphone with XLR connectors — like a LyxPro

*(continued on page 15)*

World Radio History

# Got Blending Issues?

## Analog FM & HD1 **Perfectly in Sync**

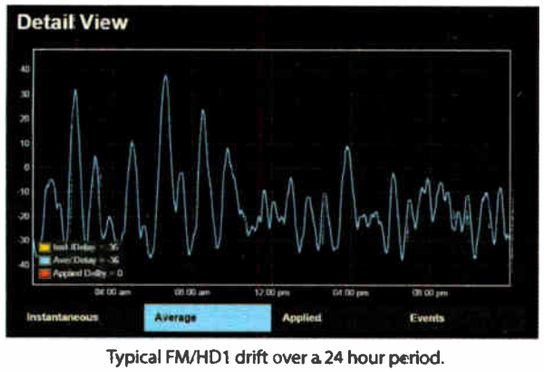
**The JUSTIN 808 is a single-box solution that securely adjusts FM & HD1 Time alignment without affecting your critical FM transmission.**

# JUSTIN 808

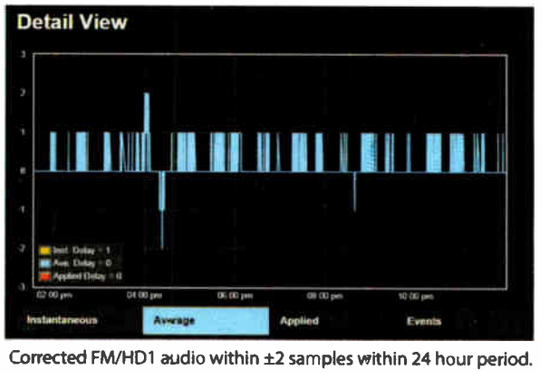
HD Radio

GETTING FROM HERE → *TO HERE*

+38/-34 Samples




Typical FM/HD1 drift over a 24 hour period.




Corrected FM/HD1 audio within ±2 samples within 24 hour period.

±2 Samples

***Why Inovonics?***

Quality Solutions. Competitive Prices. | Three-year Factory Warranty.
Quick to Install. Easy to Program. | Quality after sales service.

www.inovonicsbroadcast.com | sales@inovonicsbroadcast.com | 831-458-0552

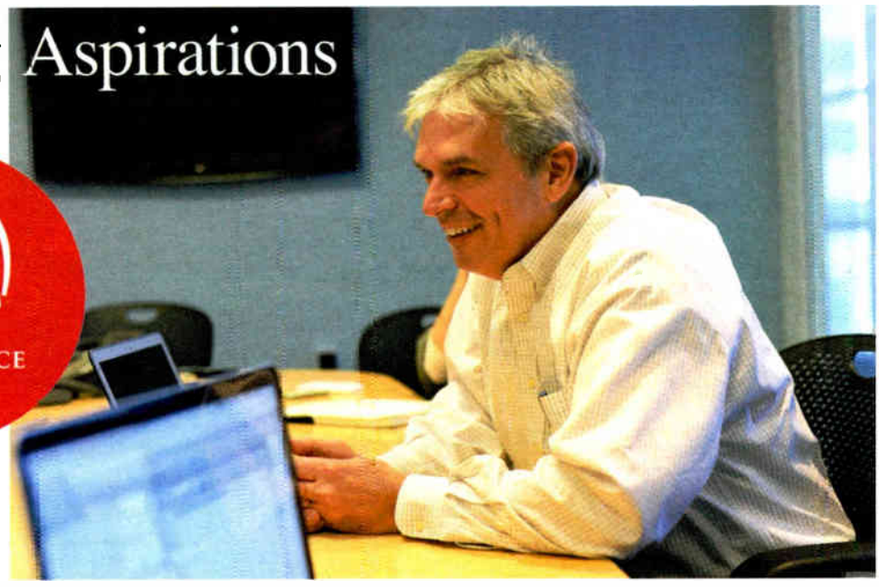
INOVONICS BROADCAST

World Radio History

# WGBH Raises Its Podcasting Aspirations

## Recent moves include a strategic investment in podcast app company RadioPublic

Courtesy of WGBH Boston



Bob Kempf

**PODCASTING**

BY JAMES CARELESS

When it comes to public media and popularity, WGBH Boston has always punched above its weight.

For years, WGBH-produced TV programs such as "Frontline," "Masterpiece," "American Experience," "Antiques Roadshow" and "Nova" have been national hits on PBS. WGBH's radio presence exceeds its local boundaries with internationally-distributed programs such as "The World," a daily news/current affairs program co-produced with Public Radio International and the BBC World Service. (Fun fact: The GBH stands for Great Blue Hill, home of WGBH's first transmitter site in Milton, Mass.)

Now WGBH is pushing to hit above its weight in podcasting, too. To do so, the public broadcaster has launched original content podcasts that leverage its Frontline ("The Frontline Dispatch") and Masterpiece ("Masterpiece Studio") brands; plus podcasts based on local WGBH radio content such as "Boston Public Radio."

"Our goal is to leverage the success we've had on TV and radio, and take it into the podcast space," said Robert Kempf, vice president for digital services. At the same time, WGBH understands that podcasting is a unique medium with its own rules and requirements. So the content WGBH is developing for podcasts is focused on long-form storytelling, with a richer mix of music and sound effects than is generally found on radio.

### PRX PARTNER

As a platform-agnostic public broadcaster, WGBH is willing to go wherever the audience is. This is why WGBH is taking podcasting so seriously, including partnering with the Public Radio Exchange and its app-based program distribution model, and in November announcing a strategic investment in podcast recommendation app RadioPublic.

**WGBH is willing to go wherever the audience is.**

"PRX is our podcast service and distribution partner," said Kempf. "RadioPublic is a podcast curation app that will help attract listeners to our podcasts."

Why invest in podcasting? The answer is to build audience for public media content, especially among relatively younger people.

"Podcasts listening is centered in the 25–45 age group, whereas our radio is more 35–60, and television is even older," Kempf said. "The podcasting audience also tunes into podcasts for different reasons than people who tune into radio and TV. So offering podcasts doesn't cannibalize WGBH's audience base — it builds it."

Podcasting is another way to attract money to WGBH, which largely survives on listener/viewer donations.

"Podcasting could attract young and new donors," said Kempf. What remains to be seen is how to attract donations effectively over podcasts: Research shows that appeals made by podcasts hoists can be effective in encouraging donations by listeners.

### BEYOND RECYCLING

The strategy of leveraging popular TV shows to attract listeners to podcasts is working. "The Frontline Dispatch" podcast's first seasons, including

World Radio History

# WORKBENCH

(continued from page 12)

HHMX-10, HHMX-15, Shure SM58 or Sennheiser E835 — to an iPhone or other compatible device for professional recording. Use this instead of relying on the phone's built-in microphone, and you'll get much better results.

In addition, the adaptor features a jack to connect any stereo headphones to monitor the recording if your app allows that. Since this cable does not provide phantom power, microphones that require phantom will not work with this cable, unless the microphone uses their own power or a phantom power supply.

Both dynamic microphones, condenser and shotgun microphones that provide their own phantom power work well. The result is a "ready-to-go" remote kit for the smartphone, shown in Fig. 4, as long as there's a mic/headphone jack.

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

*Author John Bisset has spent 48 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He is SBE certified and a past recipient of the SBE's Educator of the Year Award.*

**Fig. 4: A "remote kit" with the addition of mic and cans.**

a trailer and six podcasts, "got a million downloads," said Kempf. Meanwhile, Masterpiece Studio "has had 100,000 to 300,000 downloads per episode, depending on the episode."

"The Frontline Dispatch" leverages the TV show's journalistic approach into podcasting. Meanwhile, Kempf describes "Masterpiece Studio" as a "fancast" designed to attract and hold listeners who are fans of the "Masterpiece" TV program. But despite their differences, neither "The Frontline Dispatch" and "Masterpiece Studio" are not recycled on-air TV content but completely new standalone programs.

"'The Frontline Dispatch' podcast offers original, unique investigative reporting that is not tied to the stories covered by the 'Frontline' TV series," said Kempf. "Similarly, 'Masterpiece Studio' offers discussions on production of and content on 'Masterpiece,' but it is not the TV series repurposed for audio streaming." WGBH is considering whether to offer podcasts tied to further hit TV shows such as "Nova" and "American Experience."

WGBH's other podcasts draw on the broadcaster's radio programs; again, they aim to do much more than recycle what's been transmitted on air. "We do stream content from our radio shows online, but we do not consider them to be podcasts," Kempf said. "Podcasts are something else" — specifically, a form of thoughtful, in-depth, long-form audio programming able to tackle topics not usually heard on radio or TV.

Mindful that WGBH is not expert in this space, the broadcaster is hiring outside producers with podcasting experience from PRX and other sources to help create compelling content. "We are also using these podcasting experts to train our own staff," said Kempf.

It remains to be seen how WGBH proceeds with podcasting in the immediate future. "We are admittedly late to the game," said Kempf. But he expects podcasts to be a significant part of WGBH's program mix in the years to come, and "an important contributor" in growing audiences and raising funds for all WGBH platforms.

World Radio History

# BE Cart Machines: The First and the Last

**Spanning the years, two Broadcast Electronics 2100C models, left, with their later-generation integrated circuits and precision tape transport, sit side by side with a Spotmaster 500, built with transistors and vacuum tubes.**

## PLUGGED INTO THE PAST

BY TOM VERNON

When ATC/Collins introduced the cart machine at the 1959 NAB Show in Chicago, it revolutionized radio. Along with the 45 rpm record, the cart machine made the top 40 format possible.

Over four decades, the technology was tweaked and refined. Precision-manufactured cartridges, high-bias tape and stereo cart decks were among the milestones.

The digital audio revolution of the '90s marked the beginning of the end for the tape cartridge machine, as hard drive storage and playback of digital audio files became the norm. While there is no formal end point for tape cartridge technology, the party was winding down by 1999, giving carts a 40-year run.

This installment of Plugging Into the Past looks at the first and last models of cart machines manufactured by Broadcast Electronics. While ATC/Collins generally is credited with selling the first cart machines, the P-series, Broadcast Electronics is acknowledged as a close second.

About the same time that Fred L. "Ted" Bailey and John P. "Jack" Jenkins were developing the ATC machine at WJBC in Bloomington, Ill., Ross Beville of WWDC (now WWRC) in Washington, D.C., was working on the Spotmaster. The two parties apparently were unaware of each other until Beville saw the ATC machine at the 1959 NAB Show.

Broadcast Electronics was founded in June 1959, and the first production runs of the legendary 500 series were assembled in the WWDC garage. The first machines were shipped in wooden cases; BE's familiar blue hammertone aluminum ones came later. The first employees were Austin Knox, engineer, and Jack Neff, sales.

While cart machines were the mainstay of the early BE, they did branch out into cart accessories, such as cart tape winders and various types of cart storage racks. Starting in the mid-1960s, they also manufactured four-channel remote broadcast consoles and turntable preamps, although the marketing strategy seems to have been keeping their existence a secret. Apart from a few ads in the Journal of College Radio, they were never really advertised, and few were sold.

### THE COMPETITION

Despite the huge success of the ATC/Collins cart machine at the 1959 NAB Show and subsequent production of machines by BE, the future of the endless loop tape format was by no means guaranteed — there were competitors.

Perhaps best remembered was the Gates ST-101. It used a tape belt 13 inches wide and divided into 101 tracks, each having a maximum time of 90 seconds, with HF response topping out at 8 kHz.

RCA developed a similar wide-belt machine that never went into production.

The name Schafer is best remembered for automation systems, but it also made the Schafer Spotter, a modified reel-to-reel machine with photo cell detectors. It would count the passage of sections of clear leader tape to cue to the proper cut.

Ultimately, none of these or other competitors gained a foothold in the market, and the cart machine prevailed.

### SPOTMASTER 500

The genius of the Spotmaster 500 was its simplicity of design. While there were many cosmetic facelifts over the years, and electronic components were upgraded, the transport itself remained virtually unchanged. It started with a Viking transport with either a Pabst or Hurst motor along with a flywheel-belt drive. The first machines had an 850 Hz cue track, which was changed to 1 kHz early in production.

Unlike its competitor the ATC, which automatically engaged the pinch roller, the Spotmaster had a load lever to bring the pinch roller in place and used a smaller solenoid to engage when the machine was started.

Hybrid electronics were unique to the first-generation 500s. The 1 kHz cue detector and playback amp were

(continued on page 18)

**Tools used to align the cart deck evolved over the years, from the simple head alignment wrench, center front, to more precision devices like the right angle zenith and tape guide height gauges made by Fidelipac.**

World Radio History

Welcome to Broadcast 3.0

# Radio / On-Air 3.0

## ruby – Radio never looked so good.

Meet ruby, the new radio console from Lawo. So elegant and uncluttered, you might think something's missing — and you'd be right. We've moved most of the controls that litter the faces of other radio consoles onto an intuitive context-sensitive touchscreen, while essential controls like faders and monitor selectors are right where you'd expect them to be. ruby gives you the best of both worlds: familiar physical operations, and a modern graphical interface.

ruby's powerful visual interface is designed for fast-paced radio, with fingertip access to source, bus, and mix-minus assignments, as well as EQ and dynamics processing — freeing your talent to perform instead of searching for settings. You can even use ruby's GUI-building app to centralize control of studio software and peripherals. With intelligent AutoMix hands-free mixing and one-touch AutoGain mic calibration, your operators will tackle the most complex shows with ease. Even voice-tracking while on the air takes only the push of a button. Be prepared: your talent may actually thank you! And because ruby is engineered and built in Germany, it might just be the last console you'll ever need to buy.

ruby, from Lawo. The console with a refreshingly new point of view.

DOWNLOAD
ruby BROCHURE
bit.ly/2kT8Obi

Join us @ NAB, #N2813

www.lawo.com

World Radio History

# CART MACHINE

(continued from page 16)

solid-state, while the 1 kHz cue tone generator, bias oscillator and record amp had vacuum tubes. A combination of 12AX7s, 12AU7s and 12AV6s were used in the record circuits, while all transistors in the playback electronics were 2N217s.

Also unique to these premier machines was the location of controls and connectors along the sides. This turned out to be a bad idea for two reasons. First, the spring-loaded start lever switch was easily damaged and bent; second, the configuration made it impossible to mount machines side by side.

The 500 series continued to evolve into the A, B, C and D models from 1959 through the early 1980s, when it was replaced by the 10-70 series, although BE continued to make the multi-deck versions of the 500, 605 and 610. The 10-70s were designed and built during the time when BE was owned by Filmways Corp.

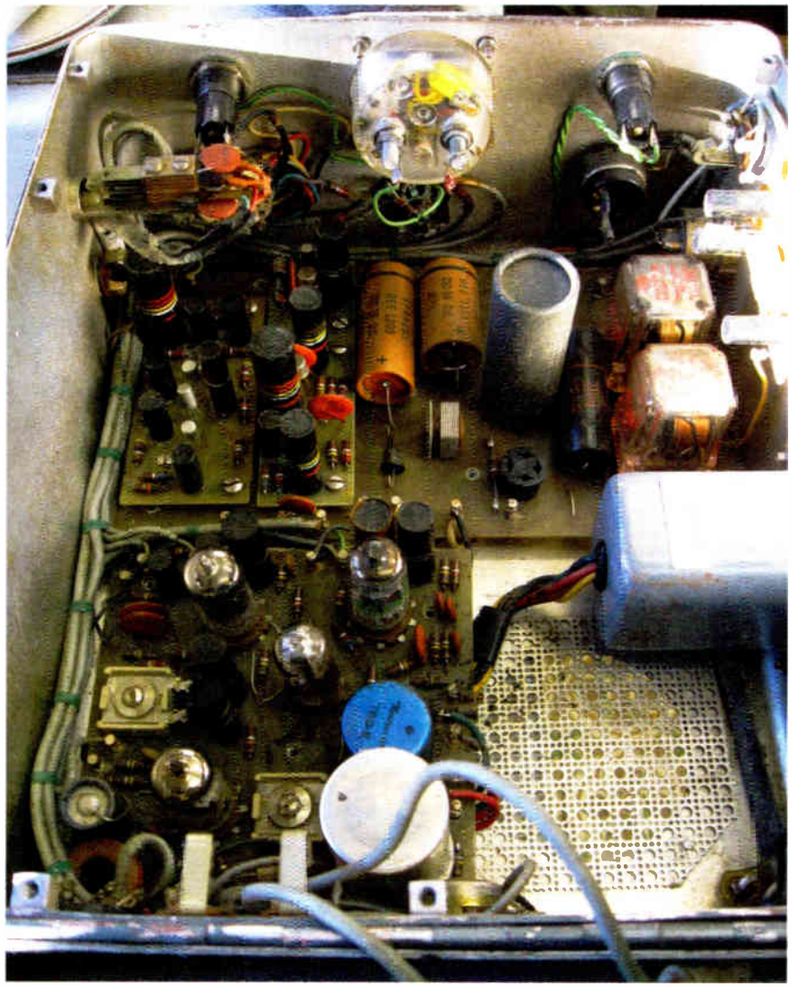
### 2100C

In 1987 the BE 2100C series machines are introduced. They are about as advanced as the 500 was primitive and would remain in production until Broadcast Electronics ceased manufacture of cart machines in 1995. The 2100C was available in both mono and stereo playback and record versions. Primary (1 kHz) and secondary (150 Hz) cue tone circuitry was standard. An automatic mono/stereo switching feature was included in the stereo machines. Most of the audio circuitry is designed around 4558 and 4559 ICs, while the logic circuits run on 74XX TTL chips.

There are two circuit boards that plug into a motherboard on the 2100C. The playback logic board contains all the deck control logic, playback amp and cue detector circuitry. The record circuit board houses the record control logic, record amp and cue tone generator circuitry. The circuit boards are double-sided with through-hole components.

The motherboard has the internal circuit connections and the robust +18, +15, +3.6 and –5.6 volt power supplies.

The cart deck is made of half-inch machined aluminum. It has an air-damped solenoid, direct-drive hysteresis-synchronous motor and the Phase Lok V head assembly.



**The original BE 500 was a hybrid device, having vacuum tubes for the record electronics but transistors for the playback and cue detector circuitry.**

### TECHNOLOGICAL ADVANCES

One of the best ways to get a sense of the advances in tape cartridge technology is to look at the tools and procedures for maintenance. For the 500 there were no tweaks for the playback amp or cue detector. The only alignment tool provided was the head adjustment wrench. The procedure was to slowly rock the head with the wrench while playing back the azimuth alignment track. When the peak was reached, the rear nut was tightened with a small crescent wrench. In the process, the head height could shift, and the entire procedure was never very precise. BE later introduced a head stack for the 500s that had Allen wrench adjustments for height and azimuth, ensuring a more accurate alignment.

Special tools were needed for adjustments to the 2100C deck. The direct-drive Nidec motor needed to be positioned so its shaft was perfectly tangent to the pinch roller, and this was accomplished with an alignment gauge. It looked like a steel pinch roller, and when it was in place, the motor could be precisely located and secured.

For coarse head adjustment, a guide was used to check the height of the tape guide, head height and head zenith. Final adjustment was made using an alignment cart and oscilloscope. The electronic alignment consisted of setting playback levels, EQ and cue sensitivity. Record adjustments included adjusting the bias traps, bias level, record EQ, cue bias and cue record level.

### BLAST FROM THE PAST

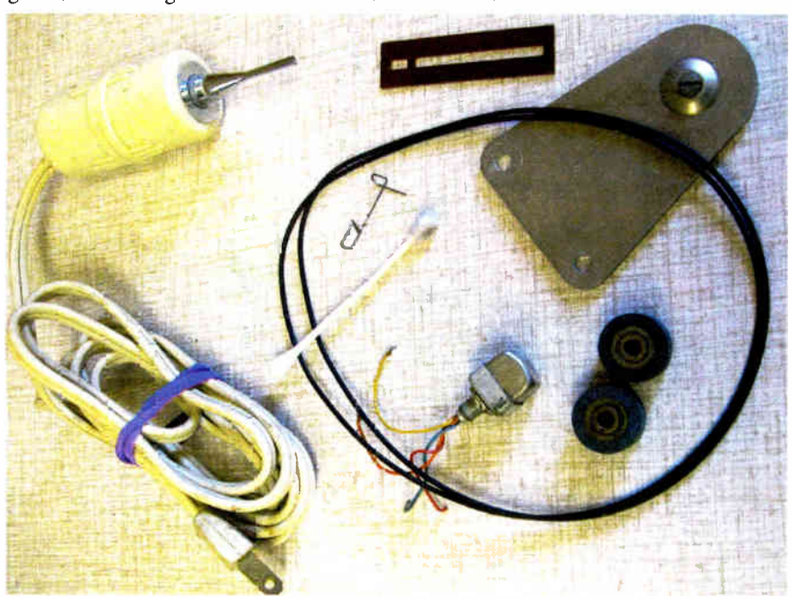
The date code on the back of the 500 shown here indicates it is a very early model, manufactured in August of 1960. It was found in the engineering shop of a Boston radio station in the back of a filing cabinet; it had been used to keep file folders from falling down the back. The original instruction manual was also found. The numerous dings and dents on the chassis suggest that it had a hard life, although it does work.

Both of the pictured 2100Cs were discovered in the closet of a college radio station about 10 years ago and were manufactured in 1989. They had been taken out of service when the station went over to a hard drive playback system. During their service life, they had suffered from considerable neglect, and needed a thorough cleaning.

Even though the 500 is approaching the 60-year mark, complete restoration is fairly straightforward since it was made from off-the-shelf components, and spare transport parts are on hand.

While the 2100s are newer, they have their own challenges. The pinch rollers were made of a miracle rubber that would not get slick and harden with age. With the passage of 30 years, however, the material cracks and takes on the consistency of gummy bears. The only option appears to be having them remanufactured.

*Tom Vernon is a longtime RW contributor.*



**In addition to frequent head demagnetization and cleaning, BE 500 transports also required regular replacement of belts, pinch rollers, heads, swing arm springs, load lever washers and thrust bearing plates.**

World Radio History

WHEATNET

THE INTELLIGENT NETWORK

# Yeah. That Kind of Bass.

## It's Time You Tried a Different Processor

Learn More: wheatstone.com/X1

Wheatstone

BROADCAST AUDIO PERFECTIONISTS®

phone 1.252.638-7000 | wheatstone.com | sales@wheatstone.com

World Radio History

Photos courtesy of NATE

# Tower Industry Reunites in Music City

## NATE's 2018 conference highlights legislative priorities, certifications & more

**TOWERS**

BY EMILY M. REIGART

It's been a busy year in the broadcast and telecommunications world, and things aren't likely to slow down for the tower industry in particular in 2018.

"To communicate, everyone needs data; everyone needs technology, so that's good for our industry," National Association of Tower Erectors Executive Director Todd Schlekeway said.

Things are good — and busy, especially since the existing tower worker shortage has been exacerbated by increasing demands for tower deployment. To alleviate that problem, NATE, which is an association of approximately 770 tower erection, maintenance and service companies, is heavily focused on outreach and recruitment.

But once you attract the new workers, you need to train them.

"Training and certification are key pieces of workforce development," Schlekeway said.

NATE members are on the front lines of network densification. "Our members have deployed every generation of technology of networks, and we're on the precipice of doing it again here for 5G. And so it's important that the workforce continues to have an evolving skillset to handle not only work done at heights, but work done on the ground."

And starting this year, some wireless carriers are going to require that a certain percentage of the workforce be NWSA-certified to work on their site, he said.

The National Wireless Safety Alliance was established with seed funding from NATE and is based in Fairfax, Va.

Schlekeway explained, "We believed a national certification organization like the NWSA was a missing piece, and it's really going to play a major role in enhancing the overall safety and quality of the workforce."

**A fall protection demonstration led by industry training company ENSA on the NATE Unite 2017 exhibit hall floor.**

NATE UNITE 2018 Nashville

### IF YOU GO

*Who*: "Decision-makers in the broadcast and telecommunications tower erection, service and maintenance industry"

*When*: Feb. 19–22

*Where*: The Gaylord Opryland Resort, Nashville, Tenn.

*How*: https://natehome.com/annual-conference/nate-unite-2018/

*How Much*: Members $189, others $469 (higher after Feb. 16 and on-site). One-day and exhibits-only passes available.

The NWSA offers two certifications, the Tower Technician I and Tower Technician II programs. Additionally, NWSA's subject matter experts are "about halfway" done developing a tower performance certification.

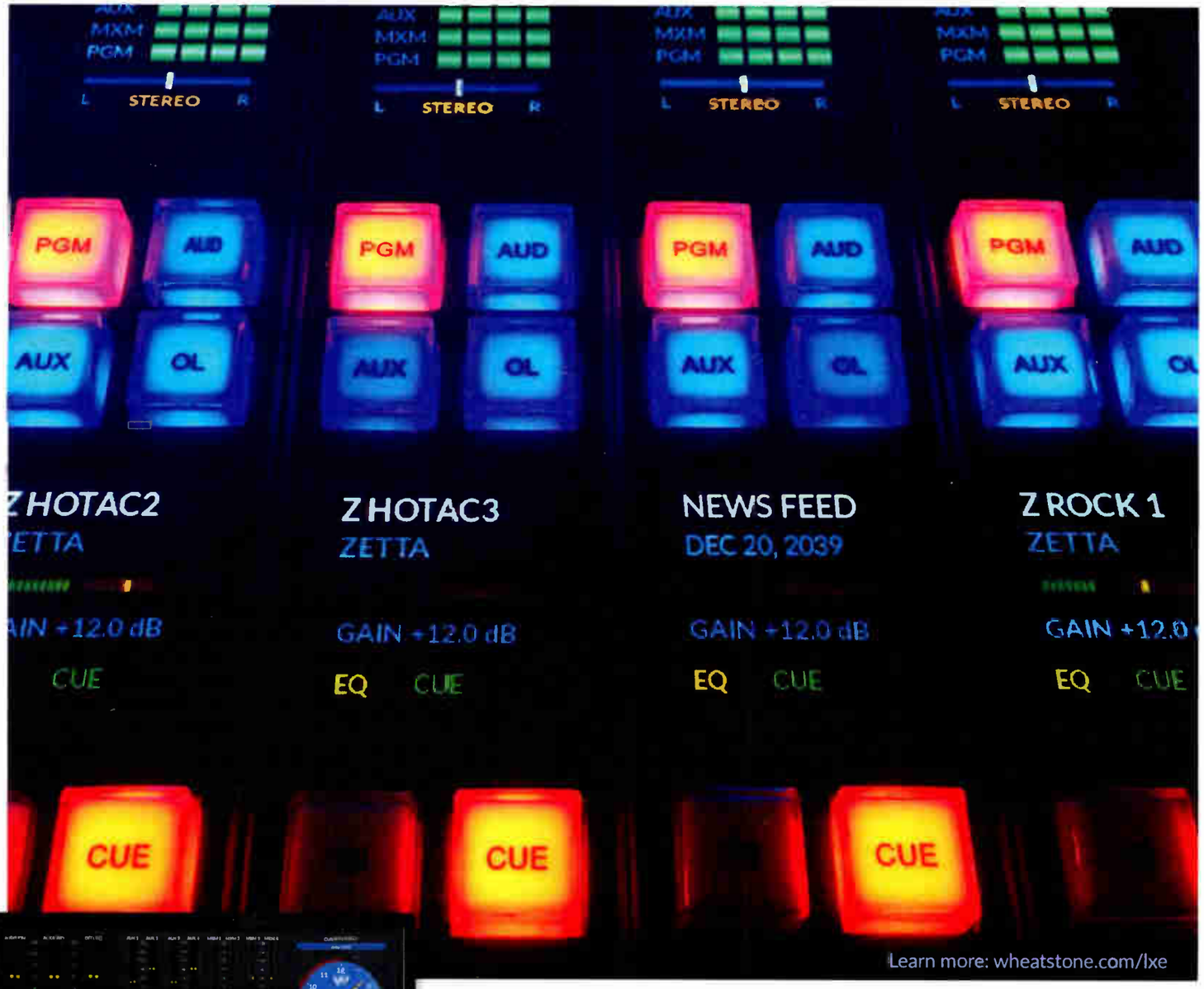
In order to be certified, participants will be required to pass two standardized tests, both a computer-based written test and a field-based practical test at a tower site. According to Schlekeway, over time, this will provide increased confidence "that the tower tech in West Virginia and the tower tech in Maine from different companies who had different training pathways will have proven that they understand and that they can perform the scope of work required of that worker category."

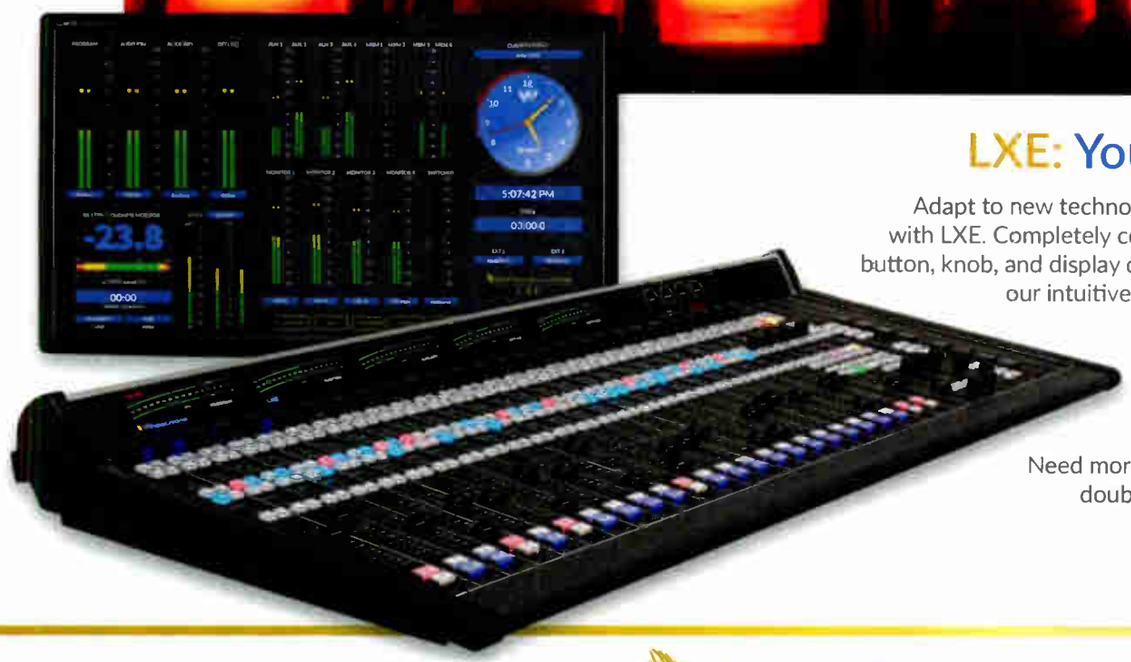
Prospective employers will be able to

*(continued on page 22)*

World Radio History

THE INTELLIGENT NETWORK




## LXE: Your Forever Console...

Adapt to new technology, new techniques, and new workflows with LXE. Completely configure/reconfigure your console – every button, knob, and display on the surface is fully programmable using our intuitive ConsoleBuilder™ GUI/scripting interface.

With ScreenBuilder™LXE, you can design dynamic custom touchscreen interfaces to augment LXE's extensive screen set. Beautiful to see and use.

Need more input faders? Enable up to four layers to double/triple/quadruple the number (up to 32) in the same footprint.

LXE is built to last in every way.

Wheatstone

phone 1.252.638-7000 | wheatstone.com | sales@wheatstone.com

World Radio History

# NATE

(continued from page 20)

verify a technician's credentials through a unique ID number, portable for the worker and comparable to an electrician's license, Schlekeway said.

Another important element of NATE's outreach efforts is increasing gender diversity; thus, the Women of NATE group was born.

"We're really trying to cultivate speaking opportunities, leadership opportunities for women," Schlekeway said. "We want to give them more of an elevated platform when NATE has events and conferences."

Another initiative, the NATE Wireless Industry Network, launched in 2016. According to Schlekeway, the WIN network is NATE's "grassroots program that's designed to promote NATE at the regional, state and local levels and facilitate communication and collaboration between all stakeholders in the wireless and broadcast industry."

WIN divvies the U.S. up into eight regions, each with its own regional ambassador. Every state also has its own liaison. Because of that, Schlekeway says it enables NATE to "have boots on the ground at any wireless or broadcast event that goes on in," and they've also hosted one-day regional conferences. WIN liaisions also "lobby legislation at the state level to provide grassroots support for legislation that's important for our industry."

The WIN program also created a "speakers bureau," which means NATE can help provide speakers who are subject matter experts.

Welcome to Bay Country BROADCAST EQUIPMENT

**Your #1 Source For Quality Used Radio Broadcast Equipment**

View our latest list of equipment on-line at:
**www.baycountry.com**

***All equipment sold with a 15 day return gurantee***

**BUY....SELL....TRADE**

7117 Olivia Rd.
Baltimore, MD 21220
Ph: 877-722-1031
**www.baycountry.com**
email: sales@baycountry.com

### TOP OF MIND IN 2018

Legislative and regulatory advocacy are key elements of NATE's leadership role for its member companies.

"By virtue of the scope of work that our member companies do and the diverse and evolving nature of the industry ... we really cast a wide net" and work with many federal agencies, Schlekeway said.

In 2018, NATE's top priority when lobbying the Federal Communications Commission is streamlining the deployment of infrastructure, Schlekeway said.

"Qualified NATE contractor companies and equipment suppliers are currently on the front lines performing essential tower work pursuant to the repack by safely deploying thousands of new antennas and wireless equipment on broadcast and cellular communications structures located across the country," Schlekeway said.

"NATE's priorities and focus during this transition will be to provide the broadcast and wireless industry workforce with the safety, standards and best practices resources needed as well as the necessary education and training to conduct their jobs in a safe and efficient manner."

Courtesy of NATE

**NATE member companies receive recognition for commitment to safety, training, accountability and reliability at NATE Unite 2017.**

> **Training and certification** are key pieces of workforce development.
>
> – Todd Schlekeway

Moreover, NATE will continue striving to expand the size of the workforce capable of working on telecommunications towers of all heights, and will ensure that those workers are properly educated and trained."

He noted that "whether macro towers or small cells," all of this is needed to densify networks, and this discussion is being held not only with agencies and on Capitol Hill, but also state capitals around the country.

Also, Schlekeway noted that the Trump administration has a "different direction they're taking OSHA, so we're building relationships with them."

NATE has had a long-standing relationship with the U.S. Department of Labor's Occupational Safety and Health Administration.

According to Schlekeway, "Each presidential administration tends to have its own unique philosophy when it comes to occupational safety and health issues and working with industry. The Trump administration appears to be much more open to forging alliances with private industry to enhance safety and health initiatives, and so NATE is currently engaging high level officials within the agency to discuss potential collaboration opportunities. NATE is looking forward to Scott Mugno's confirmation as the next Assistant Secretary of Labor—OSHA becoming official soon."

And over at the Federal Aviation Administration?

"NATE is all in on unmanned aerial drones," he said. "We have a UAS committee. There's a lot of safety and quality benefits associated with using drones at communication towers sites, so that's an issue that continues to be a priority for us."

The UAS comittee is comprised of tower contractors, licensed pilots and UAS service providers. The committee released a resource document intended to educate the wireless infrastructure industry and communications tower personnel about the safe use of the technology. It was recently updated to reflect the issuance of the UAS rule by the FAA.

Schlekeway explained that "some of the climbs involving tower inspections can be eliminated with the use of newer and better technology and techniques," including UAS.

"There are many commercial use cases associated with drones. To name just a few, NATE is currently seeing drones utilized for tower inspection purposes, for public safety purposes, accessing infrastructure damage in the aftermath of natural disasters and for close-out documentation purposes that are required," Schlekeway said.

### THE AGENDA

The association's conference NATE Unite 2018 will be held Feb. 19–22 in Nashville, Tenn. It's NATE's 23rd trade show, and Schlekeway anticipates that turnout will be good. He attributes this, in part, to timing.

"It's one of the first industry conferences that takes place every year, and so it works out great ... that first quarter is a great time to get everyone together and refocus."

"NATE Unite 2018 will consist of the most diverse lineup of sessions and speakers that the association has ever had in our 23 years of hosting a national conference. Whether it is a session conducted by the FAA or a speaker representing the FCC, our lineup will have special appeal to folks representing the radio and broadcaster community who attend," Schlekeway said.

"We're very thrilled with our keynote speaker, Lou Holtz. He's one of the premiere motivational corporate speakers in America," Schlekeway said. Holtz is a former college football coach, author and now a sought-after speaker.

Another notable name announced ahead of the show was that of U.S. Rep. Marsha Blackburn (R–Tenn.). Schlekeway described her as "a champion for our industry." Blackburn is the chair of the House subcommittee on communications and technology; she will deliver the keynote at the awards luncheon.

According to Schlekeway, the 2018 sessions reflect the multiplicity of NATE's membership.

Contractors, wireless carriers, broadcast contractors, training companies,

(continued on page 24)

World Radio History

AES67 Livewire+

# This Is Virtual Radio

## Meet Axia IP-Tablet

You've heard about it. You've read about it. Now it's time to really think about it. IP-Tablet software virtualizes monitoring and control of broadcast gear, putting your favorite console functions at your fingertips while lessening the need for physical equipment.

## Virtual Radio, Your Way

Control networked HTML5 gear, your Axia Fusion console, Omnia processors, Telos phone systems, and more. Access the internal mixer in your xNode or design layouts of Axia Pathfinder buttons. Customize to your heart's content.

## Connect to More

Designed by Livewire® partner IP-Studio, IP-Tablet is testament to the power of the Livewire network. With more than 70,000 connected devices and 100-plus partners, Livewire lets you Connect to More.

**(352) 622-7700** | **BGS.cc** | **TelosAlliance.com/Axia/IP-Tablet**

©2017 TLS Corp. Axia®. The Telos Alliance®. All Rights Reserved. F17/3/6040

BGS Broadcasters General Store

AXIA® THE TELOS ALLIANCE

World Radio History

# Proclaim18 Will Sharpen Broadcasters' Communication Tools

## Convention gathers Christian broadcasters, content producers, equipment providers and religious organizations

**RELIGIOUS BROADCASTERS**

BY JAMES CARELESS

"The NRB convention is a great crossroads for the religious broadcasting industry," said John Hamilton, president of Christian FM Radio Networks. "For Christian FM, attending NRB helps us build relationships with stations looking for compelling content. In fact, we're busy in meetings from 7 a.m. to 11 p.m."

Hamilton is one of many attending and exhibiting at NRB Proclaim18, which will be held Feb. 27 through March 2 in Nashville, Tenn. As in previous years, the 75th annual convention will bring together Christian radio/TV broadcasters, content producers, equipment providers and religious organizations from around the world.

**Christian FM staffers Bart Mazzarella and Paul Tipton on the exhibit floor at Proclaim17.**

"The NRB convention's number one contribution, in my opinion, is the exceptional networking opportunity it provides," said Jim Kirkland, director of radio for the Billy Graham Evangelistic Association (booth #273). "This helps meet our stations' thirst for ideas and solutions; something we share with general-market media."

"Iron sharpens iron," Kirkland added. "The ideas, experiences and encouragement from colleagues make us all more effective."

### A GOOD TIME FOR CHRISTIAN RADIO

Proclaim18 exhibitors who spoke with Radio World all agreed that the Christian radio industry is alive and doing quite well.

"In the U.S., the industry has never been in better shape," said Hamilton. "Listenership is growing, especially among women 25-54. What really helps is that families are tuning into our stations — whether or not they identify as Christian — because they know the content we offer is safe for kids."

"We have showed steady growth over the years here at His Productions," said Josh Brown, founder of the content creation company His Productions (booth #175). "This tells us that the health of Christian radio is very good. Otherwise, we would not see continued growth in our client base."

Internationally, Christian radio is reaching new listeners through missionary broadcast services. Exhibiting at NRB booth #506 along its sister company Mega-Voice (booth #507), Galcom International solar powered fix-tuned radios, are locked onto Christian stations worldwide. Mega-Voice produces a variety of solar, audio players, specifically Audio Bibles, avail-

(continued on page 26)

### IF YOU GO

*Who*: Christian communicators and media professionals

*When*: Feb. 27–March 2

*Where*: The Gaylord Opryland Resort, Nashville, Tenn.

*How*: http://nrbconvention.org/register

*How Much*: Member: $600; non-member: $750; member first-timer: $400; non-member first-timer: $450; daily rates and other categories also available

## NATE

(continued from page 22)

manufacturers, distributors, public safety entities and tower owners are NATE members. Attendees have a variety of roles within their respective organizations or companies — some are field personnel, others are business owners or human resources professionals or work in other administrative roles.

"It's really a very diverse set of sessions, but also one that will appeal to anyone who attends our show. [They] will always have something to go to each hour of the conference," Schlekeway said.

"If you're a business owner or a human resources professional within your company, there's a lot of good opportunities in that administrative or business track. The technical tracks are often geared towards the tower technicians and field personnel, and focus on a lot of pressing issues, not only from a safety and quality standpoint, but technology and equipment upgrades and that sort of thing...

"This year, we've added the carrier track. We have a barter agreement with the Competitive Carriers Association, so they're going to be talking a lot about the policy discussions in D.C., as it relates to our industry."

Schlekeway continued, "The carrier track of sessions will really focus on some of these discussions going on in federal and state levels that impact where this industry is headed, so we think it's vitally important to give that a spotlight and a platform at our conference."

NATE will also feature a session about complying with the Department of Transportation.

Schlekeway said, "Navigating the rules of the road for commercial motor vehicle operators" is going to "be a very impactful session because we have the former administrator of the Federal Motor Carrier Safety Administration Annette Sandberg as the speaker."

Schlekway noted that DOT compliance is a hot topic among contractors. "I get more questions on that than probably anything else."

Another federal agency will be represented with a session on "Navigating FAA's Obstruction Evaluation Process," which Schlekeway predicted will be interesting.

Also, he said NATE "thought it was important" to have a session on disaster and emergency preparedness, "especially in light of the hurricanes in Texas, Florida and then Puerto Rico."

"NATE members and contractor companies really rose to the occasion" during and after the tumultuous 2017 hurricane season. He also remarked on how well infrastructure held up in those environments and said "the infrastructure that needed to be repaired and to get the network back up [in Florida and Texas] was repaired very quickly and efficiently," which he called "a testament to our industry."

However, Schlekeway said, "Puerto Rico was a different story all together. ... There were some unique logistical challenges in terms of accessing the infrastructure... That took a lot longer, and they're still not all the way there. But the bottom line is infrastructure really fared well in those natural disasters."

Also in the technical track is a session about applying industry standards to real life work scenarios. "Several of the panelists were instrumental in writing TIA-222 revision H," which was released in October, Schlekeway said. He noted that the TIA-222 standard governs the structure of a tower, and the updates don't happen very often. It's a five-plus year process to revise a standard of that scope. The revision will have a "major impact on" the industry, he said.

Prior to the conference's official start, on Sunday, NATE will host a golf invitational. Proceeds will benefit the Tower Family Foundation, a non-profit that provides financial assistance to tower industry workers and their families in the aftermath of a work-related accident or fatality.

Additionally, Women of NATE will get in on the athletic action. On the morning of Tuesday, Feb. 20, WON will host a 5K run/walk on the grounds of the resort.

World Radio History

# RF FACILITY

## STATE OF THE ART

# UPGRADE SPECIAL

## GatesAir Flexiva 3kW (analog power) solid-state FM Transmitter
### w/ Flexiva Integrated FM Exciter

Designed for low- and high-power requirements, up to 40 kW, Flexiva has the most compact design on the market today.

- Power levels up to 3850 W Analog FM, 3100 W FM+HD
- Broadband, frequency agile design 87.5 to 108 MHz needs no tuning or adjustments
- Best-in-class power efficiency for lowest operating costs
- Compact, space-saving, 2, 3 or 4RU design
- State-of-the-art, direct-to-carrier digital modulator
- Operation at up to 1.5:1 VSWR with proportional foldback

## Orban Optimod 8700i Processor

- Xponential Loudness™ brings hyper-compressed music back to life
- Digital MPX (DMPX) 384/192 kHz AES3 digital composite output
- Exclusive "Multipath Mitigator" phase corrector reduces multipath distortion
- Dante™ Audio-Over-IP Connectivity provides a dual-redundant Ethernet connection
- Dual redundant power supplies and safety bypass relays keep you on the air

**Get a GatesAir FAX3KINT Solid State FM Transmitter and an Orban 8700i Processor for only**

# $24,595.

**Total Value: $51,990.**

Another great deal from SCMS!

## call 1-800-438-6040

sales@scmsinc.com | www.scmsinc.com

SCMS INC.
BROADCAST EQUIPMENT SOLUTIONS

**Western Mountain States** 303-674-6566
**Central** 315-623-7655
**Southern Gulf** 866-205-6905
**North-East** 315-623-7655
**Pro Audio/South-East** 877-640-8205
**Latin America** 760-650-1427
**West Coast** 818-398-7314
**North Central** 573-478-3737
**Mid-West** 844-436-4327
**Mid-South** 877-391-2650
**Bradley Division** 800-732-7665

World Radio History

# NRB

(continued from page 24)

able in thousands of languages.

Even after on-site missionaries have left new converts, "our solar radios stay behind to keep them connected to the Word of God," said Jennifer Sheldrick, development coordinator at Galcom International.

On the financial side, Christian broadcasters rely on their listeners/viewers for financial support.

"From a revenue perspective, people who donate are answering the call to do so generously," said Kirkland. "Those who wanted to give but were pensive about doing so in recent years are giving with confidence. Donor rolls are growing."

The bottom line: Religious broadcasters "are generally doing better than normal commercial radio at this time, as they do not depend on advertising as much," said Bob Cauthen, president of broadcast equipment supplier SCMS (booth #417).

## CHALLENGES AND OPPORTUNITIES

The fact that Christian radio is doing well doesn't mean that the industry doesn't have challenges. It does, and many of these issues will come up on the show floor, during Proclaim18's educational sessions and within numerous speeches by religious, political and entertainment luminaries.

Among the expected speakers are Precept Ministries International Co-Founder Kay Arthur, U.S. Vice President Mike Pence, and celebrities such as Jim Caviezel (Jon Reese in CBS' "Person of Interest" TV series) and actor Dennis Quaid.

One topic to be tackled is "Fundraising in the Age of Social Media," in which people flit like moths from one distraction to another.

"In the past, you could do a year's fundraising in three to four days because listeners would stay tuned in and be receptive," said Christian FM's Hamilton. "These days, people's attention spans are much shorter — maybe 12 minutes at a time — so you need more days and more repetitive appeals to convince them to give."

Another issue is the lack of on-site technical support at smaller Christian radio stations; a dilemma with which

Jim Kirkland

their secular broadcast cousins can sympathize.

"Many of the smaller religious stations do not have full-time engineers," said Cauthen. Fortunately, "they will be able to learn a lot about the current technology and new products at NRB."

A third challenge is human resources; namely "identifying potential talent and nurturing them," said Kirkland.

The hunt for new talent certainly applies to programming/content, he noted, but it also extends to "back of the house" talent to effectively manage donor relations, finance/ administration and engineering. "We share this dearth in the talent ranks with our general-market colleagues," he said.

This said, Kirkland believes that Christian media has invested well in talent over the years; "debatably better than general-market radio over the past decade. But there's no time to rest on laurels," he said. When it comes to finding new blood, "there aren't any to rest upon."

Despite these challenges, the exhibitors we spoke with are eager to meet colleagues and clients and optimistic about the state of Christian radio in general.

"To paraphrase the great UCLA basketball coach John Wooden, a fundamental of greatness was to not watch the scoreboard: Rather, play the game, focus on execution, and the scoreboard will take care of itself," said Kirkland. "The translation of 'play the game' and 'execution' for a Christian station is staying focused on one's particular audience and the special calling, or manner, to share the gospel of Jesus Christ that they're called upon to deliver."

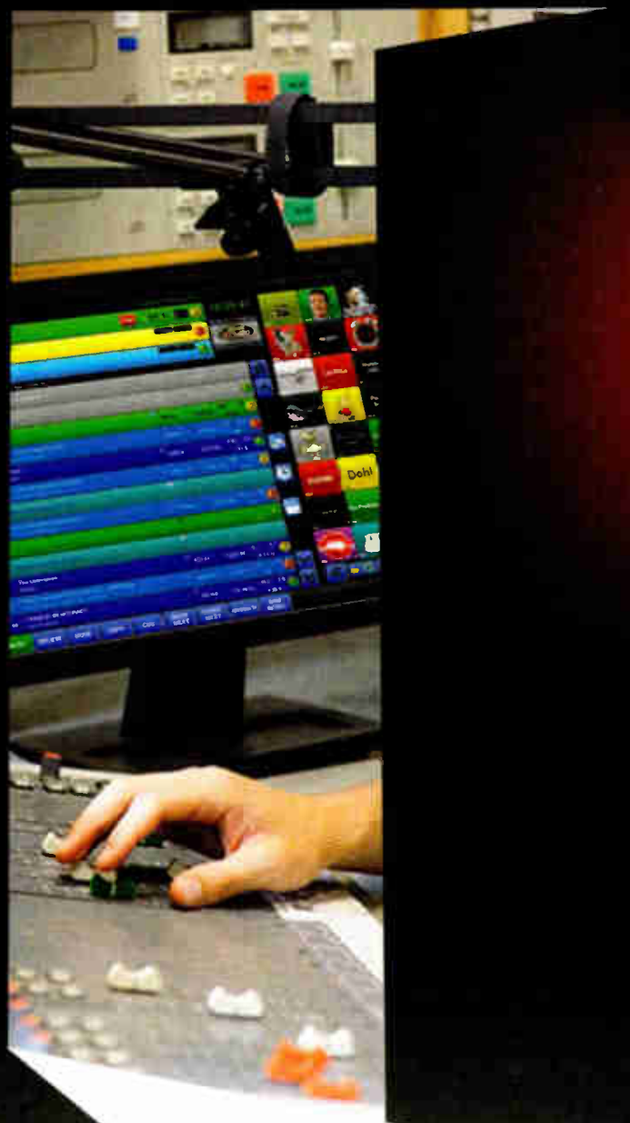
**Iron sharpens iron.** The ideas, experiences and encouragement from colleagues makes us all more effective.

– Jim Kirkland

Galcom radios help religious broadcasters reach those far away.

World Radio History

# Open the door to *your* possibilities!



Powerful, state-of the-art automation with the flexibility to grow with you...

- The power of OPX in one stand-alone computer
- Easy to learn
- The power to handle the largest audio libraries
- Satellite and live programming
- Additional stations
- Remote voicetracking
- Remote control

OPX ONE

**Call (888) 274-8721**
(888) BSI-USA-1
or email us at sales@bsiusa.com

World Radio History

# "Ask Noah Show" Chooses Tieline ViA for Global Remotes

## Reliable broadcast system fits in a carry case

**USERREPORT**

BY NOAH J. CHELLIAH
Host
"Ask Noah Show"

**GRAND FORKS, N.D.** — In 2017, the "Linux Action Show," the longest-running Linux podcast, ended. As the former host, I knew I wanted to continue creating content about Linux and open-source technologies. I decided to approach a local LPFM station with an idea: a call-in talk radio show focused on these topics that I would host.

In just a few weeks the "Ask Noah Show" was born and had an air date, but there was one big problem: I still had my company to run, and that meant frequently being on the road or flying all over the country, sometimes with little or no notice.

### ON AIR

I needed a broadcast system that would fit in a carry on case, with low latency to facilitate call-ins, and (most important) reliable high-quality audio. It needed to be something I could have up and running in 10 minutes. I knew what I wanted; I just didn't know if it existed.

The answer fell into my lap while doing my day job. A hotel was facilitating another radio station's talent to do a remote broadcast from the hotel. The station's engineer sent me an email with the firewall and router modifications they wanted. As I watched how simply and effectively that radio host pulled out his Tieline Commander G3, plugged a headset in, and went live in under two minutes, I knew I had to learn more about Tieline.

Later that night, I was on my computer doing research about the company when I noticed a link to try the gear for free. Up until this point, I had assumed that hardware IP codecs were the same as Ipdtl or SourceConnect Now. (I was wrong.) A few days later, I had codecs in our studio connected to our console, with our show going over it. I was sold. I sent the audio sample to my producer and spent the next 15 minutes trying to convince him that, yes, I was in fact outside the studio. I was remote. That's what sold me.

I'm a sucker for high quality; I can hear the quality difference between the Tieline system and the software codecs. It's really a curse, once you hear how pristine the audio is from the Tieline products. I sat up at night with my wife and tried to convince myself that Skype was "good enough." I tried to convince myself that we could live with one of the many WebRTC software-based codecs. Once you hear the quality of the Tieline, it's a splinter in the mind and you can never go back.

### PURCHASING

The truth is the purchase decision for an expensive piece of gear like that goes a lot further than making a good product. The support team at Tieline has been fantastic. Jacob Daniluck patiently answered my numerous emails and phone calls. He and I must have gone through 10 scenarios until I finally landed on purchasing the ViA.

With redundant Ethernet ports there is never a concern about a reliable connection at one of the multiple Linux events I broadcast from. During the summer, the built-in Wi-Fi chipset lets me connect to a Wi-Fi hotspot and broadcast the show from my RV at the lake, instead of having to drive two and a half hours into the studio.

The built-in compressor and audio processing means my entire setup consists of a mic, a pair of headphones and the ViA in a Pelican 1510 case.

I've traveled all over the world. I've done remote broadcasts from Sydney, Tokyo and Amsterdam, as well as all over the US. The most challenging broadcasts, though, are from my lake retreat. If you put your phone at just the right angle you can get LTE, but to say that it's spotty is a gross understatement. The ViA and Tieline's Music PLUS

### 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 **bmoss@nbmedia.com**.

World Radio History

codec handle it like a champ. I've done hours of broadcasting with some of the worst internet anywhere in the country and the studio has never had to drop me. My Tieline ViA keeps me on the air; it's that simple.

After my initial success with the Tieline system, KEQQ(LP) purchased a Bridge-IT XTRA and a Commander G3 for all of their on-air personalities to remote broadcast as well. The "Ask Noah Show" is now broadcast live from Altispeed Technologies in a studio that I handcrafted with my team.

The LPFM station also purchased a Bridge-IT for my custom studio to connect to the radio station. I still do about half of my broadcasting using the Tieline ViA, either on-location or my hotel room when traveling.

My listeners have no idea I'm remote unless I tell them. We have actually used headsets a few times just as a style thing so people can tell we are in fact on location. My audience is a technically savvy crowd. You just can't have the guy telling you what technology is best using second class gear to do the show.

The "Ask Noah Show" airs Tuesdays at 6 p.m. (CST) and is streamed live on the internet at *www.asknoahshow.com*. The show continues to grow, but it would have likely never gotten off the ground if it weren't for my mobile broadcast kit with the Tieline ViA at the heart.

You can see me talk about Tieline's ViA remote codec at *https://youtu.be/6CkKkuIJAe8*.

**For information, contact Dawn Shewmaker at Tieline USA in Indiana at 1-317-845-8000 or visit www.tieline.com.**

## TECHUPDATE

# BLU BY DIGIGRAM SIMPLIFIES REMOTE CONTRIBUTIONS

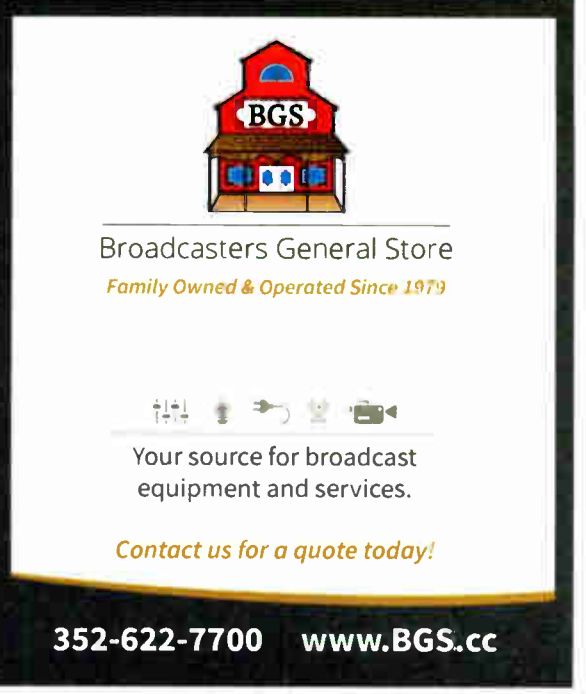
Digigram says blu by Digigram makes it simple for professional broadcast studios to establish several simultaneous, quality communications through a user portal with any remote contributor who has a web browser, traditional SIP codec or telephone.

The company says the platform allows easy management of multiplex audio contributions, and can manage up to six contributors simultaneously from up to six locations.

Blu by Digigram is a plug-and-play concept that doesn't need a specific installation or application. It gives users access to standard studio functions including talkback, mix-minus and monitoring.

With its automatic recording, audio contributions are recorded in the cloud and then available for download. In addition, says Digigram, as an SaaS, blu can deliver "uncompromising quality" through redundant and encrypted connections.

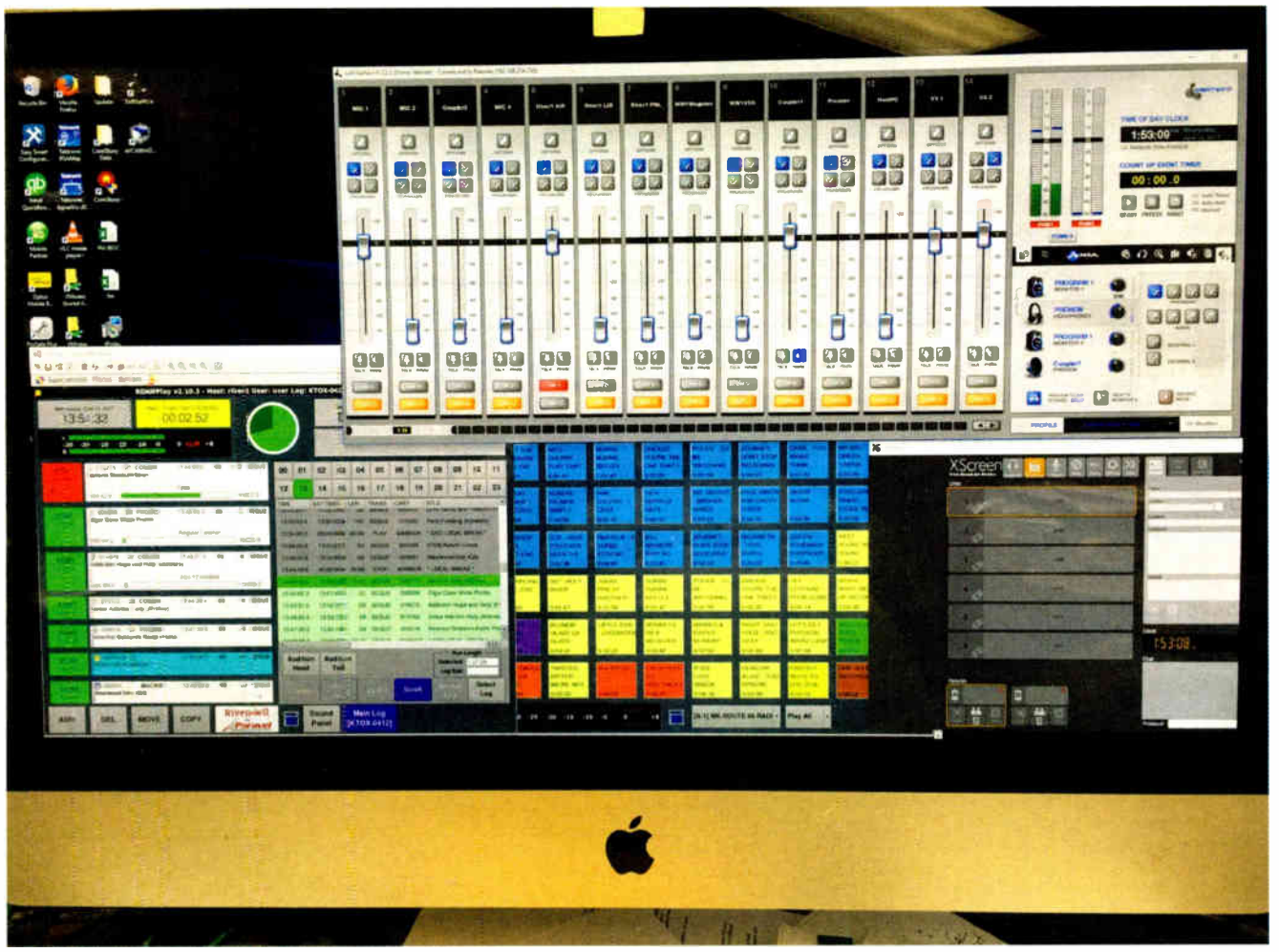
**For information, contact Digigram/Point Source Audio in California at 1-415-226-1122 or visit www.point-sourceaudio.com or www.digigram.com.**




World Radio History

# Success on Remote at Rubin Broadcasting

## Telos gear paves the path for easy operation



## USERREPORT

BY STEVE RUBIN
CEO
Rubin Broadcasting Inc.

**SAN JOSE, CALIF.** — At Rubin Broadcasting, I run three California stations — KTOX(AM) 1340 and K281CR 104.1 FM in Needles, Calif./Bullhead City, Ariz./Laughlin, Nev.; KUNK(FM)/92.7 The Skunk in Mendocino/Willits/Ukiah, Calif.; and KTOX(FM) 98.1 in Wofford Heights/Bakersfield/Porterville, Calif. — from my home in San Jose, Calif.

We do remote broadcasts for high school football games, as well as an occasional talk program from a custom-

er location. I also offer a range of services for the broadcast community including studio builds/maintenance, wireless studio to transmitter links, remote talent integration and tower services.

### MULTITALENTED

We have multiple Telos Z/IP One IP codecs, a Telos VX talk show system and a license of the Z/IPStream 9/X2 streaming software as part of our system to help make our remote broadcasts and streams sound their best, and — most important — be easier to manage. We use a pair of Z/IP Ones as an STL for our Mendocino FM station by sending the IP signal over a dedicated T1 line from the studio to the transmitter, with a backup over a cell modem. The 9/X2 feeds our internet stream, and another Z/IP One is used for remotes. We use the VX primarily in our Needles talk station for call-in programs. We also have used the VX to terminate G.722 calls from iPhones for remotes.

For our remote broadcasts, I use dedicated fixed lines on the VX when I am remotely board operating from home. I'll use one fixed line as the cue bus, then I set up a feed to the Axia Fusion console, so I can use the talkback on the board, which allows me to talk to the person doing the remote. Another fixed line is used for program, and all of this is done over SIP/G.722 and softphones. The VX solves most of my remote audio routing issues since I can drop fixed lines for anything to remotely monitor or control.

One thing we are just starting to play with is remote voice-tracking using SIP with remote talent. We are using Paravel Systems Rivendell automation with the Livewire software driver. The talent simply dials into the VX with their soft client of choice and Rivendell just treats it like a local sound card. They can then remotely control Rivendell using VNC.

I'm looking at adding a Telos Zephyr iPort Plus multicodec gateway at each of our four transmitters, and two studio sites to give me a little more flexibility. Overall, with a painless installation and smooth operation, the Telos remote products have worked out flawlessly.

**For information, contact Cam Eicher at The Telos Alliance in Ohio at 1-216-241-7225 or visit www.telosalliance.com.**

## TECHUPDATE

### RNE USES AEQ CODECS FOR REMOTES

Spanish public broadcaster Radio Nacional de España is relying on AEQ equipment for IP connectivity.

Headquartered in Madrid and with 16 provincial and some 40 regional and local production centers, the media house airs four national programs in addition to a Catalonian-language program and transmits via terrestrial broadcasting, satellite and the internet.

According to AEQ, in 2017 RNE began renovating its infrastructure in an effort to shift completely to IP connectivity and away from ISDN technology. As part of the move, RNE recently purchased 40 AEQ Phoenix Alio codecs and 15 AEQ Venus 3 audio codecs to ensure streamlined IP.

AEQ says the Phoenix Alio IP audio codec offers features including a carrying case adapted for outdoor usage and the need for reporters on assignment to manage the codecs manually at their remote location or remotely via dedicated software.

It highlights Alio for ease of connectivity, advanced control functionality, a second optional stereo channel and a mixer for up to four mic inputs with phantom power supply and a 12 V power source using external AC adapter.

AEQ audio codecs are compatible with the EBU-Tech 3326 standard for third-party audio codecs; users can connect AEQ equipment to gear from other manufacturers. AEQ adds that the AEQ Venus 3 simplifies the establishment of connections thanks to the proprietary SmartRTP technology.

**For information, contact AEQ Broadcast International in Florida at 1-800-728-0536 or visit www.aeqbroadcast.com.**

World Radio History

# TECHUPDATES

## APT MOBILIZES SURESTREAM TECHNOLOGY FOR REMOTES

APT/WorldCast Systems says its new Mobile SureStreamer can be used to maximize the uptime and broadcast quality of existing hardware or software codecs over 3G/4G networks.

The system was designed around SureStream, APT's redundant-streaming technology, which the company says has been deployed in thousands of studio-transmitter links. APT says it employs multipath streaming over two or more redundant networks to deliver a solid connection similar to that offered by traditional synchronous links such as T1.

According to APT, the main benefit of SureStream is its ability to achieve the performance and reliability of a high-grade broadcast link for much lower operational cost.

Mobile SureStreamer offers these benefits to remote broadcasters in a portable, lightweight carry bag. It will work with app-based software codecs on a phone and hardware codecs to provide a direct connection to any SureStream-enabled decoder.

The system can be preconfigured in the studio so nontechnical personnel and talent in the field can connect on start-up. Four universal Ethernet ports allow connection to any type of network access including the two 3G/4G modems that are supplied with the Mobile SureStreamer. Also included is a portable three-hour battery pack with backup and swap-out options.

The company said Mobile SureStreamer is not restricted to audio use but can be deployed to protect UDP video and live media streams using SureStream.

**For information, contact APT/WorldCast Systems in Florida at 1-305-809-0374 or visit www.worldcastsystems.com.**

## TASCAM OFFERS LAV/RECORDER PACKAGE

Tascam's DR-10L is a very compact digital recorder/ lavalier microphone combo designed for mobile and remote applications.

The DR-10L offers dual recording, which captures two files simultaneously at different levels. With dual recording, the lower-level recording serves as a safety track in case a sudden jump in audio level causes clipping distortion on the high-level track. The company says this is one of several level-management features that ensure a clean recording, even in challenging field conditions; others include automatic level control, low-cut filter and a built-in limiter.

It can capture up to 24-bit/48 kHz audio and records standard WAV files (compatible with BWF format) to microSD or SDHC card. Its clock function is convenient for editing and searching, and a timed track-incrementing function can create new files at regular intervals (about every 15 minutes) during recording.

A micro USB B port enables easy data exchange with computers. It operates for up to 10 hours on one AAA alkaline battery and weighs only 63 grams (2.2 ounces), including battery.

The DR-10LW is a white version (suitable for weddings, the company notes!). It comes with a professional-quality lavalier microphone. A black lav mic is available, TM-10LB. Both mics are equipped with Sennheiser-type connectors, making them compatible with a range of third-party equipment and accessories.

**For information, contact Tascam in California at 1-323-726-0303 or visit www.tascam.com.**

## AETA SCOOPTEAM ALLOWS FOR FLEXIBLE SPORTS COVERAGE

AETA Audio System offers the ScoopTeam commentary unit for sports remote coverage applications.

The system features a double mono codec for live audio transmission of one or two audio signals of up to 20 kHz and offers a maximum of four commentary positions and 11 audio inputs.

According to AETA, while ScoopTeam is suitable for use with IP networks, it can also be used with ISDN lines. Alternative transmission modes are available as options; these include AoIP via 3G/4G, Wi-Fi via USB and mobile voice (including HD Voice).

The premium version allows users to transmit via a Ravenna interface (AES67, Dante-compatible) and offers two additional analog inputs and one AES input.

AETA's new Remote Access can be integrated into ScoopTeam. The optional feature allows operators to control their codec remotely and in real time via IP, including 4G mobile networks, through an HTML web server.

In addition, the new MyScoopTeam application lets users control ScoopTeam through its graphic interface, directly from a laptop. MyScoopTeam is available in LAN or remote (IP) edition.

**For information, contact AETA Audio Systems in France at +33-1-41-36-12-00 or visit www.aeta-audio.com.**

World Radio History

# BROADCAST EQUIPMENT EXCHANGE

Submit your listings to: minderrieden@nbmedia.com

## ACOUSTICS

## ANTENNAS/ TOWERS/CABLES

### WANT TO SELL

CCA FM8000G Trans 107.9, great cond; 4-Bay Jampro antenna w/deicers; 3-bay Shively antenna FM. D Brockman, 606-965-3436.

## AUDIO PROCESSING (INCLUDES ON-AIR)

### WANT TO BUY

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST - 214 738-7873 or sixtiesradio@yahoo.com.

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

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; collection of very old 78s dating back to 1904; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

### WANT TO BUY

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

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

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 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.

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 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.

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

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

# CONSULTANTS

Doug Vernier
Telecommunication Consultants
Broadcast Engineering Consulting
AM/FM/TV/LPTV/DTV
Custom mapping service
Frequency searches
Propagation prediction
FCC application preparation
V Soft Communications
Software for your PC
(800) 743-3684
www.v-soft.com


## MUSIC LIBRARY


ROYALTY FREE MUSIC
• Huge Library • 99 Year Lifetime Blanket
Call for Special Radio Bulk Download Pricing
CSSMusic.com 800-468-6874 CSS MUSIC


## 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.

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

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

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

## TEST EQUIPMENT


A Real Turn-ON
(and OFF)

The DM Engineering Solid State Relay Pack is a self contained AC line switching device designed to operate "ON AIR" or "RECORDING" studio signs, or other incandescent lamp, spotlamp or floodlamp applications using a normally open contact closure, logic low, and / or a low DC input voltage to control the AC output. The DC control input voltage is not polarity sensitive.

**The Solid State Relay Pack has the following features:**

* Control input voltage range of 5-30 VDC. (Input wires may be connected without regard to polarity), and / or: a Normally Open contact closure or logic low
* Internally fused output with capabilities up to 5 amps @ 125 VAC, and supplied with NEMA standard "U" ground 3 pin outlet connector.
* 6 ft. input AC cord with NEMA standard "U" ground 3 pin plug
* Eurostyle screw terminal DC and N.O. contact/logic low control input connector for secure connection
* Zero-crossing technology is employed to eliminate noise
* Directly compatable with most DME products

ONLY $125.00

*Please visit us on the web or contact your favorite distributor for details on the Studio Solid State Relay Pack, and to see many other innovative products for the broadcaster.*

WWW.DMENGINEERING.COM

DM Engineering
2174 Chandler St. Camarillo, CA 93010
805-987-7881 800-249-0487



Buying used equipment?
Selling used equipment?
You're in the right place!


## STATIONS

### WANT TO SELL

(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.

# EMPLOYMENT

## POSITIONS WANTED

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 909-446-6820, mitchellrakoff@yahoo.com.

Good On-air presence, or behind scenes support positions, plus digital production abilities. Catches on quickly. Enthusiastic team player. Industrious, determined, extremely dependable. Kevin, 419-230-6417 or abskevin6640@yahoo.com.

World Radio History

# Rebuilt Power Tubes 1/2 the cost of New!

ECONCO

Se Habla Español

Se Habla Español

ECONCO

Tel: 800-532-6626 Web: www.econco.com
Intl +1-530-662-7553 Fax: +1-530-666-7760

## TRANSMITTERS/EXCITERS/TRANSLATORS

## TRANSCOM CORPORATION

*Serving the Broadcast Industry Since 1978*

**Transmitters and Broadcast Equipment for Radio & Television**

Used FM Transmitters

| | | |
|---|---|---|
| 55W | 2000 | Harris DIGIT CD |
| 3.5 KW | 2000 | Harris Z3.5CD, solid-state |
| 1.3/3.5 KW | 2006 | Harris Z6HD- Tri-Mode HD |
| 5KW | 1988 | BE FM5A |
| 10 KW | 1988 | BE FM10A, Dual 5 KW |
| 10 KW | 1998 | Nautel FM10, Solid State |
| 10 KW | 2004 | Harris Z10, Solid State |
| 20 KW | 1990 | Continental 816R2, SS IPA |
| 35 KW | 1991 | BE FM35B |

Used AM Transmitters

| | | |
|---|---|---|
| 5 KW | 2003 | BE AM5E |
| 10 kW | 2001 | Nautel XL12, solid-state |
| 60 kW | 2007 | Nautel XL60 |

Exciters & Miscellaneous Equipment

Exciters->DIGIT, CEB02B, BE FX50
Bird Model 8932, 10 kW air-cooled RF Load
Harris N + 1 Controller

Used TV Transmitters DTV & ATV

**Rohde & Schwarz**Harris Maxiva**

*Please visit our website, www.fmamtv.com, for additional listings.*

BE

Continental Electronics

HARRIS nautel

CROWN BROADCAST

New TV Transmitters- DTV & ATV

Anywave, OMB, and Technalogix

**1KW Special w/4 channel encoder**

VHF and UHF (10 W to 10 KW)

TV Antennas
TV STL

800-441-8454 • 215-938-7304 • FAX: +1-215-938-7361

www.fmamtv.com • E-mail: transcom@fmamtv.com

RETUNING & TESTING AVAILABLE - CALL US FOR A QUOTE!

## Broadcast Equipment Exchange

"BEE" in the habit of selling your used equipment here!

Call Michele for details at 212-378-0400 ext. 523

## DISTRIBUTOR DIRECTORY

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

CORNELL-DUBILIER MICA CAPACITORS
FROM STOCK
JENNINGS VACUUM CAPACITORS
FROM STOCK
HIGH ENERGY CERAMIC CAPACITORS
SURCOM ASSOCIATES
5674 El Camino Real, Suite K
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4758
e-mail: link@surcom.com web: www.surcom.com

TUNWALL RADIO
*SWITCH AND TRANSMITTER CONTROLLERS*

AM/FM/MULTI-SWITCH AND CUSTOM DESIGNS
330.995.9642 www.tunwallradio.com

**SPACE IS AVAILABLE!**
To advertise, call
212-378-0400 ext. 523

AM Ground Systems Co.

Complete Ground System Construction, Evaluation and Repair Services

www.amgroundsystems.com
866-227-2346
866-22RADIO
inforwee@amgroundsystems.com

**WANT TO SELL**

Armstrong X1000B AM xmtr, 1000 watts, we will pay to have freq changed & be in 100% working order, certified from factory, $9295. 423-458-5563 or hotnewstalkradio@gmail.com.

(2) BE FMi 201 FM/HD xmtrs w/FXi250 & FSi10 exciters, xlnt cond, just removed from service, make offer. 513-289-6277 or towerjimsk@gmail.com.

ADVERTISE YOUR EMPLOYMENT AD ON OUR WEBSITE FOR ONLY $2 PER WORD!

ADS GET POSTED THE NEXT BUSINESS DAY AND WILL RUN FOR A FULL TWO WEEKS!

COMBINE THIS WITH AN AD IN OUR RADIO WORLD NEWSPAPER EMPLOYMENT SECTION AND REALLY COVER THE BROADCAST INDUSTRY AND THEN SOME!

www.radioworld.com

Call Michele Inderrieden for all the details at

212-378-0400 ext. 523
minderrieden@nbmedia.com


World Radio History

# GEP Is More Than Just a Phrase

## Good Engineering Practice is a discipline you should rehearse and implement regularly

**COMMENTARY**

BY FRANK FOTI

*The author is executive chairman of the Telos Alliance.*

Many years ago, there was a green "pup" of a broadcast engineer who had just been hired by the top FM and AM radio stations in Cleveland, Ohio. A dream job, at that time, and it didn't take long for this youngster to find out the ropes of the broadcast engineering profession.

Thinkstock/Rawpixel

Aside from knowing the basics of studio/transmitter maintenance, and equipment troubleshooting, this young lad had a lot to learn. Fortunately, he had a great mentor in the late Jim Somich, who took this fellow left-handed kid under his wing, in hopes he'd eventually amount to something. Aside from Jim giving him the nickname "FoeTie," seems the kid did alright!

Along the journey of trying to understand what it takes to master the art of broadcast engineering, the phrase "Good Engineering Practice" kept appearing in various procedures, manuals, company technical policies and articles. I wasn't quite sure what this meant, and many assumptions were drawn about it.

What did Good Engineering Practice entail?

Aside from having a great resource and guidance, from my trusted colleague, I was able to acquire the knowledge through reading and by way of in-the-field experience. This enabled me to ascertain what Good Engineering Practice was all about, and more importantly, a discipline by which to live by it.

### PAY IT FORWARD

Today, it seems, the term Good Engineering Practice has been lost within the community, or at least is significantly misunderstood. Our industry has not done enough for those entering, or migrating upward in, the broadcast engineering field. That is the purpose of this article — it is my intention to hopefully "pay it forward" for those in our business, just as Jim did for me.

It would be helpful to delve into the often-used concept of "Good Engineering Practice" that we encounter among engineering circles in the texts of documents such as regulations, technical specifications and standards.

Let's try to make sense of this phrase that, at first sight, appears a bit obscure. "Engineering," according to the Accreditation Board for Engineering and Technology (*www.abet.org*), is described in the following terms:

*"Engineering is the profession in which a knowledge of mathematics and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind."*

Taking that definition as the starting point, we can arrive at basic requisite principles for engineering applications:

1. It is necessary to have work performed by employing theoretical and applied methods to assimilate information on mathematical and natural sciences.
2. It is necessary to employ rational thought upon the information gathered.
3. The objective is to develop best practices by using this information for the establishment of methods that substantiate information in a repeatable manner.
4. It is crucial that findings obtained by the use of such methods convey benefit to the industry.

Having described the required attributes for implementation, loyalty to the application process and identification of moral values, we may commence on the ultimate description of Good Engineering Practice.

The IEEE, before granting membership to candidate engineers, requires the undertaking of certain ethical rules to be observed in the execution of their profession. Those rules are:

1. To accept responsibility in making engineering decisions consistent with the safety, health and welfare of the public and to disclose — promptly — factors that might endanger the public or the environment;
2. To avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. To be honest and realistic in stating claims or estimates based on available data;
4. To improve the understanding of technology, its appropriate application and potential consequences;
5. To maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience or after full disclosure of pertinent limitations;
6. To seek, accept and offer honest criticism of technical work, to acknowledge and correct errors and to credit properly the contributions of others;
7. To treat fairly all persons regardless of such factors as race, religion, gender, disability, age or national origin;
8. To avoid injuring others, their property, reputation or employment by false or malicious action;
9. To assist colleagues and coworkers in their professional development and to support them in following this code of ethics.

*Approved by the IEEE Board of Directors, August 1990; see* https://www.ieee.org/index.

The idea that constitutes the foundation of good engineering is good science. In fact, there is no conflict of concepts between good science and good engineering. What is scientifically good is also good for engineering. No example can be cited in the history of science where a scientifically sound idea has failed in engineering practice.

Good science reveals itself in the disclosure of the secrets of nature, and in turn, those revelations are used in resolving engineering problems. Science and engineering may be developed through empiricism. New discoveries generally originate from empiricism and experimentation.

Good broadcast engineering practices, just like doctrinal precedents in law, are capable of setting foundations and standards through organizations, such as the Society of Broadcast Engineers, National Association of Broadcasters, Audio Engineering Society, International Telecommunication Union and the Institute of Electrical and Electronics Engineers, to name a few.

Now that we have touched upon theory and basics of the subject, let's turn to implementation. Good engineering is initiated by a good description of anticipated problems or requirements. This is half of the work. Identification, analysis and solution of the problems, which are expressed in the best possible, verifiable, substantiated and repeatable action, in writing, is the realization of good engineering practice.

In everyday life, how does one apply this in the broadcast environment? The following are some examples:

### MASTER THE BASICS

This may sound obvious, but it's worth repeating: Obtaining a solid understanding of the technical landscape is practically money in your pocket.

I fully understand we live in a fast-paced world, and time is precious, but the sophistication of technology today can create the possible misunderstand-

(continued on page 38)

World Radio History

# How Would You Diagnose This Signal Loss?

## Remember not to jump to conclusions when troubleshooting

**COMMENTARY**

BY STEVE EBERHART

*The author is principal of Eberhart Broadcasting in Dallas, Texas.*

Our station KGAF in Gainesville, Texas, is a 1,200-watt AM daytime and 250-watt nighttime non-directional station.

Our upgrade to 1,200 watts a year or so ago was a big improvement for us expanding our reach quite a bit from our previous 250 watts day and night. Indeed, our signal now reached to my home in Dallas, some 70 miles away.

Recently, I noticed our station was not being received as well as it had before as I drove around north Dallas. In fact, I almost couldn't hear it at all. Even in Denton, only 30 miles from our tower, I was having trouble picking up the station. I could hear all of the Dallas stations just fine, loud and clear.

Concerned, during my next day at the radio station I went to the transmitter and checked to be sure our power output was correct. It was dead on 1,200 watts. Zero reflective. Modulation was peaking 95–98-percent negative, 100–120-percent positive — clearly plenty loud.

Next, I went to the tower shack and checked the base current reading. It was exactly correct, as it had been when we initially set everything up a year ago with the upgrade.

I kept scratching my head, trying to figure out why our signal was so poor. It came out great within the county we are in, but almost the moment I drove out of the county, it dropped to almost nothing.

A large new development is being built in what used to be a large open field next to our transmitter site. They are unearthing an extensive area, and I feared that perhaps we had buried ground cables there, and they might have disrupted them or something. Unlikely as it might sound, back in 1947, when the station originally went on the air, who knows what might have been done.

A new ground system was put in in the mid-1980s, but again, it's really anyone's guess how it might have been done. As is often the case, we found numerous curious technical issues in our plant when we did the recent upgrade, and I can assure you nothing would surprise us at this point!

It was the only thing different about anything near our transmitter site, and I became obsessed, wondering how on earth (bad pun) that could so adversely affect our ground system as to cause our signal to weaken.

Every knowledgeable person I talked to assured me that was not likely the cause, as ground systems wouldn't normally extend that far — and surely not on adjoining property owned by others. I agreed it made little sense, but the dirt clearing next door was literally the only thing different anywhere near the site.

I asked if disrupting earth near a ground/tower site could cause an issue. Again, no one believed it could.

One thing I've learned about engineering issues is that most can tell you what likely is or isn't the issue when problems arise, but most agree that they can't and won't rule out anything when it comes to this kind of stuff. Just because one has never heard of it happening or seen it, doesn't mean it couldn't possibly be so.

I left the station still bewildered, wondering why the station's signal is dropping off in areas that only weeks ago it was booming into.

I stopped for gas on the way back to Dallas from Gainesville. As I stood there, filling up, I looked over the top of my car and noticed … my car's radio antenna was missing! A true OMG moment! Are you kidding me?! Apparently, someone helped themselves to the little foot-long radio antenna on the roof of my car.

I felt like such an idiot. I had been fearing some expensive engineering fix on the horizon and all along my stupid car's antenna was missing.

I could get all of the Dallas stations because most of them are 50,000-watt blow torches that obviously didn't require an antenna to hear loud and clear. My 1,200 watts with no antenna got me about 25 miles without an antenna.

I stopped at the local car dealership and replaced the screw-on antenna, hopped in the car and *boom!* KGAF loud and clear in north Dallas.

Those little antennas aren't cheap ($60), but the removal of the stress the past two weeks produced was priceless.

Word to the wise: Before you think your transmitter or tower is failing, check to see if your car still has its antenna.

**READER'SFORUM**

## REMEMBERING PERRY URY

The late Perry Ury wasn't an engineer, but he was a great leader and mentor of mine and for many others. A lot of people in our industry knew and loved him.

He was GM of RKO General station WGMS in the D.C. market but was moved to Boston, where he took WNAC to WRKO and from an old-line network-type station to "The Big 68" Bill Drake Top 40 format and turned Boston radio on its ear.

Later, he moved to WTIC in Hartford, Conn., where he set new standards in programming, community involvement and most of all sales and profits for its owner, Chase Broadcasting.

He was one of my few mentors in the business. I met him in 1967 through broadcast management classes at Emerson College in Boston, where he was a frequent guest lecturer. Perry was GM of WRKO at the time and considered a rock star by most of the students.

While he had many messages in his lectures, he offered one that really stuck: Once a second radio station came to a market, "Pick a format, choose your audience target and super-serve them — don't ever try to be all things to all people." I used that lesson throughout my entire 30-year station ownership career.

When I went to work for Harris in 1976, Perry was working in Hartford. I called him and said, "You probably don't remember me, but I sure remember you." He said, "Really? How?" I said "Larry Holcomb, Emerson College." Perry replied, "You Emerson people are coming out of the woodwork. Everywhere I go, I run into one of you."

**A selfie of Hal Kneller and Perry Ury, taken in Ury's yard in Sarasota, Fla., a few years ago.**

I sold him some broadcast equipment, and our relationship flourished. We had lunch many times (and pretty much any equipment they needed, I sold them).

When Perry retired to Florida, I was already here. I'd see him occasionally at Broadcast Pioneers meetings in Sarasota. You had to have 25 years in the business to be a "pioneer." Most of the people there had 50.

Then a few years ago, he told me that he found an organization that was more interesting than the Pioneers called the Media Roundtable (*http://mediaroundtable.com*). He invited me and I started going to the meetings.

About two years ago Perry could no longer drive. He had some health issues, and he got much more feeble. When he was 88 or so he was amazing. As he got towards 90, he really started slowing down.

I noted one day he wasn't at Roundtable. So I called him. He said he couldn't drive, and he didn't want to ask for a ride. I told him that he didn't need to ask for a ride — from then on, I would be his ride. For the last two years I picked him up, and we went together.

His mind was as sharp as a tack. He remembered every detail, every story from WTIC, David Chase, Arnold — story after story, and what a hoot. He told me stuff he could never tell me back in those days — personnel, financial, events gone wrong, just amazing stories!

As I went through the process of starting my station in Florida in 1986, I frequently called him, and he always had sage advice. When he went to the WRKO 50th anniversary a few months back, he called me when he got home and regaled me with all the news and people he saw. He was held in very high esteem by all of them, as I could tell by the Facebook posts.

He had time for everyone, and if you wanted to learn, he was willing to share. Great man, nice man.

The last time I spoke with him was the Monday of Thanksgiving week. The day before Thanksgiving was a Roundtable meeting, and I called to see if he was going. He said he had a flight to New York that afternoon. Frankly, I'm surprised he was strong enough to fly on his own. His caretaker took him to the airport in a wheelchair, but he made the flight and passed on Dec. 7.

He will be missed. My sincere condolences to his family.

*Hal Kneller*
*Punta Gorda, Fla.*

World Radio History

# PRACTICE

(continued from page 36)

ing in the application of a product, software or procedure. If possible, it is highly recommended to read manuals or required test procedures, as well as seek additional information from other resources. You cannot possess too much knowledge! ☺

*Transmission-Related* — This would include broadcast coverage area and everything it encompasses, such as antennas, transmitters, signal processors, and the rest of the broadcast chain.

*Performing Test Measurements* — The rigors of acquiring data from various tests required in the broadcast facility are sometimes mandated by specific policies and procedures. All of these are rooted in good engineering practice and also offer a discipline, which promotes excellence.

*Signal Evaluation* — The technical, and subjective evaluation of the broadcast signal falls under good engineering practice.

One cannot make an ad hoc claim without repeatable substantiation, when comparing audio quality and/or signal performance based upon casual listening or hearsay alone. Casual listening is acceptable as a first observation.

In order to verify what is initially observed, some form of best practice technical methodology must be applied. This provides a result for those knowledgeable in the art, and it must stand the scrutiny of Good Engineering Practice.

*Planning Facilities* — Studio and transmitter facilities benefit in the areas of operation, ergonomics, performance and safety, when best practices are considered.

*Research & Design* — Developing the next great innovation requires a lot of fortitude and experimentation. In many cases, "raising the bar" causes the need to push the limits of the norm; yet upon discovery, it also demands review of how this accomplishment occurred.

This new information, upon review, increases the wealth and knowledge base of best practices, but it must do so once the criteria, as described prior, has been met.

*Public Opinion* — Opportunities arise within the marketplace to express opinions or viewpoints regarding technology, engineering and the performance of products. Whether it be a technical white paper, article for publication or a post inside of a users' group, good engineering practice supports credibility of the writer.

Likewise, as expressed under one of the IEEE recommendations, there is also a moral consideration to be observed, especially when the opinion, viewpoint or comment may affect that of a colleague, or another organization.

*Proverbial Engineering Toolbox* — Just as a great painter has key tools and instruments which enable his craft, the same holds true for the broadcast engineer.

Aside from common hand tools, there's the need for and understanding of a few core instruments. In my view, the basics include an oscilloscope, signal/distortion analyzer gen-set, logic and network analyzer, and a full knowledgeable understanding of each.

**It is my intention** to hopefully "pay it forward" for those in our business, just as Jim did for me.

While the industry has created many computer based monitors, and testing devices, there are still going to be occurrences, when a "back-to-the-basics" skill set is required to sort out a situation. I have personally had the experience where a computer based analyzer provided an incorrect result, and it took the use of an "old school" test method to confirm the proper result.

Here's where having deep level of knowledge and expertise is an asset.

Given all that is expressed here, these are beneficial guidelines to follow when preparing a technical application for a facility, designing a new method or product for the industry, and performing critical evaluation of a signal for coverage or sonic performance purposes. Likewise, when expressing yourself in an article or public forum, observing good engineering practice provides the basis to present information that will stand up to the scrutiny of the community, as well as build credibility of the engineer involved.

The following sums it up quite well: "Good engineering practice is substantiated verifiable work performed in conformance with rules and/or regulations, which are based on basic scientific, and mathematical facts, or experiences that, as a result, create verifiable and repeatable results, of which would be beneficial to an industry, or mankind."

*Comment on this or any article to* radioworld@nbmedia.com *with "Letter to the Editor" in the subject field.*

## ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

| PAGE | ADVERTISER | WEBSITE/URL |
|---|---|---|
| 15 | Arrakis Systems Inc. | www.arrakis-systems.com |
| 23 | Axia - The Telos Alliance | www.telosalliance.com/axia |
| 22 | Bay Country Bdct Equip Inc. | www.baycountry.com |
| 29 | Broadcasters General Store | www.bgs.cc |
| 27 | BSI | www.bsiusa.com |
| 4 | Burk Technology | www.burk.com |
| 7 | Comrex Corporation | www.comrex.com |
| 14 | Deva Broadcast Ltd | www.devabroadcast.com |
| 33 | Dixon Systems | www.dixonsystems.com |
| 1 | ENCO | www.enco.com |
| 5 | ESE | www.ese-web.com |
| 13 | Inovonics Inc | www.inovonicsbroadcast.com |
| 17 | Lawo | www.lawo.de |
| 12 | Lightner Electronics | www.lightnerelectronics.com |
| 1 | Logitek | www.logitekaudio.com |
| 31 | National Association of Broadcasters | www.nabshow.com |
| 6, 10, 16, 18, 26, 32 | Nautel Ltd. | www.nautel.com |
| 11 | Omnia - The Telos Alliance | www.telosalliance.com/omnia |
| 25 | SCMS | www.scmsinc.com |
| 9 | Tieline Technology | www.tieline.com |
| 2, 19, 21, 40 | Wheatstone Corporation | www.wheatstone.com |

# READER'SFORUM

## A TABLE RADIO AND MORE

*Responding to "Smart Speakers Are a Key Gift Trend for 2017,"* radioworld.com:

Being retired, I fall into the "older" age group, yet I already own the latest Echo and an Echo Show. The family will get two additional Echo Show units for Christmas.

SiriusXM already has an app "skill" on this Amazon platform, and I see an increasing number of radio stations releasing their app to the "skill" list.

Convenience plus high-fidelity stereo sound with *no* static or noise make these products the perfect table radio and so much more.

Amazon Echo offers the broadcaster an entirely new platform that is easy to use and enjoy by the listener. The Echo Show provides a high-quality video screen that opens up even more opportunities for internet streaming radio stations and advertisers. All this adds up to more revenue for the broadcaster. Echo also transmits Bluetooth audio to bigger better speakers in the home, if desired.

In my view, these products have the potential to become the new "radio" in homes worldwide.

*Tom Dolan*

Courtesy Amazon

World Radio History

# eBooks: Tools for Strategic Technology Decision-Making

Radio World's growing library of eBooks can assist you in maximizing your investment in an array of platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more.

The eBooks are a huge hit with readers. They help engineers, GMs, operations managers and other top radio executives — radio's new breed of digital, cross-platform decision-makers — understand this new world and thrive in it.

*Is there a topic you want to see covered in our next eBook? Let us know!*

**Visit radioworld.com/ebooks**

World Radio History

WHEATNET IP

THE INTELLIGENT NETWORK

four mics. four voices. four studios.
one processor.

Not only does the M4-IP USB make four voices in up to four different studios sound amazing, it can also control, mix, and route them anywhere on your IP network.

See the difference The Intelligent Network makes: wheatstone.com/M4

## M4-IP USB

GATES • DE-ESSERS • COMPRESSOR/LIMITERS • PARAMETRIC EQS • INTERNAL MIXERS • SILENCE SENSORS • 80 PRESETS & MORE x 4

Wheatstone

BROADCAST AUDIO PERFECTIONISTS®

phone 1.252.638-7000 | wheatstone.com | sales@wheatstone.com

World Radio History