



RADIO WORLD

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Men and women who earned this service medal have a special connection to AFVN, remembered now in a radio documentary. — Page 26

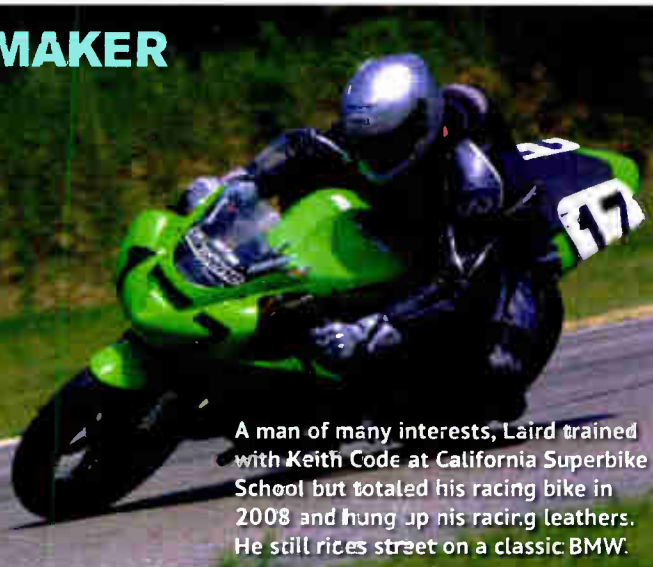
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Buyer's Guide explores audio processing. — Page 30

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FM broadcasters should begin planning now and understand their options. — Page 38

NEWSMAKER



A man of many interests, Laird trained with Keith Code at California Superbike School but totaled his racing bike in 2008 and hung up his racing leathers. He still rides street on a classic BMW.

Laird's Goal: Excellence in Radio and Audio

Recipient of NAB Engineering Award says an educated ear is the best test gear

BY RANDY J. STINE

Andy Laird's lifelong mantra of "doing it right" has served him well throughout a 50-year career as a broad-

cast engineer.

A self-professed audiophile, he said his goal as a chief was to originate the best-sounding product and then pass it through the transmit and receive system with the least harm.

He also owns what is generally regarded as one of the best sets of ears in the broadcast business. A fellow broadcast engineer deemed Laird a "Golden Ears," a special industry compliment.

Now he has another.

Laird, 72, is this year's recipient of the NAB Radio Engineering Achieve-

(continued on page 4)

Varied Pace, Approach for Digital Radio

A snapshot of the global transition, from RW's latest eBook

BY DAVIDE MORO

The global transition toward digital radio continues to move forward. In January 2017, Norwegian broadcasters will gradually begin to switch off their FM transmitters in a process scheduled to be spread out over an 11-month period. Local stations in Norway outside urban areas will, however, be allowed to operate their FM transmitters for five more years.

A countrywide switch-off generally marks the point of no return for a certain technology, and at the European Broadcasting Union's Digital Radio Summit, held Feb. 10 in Geneva, speakers agreed that there was no doubt that radio is going digital. The question is how and when this will happen.

SPECTRUM AVAILABILITY

Today, three digital radio standards exist — DAB/DMB, DRM and HD Radio — and up until this point there is no evidence that a single one of them will be universally adopted.

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-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
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-36	-36	-36	-36	-36	-36	-36	-36	-36	-36	-36	-36
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DIGITAL

(continued from page 1)

Conference 2015 guaranteed the availability of spectrum in Band III to roll out digital radio services, while various organizations are encouraging the digital radio evolution. The EBU, for example, recently published its first Market Report Digital Radio 2016, which outlines digital progress worldwide (see tinyurl.com/rw-ebu-digital).

In Europe, four countries pioneered the mass-adoption of digital radio (Norway, Switzerland, the United Kingdom and Denmark). Each of them has already defined the requirements digital broadcasting has to comply with in order to set a firm, binding switchover date.

Norway is set to be the first country to migrate from FM to DAB, and broadcasters there appear ready to make the switch. DAB broadcasts in the country today cover 99.5 percent of the territory and 97 percent of the main roads. Nor-



This article is from the new eBook "Global Digital Radio Developments," published by Radio World International. Read it at radioworld.com/ebooks.

wegian road authorities say that all relevant tunnels will have DAB with emergency messaging capability by 2017.



Courtesy EBU

A car dashboard with a DAB digital receiver.

According to the TNS Gallup Digital Radio Survey Q4 2015, at the end of 2015, the country's digital receiver penetration rose to 60 percent in households and 26 percent in cars, while 57 percent of daily listeners were using a digital device.

Norwegian authorities are determined to not lose a single listener in the digital migration and have planned information campaigns to ensure that Norwegians update their receivers.

Norwegian authorities are determined to not lose a single listener in the digital migration and have planned information campaigns to ensure that Norwegians update their receivers.

NOT YET

In Switzerland, radio industry representatives and the Federal Office of Communications are aiming for an FM switch-off between 2020 and 2024. DAB coverage stands today at between 98 and 99 percent, and plans to include DAB coverage on the main motorway and in train tunnels are in the works. The GfK/DigiMig, August 2015 survey showed that as of June 2015, 60 percent of new cars came with DAB+ as

standard and that 25 percent of radio listening at home and work is carried out via DAB+.

The U.K. government has stated that "the future of radio is digital," but it is still waiting for two criteria to be met before announcing a firm FM switchover date. These criteria are that digital listening needs to account for a 50 percent share of all listening hours, and digital coverage for national services must be comparable to FM, while DAB coverage by local stations needs to reach 90 percent of the population as well as major roads.

Rajar Q4 2015 demonstrates that national DAB broadcasts cover more

Danish Radio launched a new multiplatform strategy that included moving some of its flagship programs to digital-only stations. As a result, in 2015 DR and radio in general in Denmark saw the first increase (four minutes) in radio listening figures in decades.

ACTIVE NEWCOMERS

While four digital radio pioneers are ahead of the pack in transitioning to digital, both Germany and Netherlands have also made big advances.

In Germany, both public and commercial broadcasters promoted DAB+ with new services and advertising campaigns. Coverage stands at approximately 92 percent, while 10.6 percent of the population listens to DAB and only for 1.8 percent rely on digital radio as their main source of reception. In households that have at least one DAB receiver, this figure increases to 17.3 percent.

In 2015, BMVI, the German Federal Ministry of Transport and Digital Infrastructure, established a steering committee, the Digitalradio Board, to ensure a smooth transition from FM to DAB+. According to the EBU, 2025 looks like a realistic target for the FM switchover in Germany.

Broadcasters from the Netherlands launched DAB in 2013. Despite this

The U.K. government has stated that "the future of radio is digital," but it is still waiting for two criteria to be met.

than 96 percent of the population and digital receiver penetration is at 54 percent, while digital listening attracts a 41.7 percent share of total listening.

In April 2015, Kulturministeriet, the Danish Ministry of Culture, announced that it would consider an FM switchover date once 50 percent of radio listening is carried out via digital platforms (DAB, Internet, satellite, etc.) That figure today stands at 28 percent, according to DR Media Research. Forecasts by TNS Gallup demonstrate this goal could be realistically met by 2021. The country's DAB coverage today is 98 percent, while 45 percent of the country's households own a DAB receiver.

In 2014, public service broadcaster

late adoption, coverage should reach 97 percent of the country's population by the end of 2016. The various stakeholders, including the government, share the work of fostering digitization, much of it through public education campaigns. As a result, nearly 15 percent of radio devices and new cars feature a digital radio tuner.

There is no FM switchover date designated at this point, but signs pointing to digital include public service broadcaster NPO shutting down its AM broadcasts and transferring some of its services to digital in September 2015. In January 2016, NPO also ceased broadcasting more than 20 Web-only

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LAIRD

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ment Award. It recognizes people who have made significant contributions to broadcast engineering. Richard Chernock of Triveni Digital was chosen for the TV Engineering Achievement Award, while Adam Symson of The E.W. Scripps Company will receive the Digital Leadership Award. They will be honored in Las Vegas during April's NAB Show.

Laird retired as vice president and chief technology officer for Journal Broadcast Group in 2015 after spending much of his career on the cutting edge of broadcast technology.

His involvement with the National Radio Systems Committee was crucial to the evolution and standardization of the system for digital AM and FM in the United States, according to NAB. NRSC is the technical standards setting body co-sponsored by NAB and the Consumer Technology Association. Until recently, Laird was the co-chair of its Digital Radio Broadcasting subcommittee.

Laird began his career in the 1960s developing audio processors and designing and building radio facilities. His first job was at Denver's KWGN(TV) as staff engineer, then he was hired a year later at KLAK(AM) in that same city as chief engineer, according to NAB.

By 1972 Laird was in Los Angeles at KDAY(AM) as CE. He remained there until 1988, when he joined Heritage Media and took on some major rebuilding projects. Heritage later sold most of its radio stations to Sinclair Broadcast Group. Laird moved to Journal Broadcast Group in 1998 to oversee engineering operations for the group's TV and radio properties.



Laird was general manager of KVDU at the University of Denver as a grad student in 1965.

Laird also worked as a studio design consultant on many projects for a variety of customers and radio groups throughout his career.

LISTENING WITH CARE

Laird had been set to become a physicist — he has a Bachelor of Science degree in physics with a minor in math from Principia College in southern Illinois — but the lure of working with audio in the broadcasting industry was too much to resist. After all, this is a man who has played seven musical instruments, beginning with piano when he was 5.

Having a critical ear when listening to audio of any kind should be important to every broadcast engineer, Laird said.

"An educated ear is the best test equipment available. Ear development for me happened as a young kid," he said.

"I'd record a piano on a disc recorder at home and wonder why it didn't sound like it did when I played it. That was part of my initial curiosity and development as an audiophile. My career really was just an exten-

sion of that."

Laird, who was quick to offer recommendations for better audio to equipment manufacturers, began his radio projects with the idea of building a broadcast plant to the highest fidelity standard available.

"My educated ear philosophy says you can't just look at test equipment and make subjective judgments that are necessary to build a superior facility. A broadcast engineer needs to learn sounds that different equipment makes and when you hear it know where to go. It's a huge time-saver when you can do that."

Laird's hearing ability came into play during the development of HD Radio, which was submitted for technical review to the NRSC.

"We went through many iterations of what a digital system could sound like for AM and FM. Early on, there were so many different codecs, and it was really subjective as to what sounded best. We had to design subjective tests for the various codecs being presented so we could develop definitive data," Laird said. "That work we did was critical to the process."

After the first round of testing, the NRSC suspended work, allowing proponents to develop their systems further. Eventually some stopped development while two merged to form iBiquity, which later asked that the committees be reactivated to evaluate the revised system.

Laird spent more than 20 years on the NRSC and held various leadership roles, including chair of the Test Guidelines Working Group and Test Procedures Working Group, which were responsible for developing the procedures used in the NRSC's evaluation of the IBOC-DAB standard.

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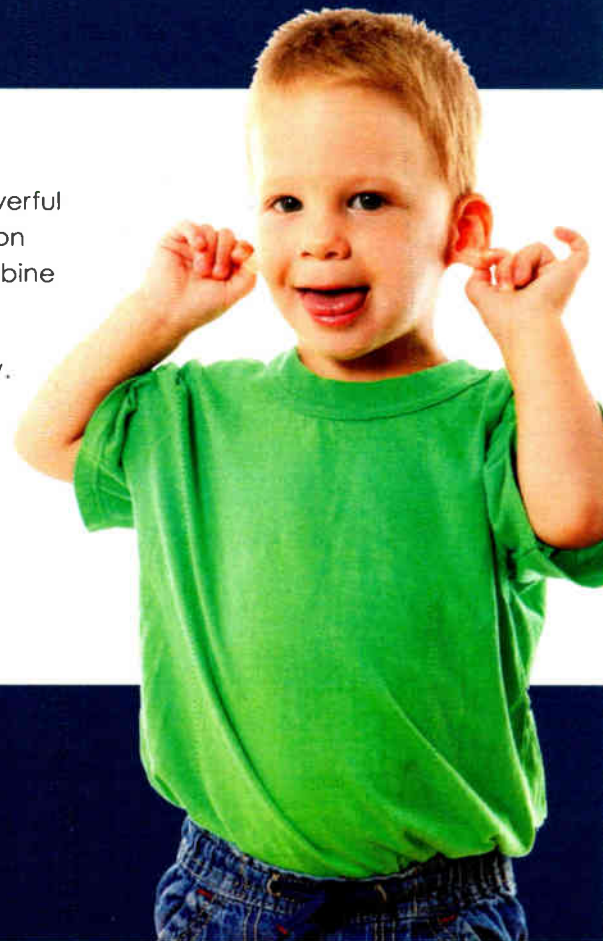
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tially better than analog. I believe HD Radio is growing at its expected pace to this point," Laird said.

Asked how he felt about AM HD Radio, Laird said, "Hybrid AM IBOC works really well on some stations, not all. Both the FM and AM IBOC hybrid operations are intended to be transitional. It may be that pure AM digital mode (supported by all IBOC receivers) will have its biggest impact on AM. All-digital AM testing will help answer that question."

DEMANDING EXCELLENCE

Laird's peers on the NRSC admired his preparation and attention to detail when leading discussions on a range of topics, from IBOC-DAB to improving the quality of AM radio and setting the RBDS standard.

Mike Starling, former vice president of NPR Labs, cites Laird's persuasiveness in demanding audio excellence as a key attribute.

"Andy singlehandedly convinced my bosses at NPR that there really was a problem with the PAC codec during a critical listening session, even though none of them could hear it," Starling said. "[Laird's] articulate horror and description of the artifacts he could hear spoke for the 30 engineers in the room."

Milford Smith, vice president of engineering at Greater Media and current chairman of the NRSC, said Laird's work and contributions with the group are well documented.

"Andy was always a valued contributor to that organization's work but never more so than during the more than decade-long evaluation and ultimately standardization of the system for digital AM and FM radio broadcasting in the U.S.," Smith said.

"More specifically, in addition to his active participation in the entire process, start to finish, Andy was chairman of the critical Test Procedures Working Group, which literally formulated from scratch the detailed and comprehensive test procedures for a transmission technology never before evaluated in any forum."

The thoroughness of Laird's work and the incremental results of such testing identified areas in need of improvement, which resulted in significant changes to the originally proposed technology, Smith said.

It was Smith who bestowed the golden ear moniker upon Laird. "[He has] what many consider to be the best set of ears in the business."



Laird turns on the AM IBOC at WTMJ in 2004. IBOC for AM was FCC-approved only as a daytime service at the time.

For those lucky enough to be in Laird's company at previous NAB Shows, the experience was priceless, according to Rick Kemp, who works in engineering sales at broadcast parts supplier BSW.

"One of my favorite things to do at NAB is to do the Radio Hall floor walk with Andy. But don't be in a hurry," Kemp cautioned.

"Broadcast engineers and personalities alike will stop him mid-walk to say hello shake his hand and thank him for the consulting work he did for them years ago. This would then

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LAIRD

(continued from page 5)

be followed by a brief but detailed history of the station, the problem he was asked to provide a solution for. This often prompted a detailed explanation of his solution over lunch or dinner, including the math or logic and how to avoid a similar problem in the future."

Kemp said Laird's contributions to broadcasting in HD Radio, antenna design and audio processing are illustrious.

Tom Silliman, president of Electronics Research Inc., summed up Laird's analytical style of management with an anecdote: "My last encounter with Andy regarded a tower failure in Kansas from an unusual storm with excessive straight-line winds that resulted in the top of Andy's tower ending up in a corn field. Andy approached this accident with his usual calm, logical, engineering based response."

"DON'T MAKE ME NORMAL"

Then there's the other Andy Laird, the adventure-seeker. If Dos Equis beer is looking for a "World's Most Interesting Man in Tech," we might suggest Andy Laird.

How many engineers — how many *people* — do you know who have played the euphonium (and six other instruments), sailed with friends from Argentina to Antarctica, scuba dived under icebergs, rode MotoGP and set the national dead-lift record for 70+ year olds by lifting 446 pounds at the Natural Athlete Strength Association 2014 Masters Nationals? Sheesh.

Why is he drawn to such diverse and challenging endeavors? Is there a philosophy behind it?

"I remember at a young age wondering about a line from the 1952 Broadway play *The Fantasticks*: 'Please God please, don't make me normal,'" he said.

"What does that mean? For me it means acting on what interests me, not just dreaming about it. Normal is being limited by 'I can't do that.' You have no idea what you can do until you actually go out and do it."

He recommends visualizing what you want to help make dreams into reality. "This process plants a goal into the subconscious mind so you can recognize the opportunities to

Skiing in Vail. Laird's interests include music, scuba diving, sailing and weightlifting, in which he holds a national record for his age group.



advance on it as they come available."

The expedition to Antarctica came about that way. "Since I was a kid, I've dreamed about seeing Antarctica, so distant, so exotic, so out of this world." So he was ready for the experience of a lifetime when a fellow adventurer mentioned he was in the process of putting together a sailing, hiking, kayaking and diving expedition, and needed someone with cold-water diving skills.

"As to being drawn to physically challenging things, it must be in my genes. My dad had six world's records in skeet shooting and several in hydroplane racing. Also he was a factory racer for Indian Motorcycles in the 1920s. My sister says I didn't fall far from the tree."

Meantime, Laird also continues to be active in radio in retirement. He travels often as a freelance consultant for E.W. Scripps, working with its radio properties, which were acquired from Journal Communications in 2015. Scripps spun off Journal's publishing operations while keeping the radio and TV properties.

"It's just been a fabulous way to transition into retirement. Consulting gives me a lot of flexibility. I'm doing some market travel. Right now I'm helping [Scripps] with a potential relocation of five stations and offices of theirs in Springfield, Mo.," Laird said.

Laird resides with his wife, Donna, in Milwaukee, Wis.

Read *Radio World Engineering Extra's 2014 interview with Laird* at www.radioworld.com/laird.

HONOR ROLL

Recipients of the NAB Engineering Achievement Award are listed here. Beginning in 1991, radio and TV winners were named; radio winners are shown.

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1963	Dr. George R. Town
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1966	Carl J. Meyers
1967	Robert M. Morris
1968	Howard A. Chinn
1969	Jarrett L. Hathaway
1970	Philip Whitney
1971	Benjamin Wolfe
1972	John M. Sherman
1973	A. James Ebel
1974	Joseph B. Epperson
1975	John D. Silva
1976	Dr. Frank G. Kear
1977	Daniel H. Smith
1978	John A. Moseley
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1983	Joseph Flaherty
1984	Otis S. Freeman
1985	Carl E. Smith
1986	Dr. George Brown
1987	Renville H. McMann
1988	Jules Cohen
1989	William Connolly
1990	Hilmer Swanson
1991	George Marti
1992	Edward Edison & Robert L. Hammett
1993	Robert M. Silliman
1994	Charles T. Morgan
1995	Robert Orban
1996	Ogden Prestholdt
1997	George Jacobs
1998	John Battison
1999	Geoffrey Mendenhall
2000	Michael Dorrough
2001	Arno Meyer
2002	Paul Schafer
2003	John W. Reiser
2004	E. Glynn Walden
2005	Milford Smith
2006	Benjamin Dawson & Ronald Rackley
2007	Louis A. King
2008	Thomas B. Silliman
2009	Jack Sellmeyer
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2013	Frank Foti
2014	Jeff Littlejohn
2015	Thomas F. King
2016	Andy Laird

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APTS Members Pledge to Support FirstNet

NPR too is involved in this effort to build nationwide public safety broadband network

BY PETER SUCIU

This story originally appeared in our sister publication Broadcast Engineering Extra.

This winter at its annual Public Media Summit, the recently renamed America's Public Television Stations, formerly the Association of Public Television Stations, announced efforts to create a national hub and committed to set aside spectrum for an upcoming first-responders network. APTS will run the Public Media Public Safety Coordination, which will also coordinate work of PBS Warn, the redundant path for FEMA wireless emergency alerts, as well as NPR, which will incorporate radio into the initiative.

In a unanimous vote the stations committed — at least in principle — to each allocating 1 megabit per second of spectrum for the First Responder Network Authority (FirstNet) nationwide public safety network.

"This is the early days of FirstNet," said Patrick Butler, APTS president and CEO. "This fills the void in ensuring that first responders receive the information they need in a time of crisis."

The creation of FirstNet was legislated on Feb. 22, 2012 as part of the Middle Class Tax Relief and Job Creation Act, and the law gives FirstNet the mission to build, operate and maintain the nation's first high-speed, nationwide broadband network dedicated to public safety. It came about after Congress allocated spectrum along with up to \$7 billion in funding for the construction of

the network. FirstNet is further leveraging telecommunications infrastructure and assets that include exploring public and private partnerships to accelerate the creation of this wireless network.



"The money set aside by Congress may not be enough to sustain it," said Butler. "Public TV is proud to play a role to help support it."

IMPORTANCE OF BROADCASTERS IN AN EMERGENCY

Today with Americans ever more connected via alternatives including mobile apps, broadband computers and satellite radio, the question becomes how important broadcasters — in particular public broadcasters — still are in regards to EAS.

"Broadcasters are still relevant to emergency alert networks, although not as relevant as they would have you believe," said Steve Blum, founder and principal analyst at Tellus Venture Associates. "The public is increasingly unlikely to be watching an over-the-air broadcast directly."

Other means, such as mobile network messaging and integration into cable and DBS systems, are more efficient at reaching individuals, Blum feels.

"But unlikely doesn't mean never, and emergency communication is about ubiquity, not efficiency," he said. "In an emergency, it's about pushing information out via all possible means. At any given moment a significant number of people are engaged with any form of media you can name, so you have to use all forms of media if you want to reach

the greatest number of people in the shortest amount of time."

There are also the issues of how the messages are sent in a crisis and the scale of an emergency.

"Even for people who rely on a smartphone for their information there is a limit when the messaging that is available has a 90-character limit," said William T. Hayes, director of engineering and technology for Iowa Public Television. "With TV there is the ability to not only put up the textual warning for a tornado but a graphical map that shows where it is. The other thing is that where broadcast tends to shine is when you look at a large scale emergency. In disasters such a large scale flooding the cellular infrastructure can fail."

Then there is the case of the audience as well.

"There are still plenty of Americans who still do things the old-fashioned way," said Jeff Kagan, telecom analyst and industry consultant. "So we need to make sure we can reach everyone with EAS."

This may include the elderly, lower income and rural families who may not have access to broadband, and who may not be adopters of the latest smartphones. Public TV however certainly has a reach with those audiences.

"This goes back to the universal service mandate that created this entity and oversees public TV," said Lonna Thompson, APTS executive vice president, chief operating officer and general counsel. "We reach about 99 percent of the country, including those rural areas where it isn't profitable for others to go, and where it is expensive to build broadband."

GETTING TO FIRST RESPONDERS

The other important part of FirstNet — as noted by its full name — is that it is a system that will ensure first responders can get the information that they require in a time of emergency as well.

While it will use the same spectrum. FirstNet can be data embedded so that information sent to first responders won't appear on regular TVs.

"That same datacasting can be used to feed any receivers including those in police cars, in fire trucks and other emergency vehicles or even in schools," said Thompson. "Our PBS stations are doing this, and it is important for the first responders. This network is designed not to overload, and we can send tons of video without overloading the networks to first responders."

One example that Thompson highlighted was how helicopters could send out footage from the air to any first responder receivers on the ground. Public TV plays an important role in this for a number of reasons.

"Most stations own their own towers, so our part of this could be accomplished very quickly," she added.

The efforts to reach first responders won't be limited to public TV, as radio will also play a crucial role. NPR has announced efforts to ensure that crucial information can also be relayed to first responders in a time of emergencies via a private two-way broadband network. This network is part of the upcoming upgrade to the Public Radio Satellite System that will provide improved bandwidth efficiencies.

"During a crisis, efficient communications can make a difference in responding to need," said Michael Beach, vice president for NPR Distribution, which manages PRSS.

"Local radio broadcasters fill a vital role in sharing emergency information with the public in a clear way that is not dependent on the Internet or the electrical power grid," Beach said. "NPR Distribution provides an important service by sharing national level emergency information with local public radio stations."

At present the PRSS staff is working with the Corporation for Public Broadcasting staff to finalize the proposal. To date consultants from Cognizant Technology Solutions, which has advised CPB on interconnection upgrades for both public TV and radio, have been reviewing PRSS. The consultants have called upon PBS and NPR to seek ways to consolidate network operations.

While costs of this network are an issue, for cash-strapped public TV it could be a revenue stream as well, as first responders will pay for the systems, which APTS estimated could be in the tens of millions of dollars every year, so the stations could be doing well by doing good.

"We believe that public broadcasting is public service, and we are committed to delivering this service," added Iowa Public TV's Hayes. "We hope it never needs to be used, but we are willing to commit to it so it is there if needed."

NEWSROUNDUP

A sampling of news from Radio World's NewsBytes e-newsletter:

Nielsen hailed the impact of its enhanced CBET on PPM results. Company execs wrote in a blog post that since February a year ago, AQH audience for audio grew 13 percent in portable people meter markets among persons age 6+, reflecting "a significant improvement in our PPM measurement system." ... A few days prior, the Telos Alliance put out a statement saying its Voltair product "still provides broadcasters with a significant ratings advantage, even on enhanced CBET."

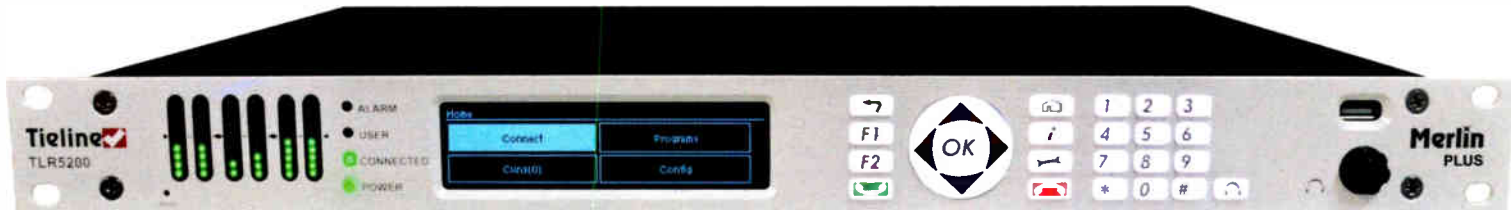
The NRSC released a set of guidelines for radio broadcasters looking to implement MDCL technology for AM broadcast, which offers a way to reduce electrical power consumption. ...

Pandora was reconsidering its broadcast strategy. It told the FCC it was thinking about divesting the South Dakota radio station it had acquired as part of a royalty strategy....

Jeff Griggs died, age 60. He had been the voice on the other end of calls to Harris Broadcast for radio support for a number of years, according to former co-worker Dave Agnew.

More news on page 11.

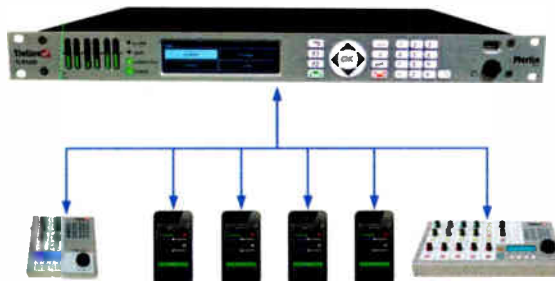
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DIGITAL

(continued from page 3)

stations in order to launch new DAB-only services.

In Italy, commercial broadcasters are setting the digital radio pace: the public service broadcaster RAI covers about 40 percent of the population with its DAB broadcasts, while commercial broadcasters cover about 65 percent.

In 2015, Italian media authority AGCOM unveiled a licensing plan for the entire country, and initiated a few public tenders. At the same time, the

organization still calls for a substantial simulcast of FM content, heavily limiting the launch of new services.

The roll-out of digital radio in Poland relies mainly on the commitment of public service broadcaster Polskie Radio, while commercial broadcasters are showing a lack of interest. By the end of 2015, DAB services covered 56 percent of population, but the new media law, approved in early 2016, which European media watchdogs fear enables the government to control public service broadcasters, could affect Polskie Radio and its digital radio plans.

Despite the early adoption of DAB in 1995, in June of 2015, Sweden's Minister of Culture Alice Bah Kuhnke rejected the plan for the digital migration proposed by a digital radio committee named by the same government. The committee's roadmap included some criteria for the switchover and a tentative date in 2022–24.

At present, Sveriges Radio covers 35 percent of the country, but due to the uncertain conditions determined by the rejection of the migration plan, the launch of new services is unlikely. Several more European countries feature

DAB services, and during 2015, Austria and Slovakia joined this group.

On the Digital Radio Mondiale front, trials are in progress in Germany, where shortwave tests in the 11-meter band began in Berlin in 2015, alongside existing activities in Hannover. The DRM+ standard (DRM transmissions in the FM band), is also being trialed in St. Petersburg, Russia, on two different frequencies.

In Africa, the only country with noticeable news on the digital radio side in 2015 is South Africa. In March 2015, the Independent Communications Authority of South Africa issued a report endorsing the switch-off of AM and FM signals and leaving the door open to both DRM and DAB. A 12-month DAB trial commenced in November 2014 and was extended in January 2016. This DAB trial reaches 21.5 percent of the population with 40 radio services from public service, commercial and community broadcasters.

In Asia, the biggest potential market for digital radio is India.

In addition, in 2014 a DRM trial began on 1440 kHz (AM). A second DRM test service was then added on the same frequency in February 2015.

In Asia, the biggest potential market for digital radio is India, where 600 million people will be covered by DRM broadcasts once the last nine of 35 digital AM transmitters are fully operational.

At present, the DRM network in India relies on 26 transmitters in the AM band, ranging from 20 kW to 1 MW output power, and four transmitters in the SW band, ranging from 100 kW to 500 kW. The Avion DRM receiver unveiled at IBC2015 is currently available for purchase on the *Amazon.in* website. The first Indian car manufacturer recently launched its latest model with factory-installed DRM reception, and several car brands are expected to follow during 2016.

Elsewhere, Turkish Broadcasting Corp. TRT relaunched DAB test transmissions in Band III with two transmitters, in Istanbul and Ankara in December 2015. The broadcaster is airing DAB test transmissions with five simulcast services.

There are DAB trials in progress in other countries that are in the initial stages or did not see major changes in 2015. For instance, Indonesia recently

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AUSTRALIA IS LEADING

Australia is a clear digital radio success story. DAB service was launched in 2009 in five major cities (Sydney, Melbourne, Brisbane, Perth and Adelaide) and trial services in Canberra and Darwin. Digital radio covers 65 percent of the population, thanks to the efforts of both Commercial Radio Australia and the public service broadcasters ABC and SBS.

One national multiplex is on air delivering 17 radio services; just four are simulcast, while 13 are digital-only stations. DAB receiver penetration is equal to 23.6 percent of households in the five above-mentioned cities. DAB listening is nearly 25 percent of total radio listening.

The in-band, on-channel technology known as HD Radio is an approved standard in the United States, Mexico, Puerto Rico, Panama and the Philippines. The HD Radio system does not require consumers to choose between digital broadcasting or existing analog AM or FM transmissions, since the IBOC system inserts a digital portion of the signal within the sidebands of the existing analog signal at each individual radio facility. This allows analog broadcasts to continue to be available to the listener via existing radio receivers.

According to the technology's owner, DTS Inc., about 2,300 AM and FM stations from the Americas are broadcasting in HD Radio and there are approximately 30 million HD Radio receivers operating worldwide.

In Mexico, currently 101 digital channels in 14 cities — including Mexico City — are on air, covering 31 percent of the population. Other countries with HD Radio broadcasts on air include the United States, Canada, Puerto Rico, Panama, Dominican Republic, Trinidad and Tobago, Philippines and Romania.

Canadian Radio-television and Telecommunications Commission established a flexible approach to introducing HD Radio technology in Canada through experimental authorization. As of February 2016, seven stations are on air in the country using HD Radio technology.

Taking into consideration the above coverage figures, DAB+ is the most widespread digital standard in both Europe and Oceania, while HD Radio has a strong foothold in North America. Asia does not show a homogeneous trend, even if the potential DRM audience figure in India is impressive. African countries still do not display a particular tendency with the exception of South Africa, while digital radio supporters are fostering interest in Latin America.

NEWSROUNDUP

DTS Inc., parent of HD Radio, told the FCC the expanded portion of the AM band (1605–1705 kHz) would be a good place for industry to introduce all-digital broadcasts. ... SBE told the FCC it's time to get tough on ambient noise in the band and on medium frequencies in general. It called for an interference management plan "based on rules that limit RF noise before it becomes an issue, not after the fact, and those rules have to be enforced." ...

Ben Downs, an owner vocal about AM revitalization, said the FCC should consider granting primary status to cross-service FM translators under certain conditions, and

that owners of dual expanded band/standard band licenses should be allowed to keep both until the next AM filing window and allowed to file for a replacement station. ...

George Beasley went on a medical leave of absence at the company that bears his name. Caroline Beasley, EVP/ CFO, was named interim CEO. ...

Hubbard's WTOP(FM) returned to the top slot in BIA/Kelsey's ranking of annual station revenue. ...

Growth in the number of hams continued, with a record 735,405 licensees in an FCC's database, according to ARRL, up about 1 percent. It says the amateur population has grown every year since 2007.

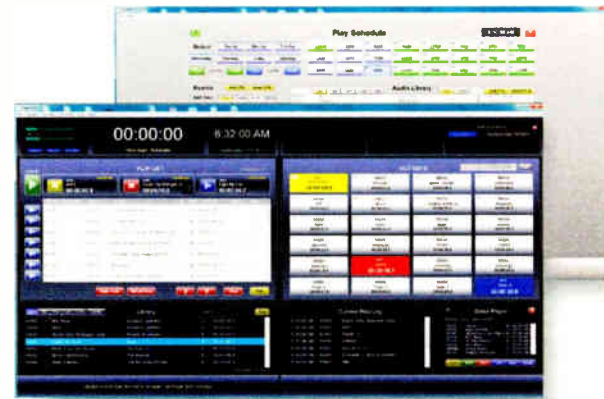
Grant Bingeman, known for design and software work in complex AM RF engineering, died at 66.

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Ugly Foam Is Beyond Disquieting

Rotting foam looks like heck; it may also be a fire hazard

WORKBENCH

by John Bisset

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Fig. 1 shows newly installed sound deadening foam squares, neatly applied to a studio wall. Fig. 2 shows the result of years of smoke, abrasion and sunlight — a rotting mess.

Bobby Gray, market chief for Salem Media Little Rock, reminds us that a studio full of deteriorating foam not only may be ugly, it may be out of code.

These photos are not from Bobby's facility, but he writes that older 1980s-style foam has a vertical burn rate that makes it illegal to install in a large number of cities. If the stuff is going bad, it might be time to consider making it all go away. There are better, prettier methods of deadening a studio these days than powdered, aging, flammable foam.

This discussion is prompted by a picture we ran a few months ago, asking what you do when mounting foam



Fig. 1: Newly installed foam panels deaden sound in a studio.

around studio light switches or thermostats in a studio. When the switch plate is right next to the foam, constant rubbing is unavoidable but only hastens the disintegration process.

Bobby's go-to solution is to bring the switchbox forward into the room, allowing the switch face to be raised above the surface of the foam. In some cases, Bobby has had to change to a quad-style electrical box.

At one facility a few years ago, the budget allowed Bobby to hire a local cabinetmaker to build a small oak cover for the new switch and quad box. The

cover was about 2 inches deep and 10 inches by 10 inches square. The foam was cut back to accommodate the oak box; its addition really beautified the studio. The large 10-by-10 box kept fingers or hands from the foam edges — either on the switch itself or on the switch box.

Fig. 3 shows a deadening foam product with a low profile. The small ridges are less likely to get pulled or broken off, reducing the "rotting" problem.

If you don't have much of a budget, cut the foam away from the light switch or thermostat, as seen in Fig. 4. This shouldn't disrupt the sound deadening quality of the room and, like the 10-by-10 box, will keep hands and fingers from the foam edges.

(continued on page 14)




Fig. 2: Foam panels deteriorate. Depending on their age, they may also pose a fire hazard.



Fig. 4: Cut the foam away from light switches or thermostats to reduce damage from hands.



Fig. 3: Low-profile foam reduces disintegration problems.

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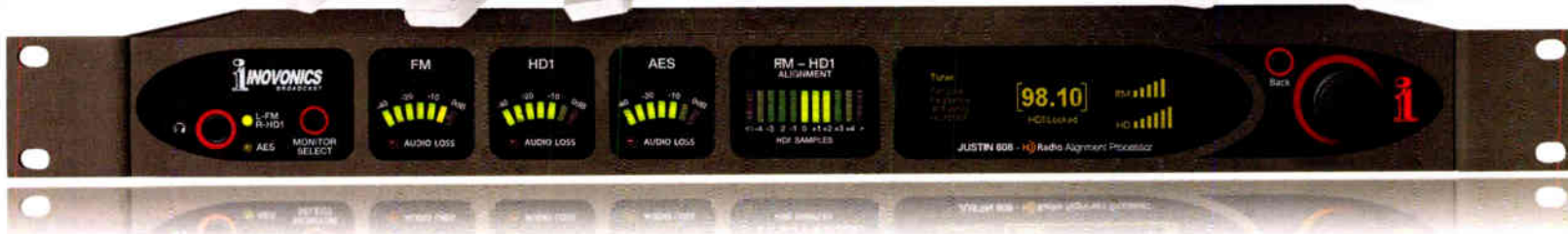
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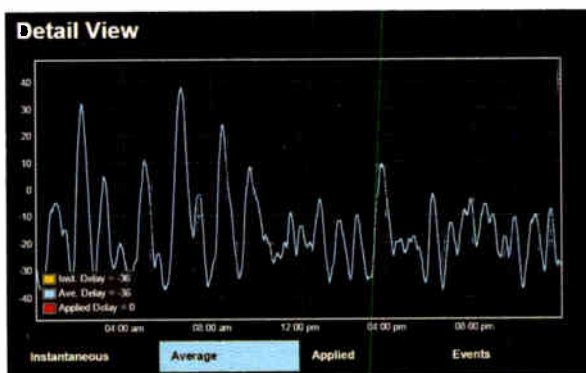
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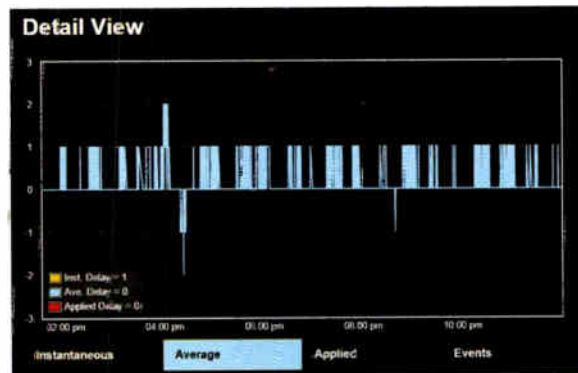
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My Brief History of the NAB Show

I felt as if I'd died and gone straight to broadcast equipment heaven

ROOTS OF RADIO

BY JAMES E. O'NEAL

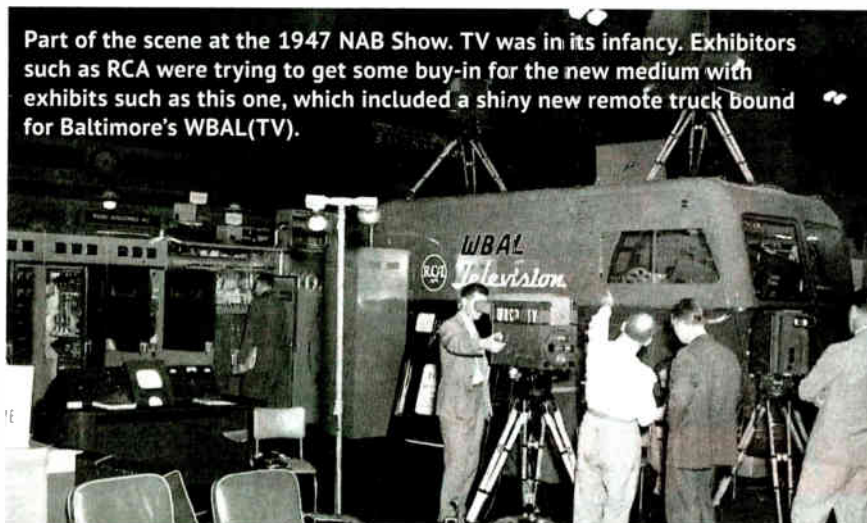
This month many of us head for Las Vegas and the NAB Show. Hands down, it's the biggest exhibition and conference in our profession (I also enjoy the IBC and some others, but stats don't lie), and many of us make it the focus of our year's activities.

None of us like to admit to getting long in the tooth, but for a number of years now the Ross Video folks have been handing out lapel pins marking the number of NAB Shows the wearer has attended. These top out at 30 years and I received that one quite a few years ago! Actually, my first NAB — we didn't call it the "NAB Show" then — was the last one in Washington (for a long time the show flip-flopped between Chicago and



Author James O'Neal describes his experience at the 1977 show; these photos go even farther back. The 1951 "Big Show" — held by the National Association of Radio and Television Broadcasters, or NARTB — was held in Chicago.

Part of the scene at the 1947 NAB Show. TV was in its infancy. Exhibitors such as RCA were trying to get some buy-in for the new medium with exhibits such as this one, which included a shiny new remote truck bound for Baltimore's WBAL(TV).



D.C.) The year was 1977, the 55th time the show had been held. The city didn't have a convention center then, and the NAB event was spread over three hotels with shuttle busses connecting attendees with exhibits and events. The thing was huge, at least from my perspective then. I'd seen my share of TV and radio gear before, but I was the proverbial kid in a candy store. I felt as if I'd died and gone straight to broadcast equipment heaven!

MY FIRST SHOW

So what was the NAB Show like almost 40 years ago?

For starters, far and away the largest exhibitors were Ampex and RCA (who?), as had been the case for a number of years. The really hot tickets in radio were solid-state transmitters and program automation. RCA was drawing crowds with their new 5 kW transistor-

ized AM model and Harris was touting a 1 kW tubeless model, the MW-1.

Sintronic (remember them?) also brought a 1 kW AM solid-state machine and Cetec Sparta was at the show with both AM and FM solid-state models. (The AM rigs were available in your choice of 1, 2.5 and 5 kW.) Speaking of FM, Collins — by then a division of Rockwell International — brought along its new "Generation 4" FM transmitter lineup, and Harris spotlighted their latest exciter product, the MS-15. It featured "digitally-synthesized modulation" and claims of a "loudness boost" between 2 and 6 dB. Harris also introduced its "K" line of FM transmitters, available with outputs between 10 Watts and 40 kW.

On the automation side of things, at least four players were at the show and their technology for taking human DJs

out of the picture was attracting a lot of attention, even though the price tags were a bit frightening.

Cetec Schafer was there with its new Audiofile II system that could now accommodate 48 audio carts. IGM showed a system with considerably more capacity: 1,000 carts. Pacific Recorders was demonstrating the Cuerac system from Consolidated Electronic Industries, which sported an "automatic computer-controlled random-access library" that could accommodate as many as

2,500 carts. The basic unit came with a price tag of \$60,000 (almost \$235,000 in today's dollars).

Not to be outdone, International Tapetronics showed a prototype system with automatic storing and accessing of tapes "to prevent human error." It accommodated up to 1,024 carts and as many as 10,000 pre-programmed events. You could have one at your station for between \$50,000 and \$75,000.

Program automation was not the only sort offered at the show. Due to recently relaxed FCC rules it was now possible to automate transmitter operation (automatic logging and control). The jury was still out on this technology, but it could be had if you were bold enough to become an early adopter. Harris, TFT, Eric Small & Associates and CCA were all showing systems. Prices ranged from \$3,500 to \$15,000.

MEMORABLE IN OTHER WAYS

The 1977 show was not all sweetness and light, though. The nearly 13,000 attendees completely swamped Washington hostelry, with a good number of people unable to get rooms anywhere in the area at any cost.

As I recall, there was such an uproar over this that several attendees pulled out of NAB as a symbolic gesture. Although the NAB had already scheduled the 1978 show for Las Vegas, the organization went on record saying that it would never schedule a show in D.C. again until a convention center was built. (I was a local, living in northern Virginia, so this was a "commuting" NAB for me.) President Jimmy Carter, who was living just a few blocks from the activities, took some heat for not at

(continued on page 18)



Another view of the 1951 NARTB Show. AM radio was still the big ticket but the curious could inspect some FM and TV gear. This was the first show held under the NARTB name.

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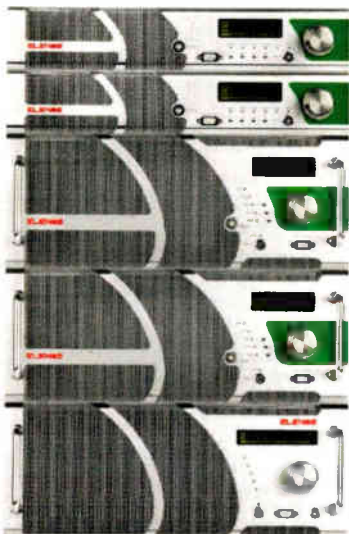
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SHOW HISTORY

(continued from page 16)

least putting in a cameo appearance at the show. Vice President Walter Mondale did stop by, as did outgoing FCC Chair Richard Wiley; I didn't get to see either of these gentlemen.

In case you're wondering: No, the show has never returned to Washington. After Vegas, it went on to play Dallas in 1979 and was held there for a number of years. I attended all of the Dallas NABs and remember them as great shows held at a convention center that could accommodate everything under one roof.

Unfortunately, the number of hotel rooms near the Dallas Convention Center were also woefully inadequate to accommodate the number of attendees, so it took 30 minutes or longer on shuttle buses for most of us to reach accom-

modations in outlying hotels and motels.

(Then-VTR king Ampex did score some points with attendees at one of the Dallas shows with bus rides, though. The television series "Dallas" was in full swing and the company organized an evening party at a working ranch somewhere on the outskirts of the city and bused scores, if not more, of invitees there to enjoy real Texas hospitality capped off with barbecue served from a chuck wagon. This was a real treat, especially for attendees who had never traveled to the U.S. before.)

THROUGH THE AGES

Just for the record: The first-ever show (1923) was not held in Washington, but rather

in New York; it arrived in the nation's capital five years later. It played Chicago for the first time in 1936 and again the next year, but didn't return again until 1943. The show moved around a lot during its early years. Venues played in the 1920s, '30s and '40s included Atlantic City, N.J.; Cleveland; Cincinnati; San Francisco; St. Louis; White Sulphur Springs, W.Va.; and even once in West Barden, Ind. (don't ask me why).

The show alternated between Washington and Chicago starting in the early 1950s, with Los Angeles thrown in a couple of times during this era. It played Houston in 1974 and tried out Las Vegas for the first time the following year.

The NAB Show is at the top of the list for broadcast-related events during the calendar year. It's an opportunity to check out all the latest equipment and technologies; a chance to sit in on informative engineering and other seminars; and for many of us who have been attending the show for a number of years, it's an opportunity to meet with many, many old friends, some of whom have retired but still can't get the coax and flashing lights out of our systems.

What are your memories of your first NAB Show? Tell us at radioworld@nbmedia.com.



Show programs were a lot smaller a few years ago, as evidenced by this example from 1982. It consisted of 140 pages (plus show floor maps) and could be carried in a pocket.



In 1989, Radio World's coverage of the show included a story "Workstations Break Ground in Audio Arena," with a photo of an AKG DSE 7000 digital editing workstation that broke "new ground in price and performance" — at under \$30,000.

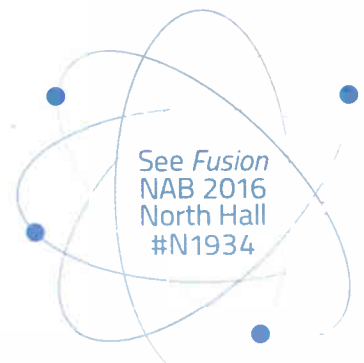
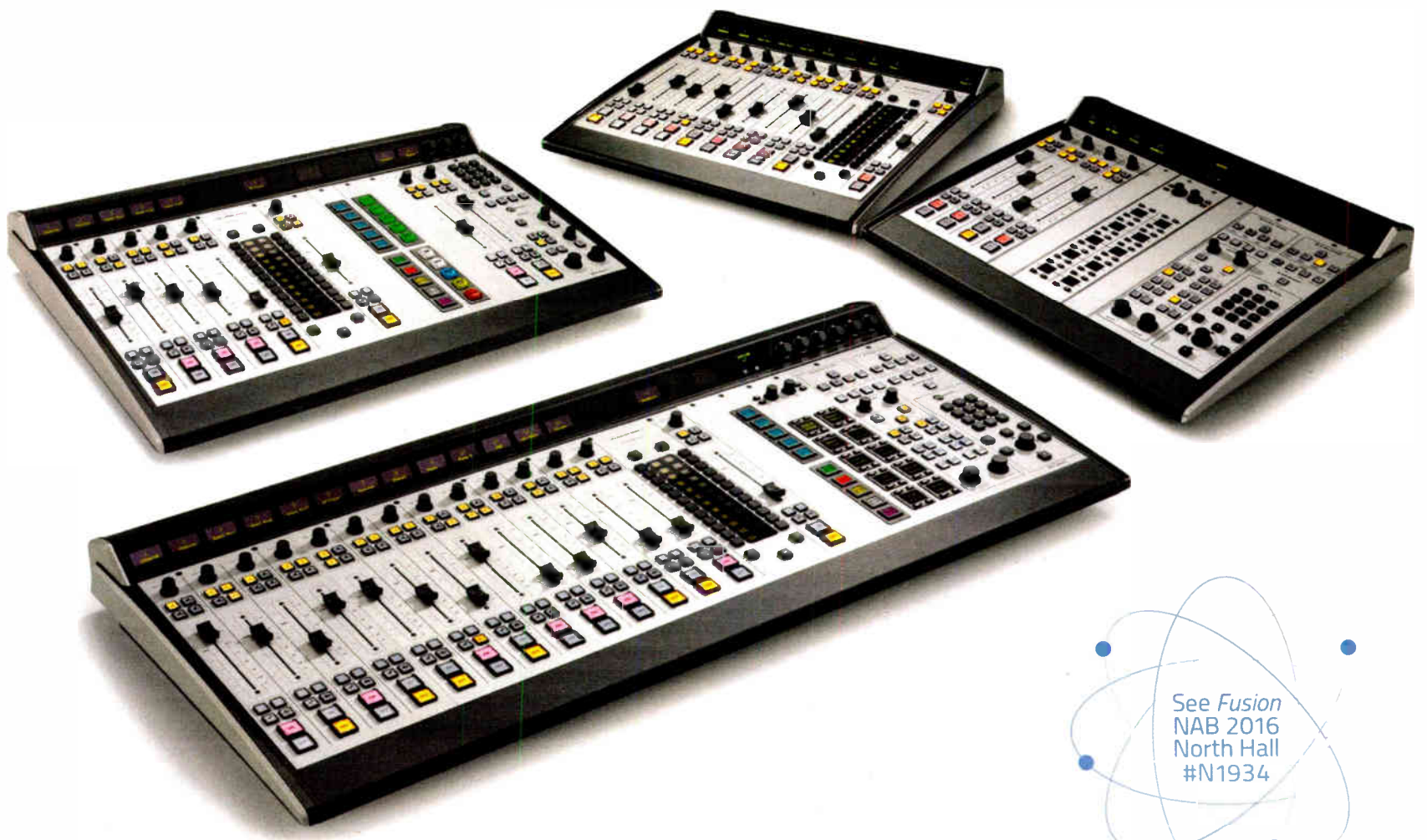
FROM THE 1984 ARCHIVES

Reported in Radio World, April 15, 1984: "Engineers have longed viewed the annual NAB Convention as an electronic supermarket with a round of soft, esoteric engineering presentations on the side. But this year, according to NAB Senior VP of Engineering Tom Keller, the concurrent Engineering Conference will come into its own. 'We're expanding beyond a trade show up to a technical conference,' Keller said. 'That's the level it should be for such a large show.'"

Presentation titles at the 1984 show, according to Radio World at the time, included "Minimum Bandwidth High-Quality Digital Audio Transmission System Using DC-PCM" by Jerry LeBow of TMC Inc.; "Proposed Solution to the Channel 6/Educational FM Broadcast Interference Problem" by consultant Jules Cohen; "Using FM Subcarriers for Data" by Eric Small of Modulation Sciences; "Evaluating S/N Ratio Specifications for Audio Tape Machines" by Charlie Bates of ITC/3M Corp.; and "Use of Microprocessors for Monitoring, Control and Diagnostics of Transmitters: What to Expect" by Whit Smith of Harris Corp.

Other speakers included Wally Johnson, John Moseley, Bob Orban, John (Skip) Pizzi, Mark Durenberger, Bill Wisniewski, Ted Schober, Ralph Justus, Michael Rau and numerous other familiar engineering names.

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World Radio History

10 INCREDIBLY AWESOME THINGS YOU CAN DO WITH A BLADE BEFORE YOU EVEN NETWORK IT

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When you install the WheatNet-IP driver, you can get rid of your soundcard, its breakout box, switcher, serial interface, and your isolation. Stream up to 24 stereo channels of audio to a WheatNet-IP system (8 per BLADE).



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The BLADE is constantly monitoring stuff. Silence, for instance. When it finds it, it can do just about anything you want, INCLUDING having it play clips that it optionally stores.



And as cool as all this is, it's just the start. Wait until you network it with our intelligent control surfaces, talent stations, panels and other BLADEs. It'll blow your mind. Learn a lot more at: blades.wheatstone.com

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OK, this spread is an advertising space paid for by Wheatstone. But hopefully you'll find it informative, entertaining and compelling.



MIDI and AES70?

AES70 was ratified on January 4 as a rudimentary control standard for audio IP networking. Whereas AES67 gave us a means to move audio signals from point A to point B regardless of audio network brand, AES70 now offers a basic control standard that we can use to add third-party devices to the WheatNet-IP audio network. Think MIDI, only for the broadcast world.

IP audio network manufacturers have spent a great deal of time, money, and energy developing fully realized solutions that handle intelligent audio transport and control. For example, our WheatNet-IP audio network is a complete studio environment with control surfaces, navigator software, button panels, widget GUIs, audio controllers, and more that interoperate behind the scenes in ways that would give a cellular phone network a run for its money. We can control anything, conditionally if necessary, from just about anywhere in the environment.

Read the rest of the story: INN33.wheatstone.com

Your IP Question Answered

Q: Why is a distributed network like the WheatNet-IP better for redundancy than a centralized system?

A: Centralizing network management is a single-point-of-failure waiting to happen, whereas distributing network resources to every IP point naturally builds in redundancy.

If one part of the network fails for any reason, the rest can keep on functioning. Each IP connection point (or WheatNet-IP BLADE) stores the configuration of the entire network onboard, which means that failover is immediate. And because WheatNet-IP BLADEs talk to each other, adding additional BLADEs onto the network is plug-and-play or easy system expansion.

For more IP Audio News: INN33.wheatstone.com



He'd Tell You, But Then He'd Have To, Well, You Know...

You know your audio processor is doing a good job when the engineer says he can't disclose the settings because he doesn't want them to leak out to his competition. We expect that with our AirAura, FM-55 and other Wheatstone processors. But with an I/O BLADE that connects together our WheatNet-IP audio network?



That's what they're telling us. To wit: "I don't want to tell the world what we're doing, but I can tell you we're using one of your streaming presets as our starting point," said Cris

Alexander, the DOE for Crawford Broadcasting. He's referring to our BLADE-3s, which serve as I/O connection points in the WheatNet-IP network but also happen to have powerful audio processing on board. Ever the budget-conscious engineer, Cris installed the BLADE-3s as part of the WheatNet-IP system (with E-6 control surfaces) and then assigned them double duty as the processing for web streams. He is using BLADE-3s for processing streams in five markets - Crawford's clusters in Denver, Detroit, Birmingham, Chicago and Los Angeles - for a total of 14 streams. We're talking a very diverse group of formats that range from talk to urban.

Read the rest of the story: INN33.wheatstone.com

Talent Station Gets a Pretty Major Update

These little wonders are showing up everywhere, and now they're even better.

For news booths, interviews, live talk shows or just any place you need control over your network and programming, Talent Stations have become the number one choice. They're tiny, they have exactly what you need to dial up a source and incorporate it into your show, as well as talkback and mute, channel on/off buttons, and now they even have a headphone amp and jack (in 1/4" and 1/8" TRS varieties).

The TS-4 comes in two formats - horizontal or vertical to ensure compatibility with every installation! Just plug them into your switch and they are up and running on your WheatNet-IP network.

To learn more: TS.wheatstone.com



SEE US AT NAB BOOTH N2530



Maximize Your Audience Interactivity

Here are three products that stations can use to connect with listeners in new ways

INTERACTIVERADIO

BY JAMES CARELESS

Listeners have been interacting with their favorite radio stations since the medium's earliest days — by telegram, letter, telephone, email, text, tweet and online live chat. In doing so, listeners feel stronger ties to stations while broadcasters build ratings, ad sales and staff morale.

Opportunities for real-time radio-audience interactivity go even beyond live streaming and social media contacts. In fact, as the following products prove, it is now possible for radio stations to take audience interactivity to the max and to make the Web work for broadcasters, rather than against them.

FANS + LIVE CONTENT + SKYPE

Connecting radio listeners with their favorite musicians is nothing new for broadcasters. But doing this live via Skype-based videoconferencing, with both sides interacting during exclusive concerts hosted on a radio website? Now that is different.

This is the interactive approach being used by radio group Alpha Media, in support of the company's FM

Studio's project manager. "This lets us do live Q&As online, really engaging our listeners with our brand and our content, and enhancing their loyalty to our stations."

Cox Media Group's Tampa talk station WHPT(FM), "102.5 The Bone," has gone even further: It is using the TalkShow and a TriCaster switcher to launch Bone TV, a 24/7 Web stream. "The Bone has talk shows all day long, one of which is based out of Long Island."



102.5 The Bone uses NewTek TalkShow Skype-based videoconferencing to videostream its studio activities under the name Bone TV.

said Rusch Young, Cox Media Group Tampa's digital content manager. "I use TalkShow to Skype that show in daily so we have a feed to show on Bone TV."

Bone TV also uses TalkShow to provide what Young calls "a poor man's remote camera." Whenever 102.5 The Bone has a stunt or event happening in the studio, "we'll call a phone on Talk Show and use that as

streaming of its audio feeds, such as showing the morning show in-studio as it happens.)

A cool feature: Because TalkShow comes with Skype TX software, the system automatically rejects incoming Skype calls once a two-way link is established, preventing the live video feed from being disrupted by incoming call messages.

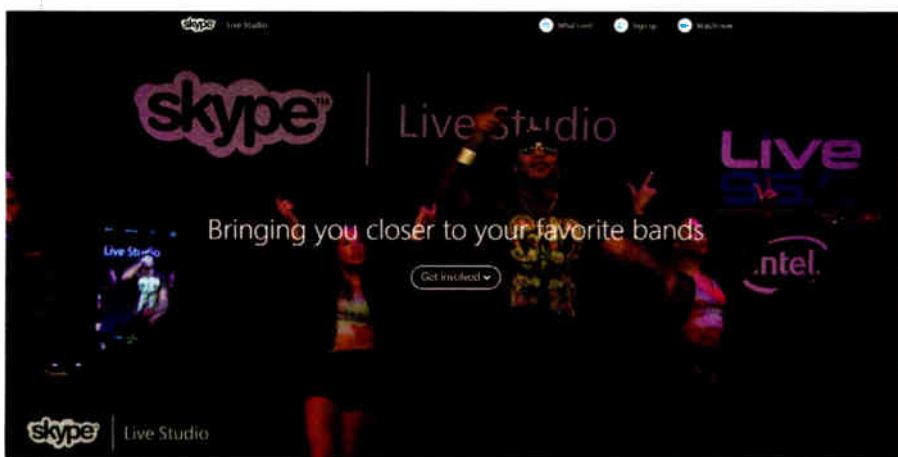
"Skype TX also suppresses the onscreen ads inserted into regular Skype feeds, which means you won't inadvertently display ads from someone who isn't a sponsor," Nelson said. Add Skype TX's ability to enable viewers with top level webcams to send video

to the station at rates up to 1080p, and the result is a broadcast-quality two-way videoconferencing system that gets fans up-close-and-personal with their favorite stars, for the radio station's benefit.

At Bone TV, Cox is using a new advanced edition of TriCaster to automate the station's video capture/payout system. "We built macros to take the net input that has Talk Show on it and set a trigger to take the feed when it detects audio," said Rusch Young. "As soon as a call comes in, it takes the Skype call; and as soon as it disconnects it goes back. This is useful when there is no TriCaster operator but you want a show to have the ability to use a remote camera. It works great."

BEYOND LIVE CHATS

Today, many radio stations webstream live video of their studio shows to listeners, adding pictures to the audio viewers are hearing through their computers and mobile phones. While doing so, the on-screen talent interacts with the viewers via social media, email and live chat.



Alpha Media uses Skype and NewTek's TalkShow videoconferencing unit to produce live, interactive streaming events with musicians and fans under the name Skype Live Studio.

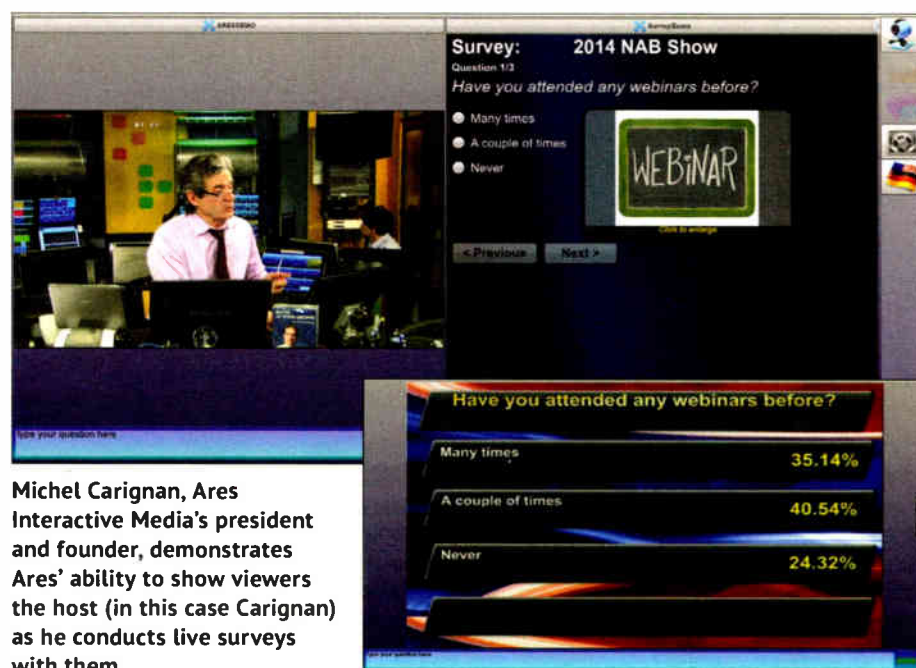
stations in Portland, Ore. Alpha Media has built what it calls its "Skype Live Studio," which connects a musician/band in its Portland facility with fans all over the world.

The Skype Live Studio is not just a bare space. It is fitted with three cameras, a front-of-house audio mixing board, a NewTek TriCaster console capable of feeding switched streams video to the Web and a NewTek TalkShow Skype-based videoconferencing unit.

"The TalkShow allows us to use Skype as a two-way backbone for our webcasts, meaning that listeners can connect and communicate via videoconferencing with our music acts," said Stephanie Hough, the Skype Live

a feed," he said. "It works great in a pinch when you have limited personnel working."

Although Alpha Media and Cox are using the NewTek TalkShow in conjunction with its TriCaster switcher, "you can use the TalkShow as a standalone device," said Philip Nelson, NewTek's chief relationship officer. "Designed to fit into a single rack unit with a built-in small LCD screen, you just add a monitor, keyboard, mouse and network connection to make the TalkShow your Skype portal to the world." (Adding this capability presumes that the station is doing video



Michel Carignan, Ares Interactive Media's president and founder, demonstrates Ares' ability to show viewers the host (in this case Carignan) as he conducts live surveys with them.

Results from Ares Interactive Media surveys are compiled and displayed to viewers in real time.

But what if you could do more with this onscreen connectivity? What if the viewers could take part in contests, answer quizzes, post ratings, download documents and take part on multi-window video chats with the station's online host?

This is the concept behind Ares Interactive Media.

(continued on page 24)

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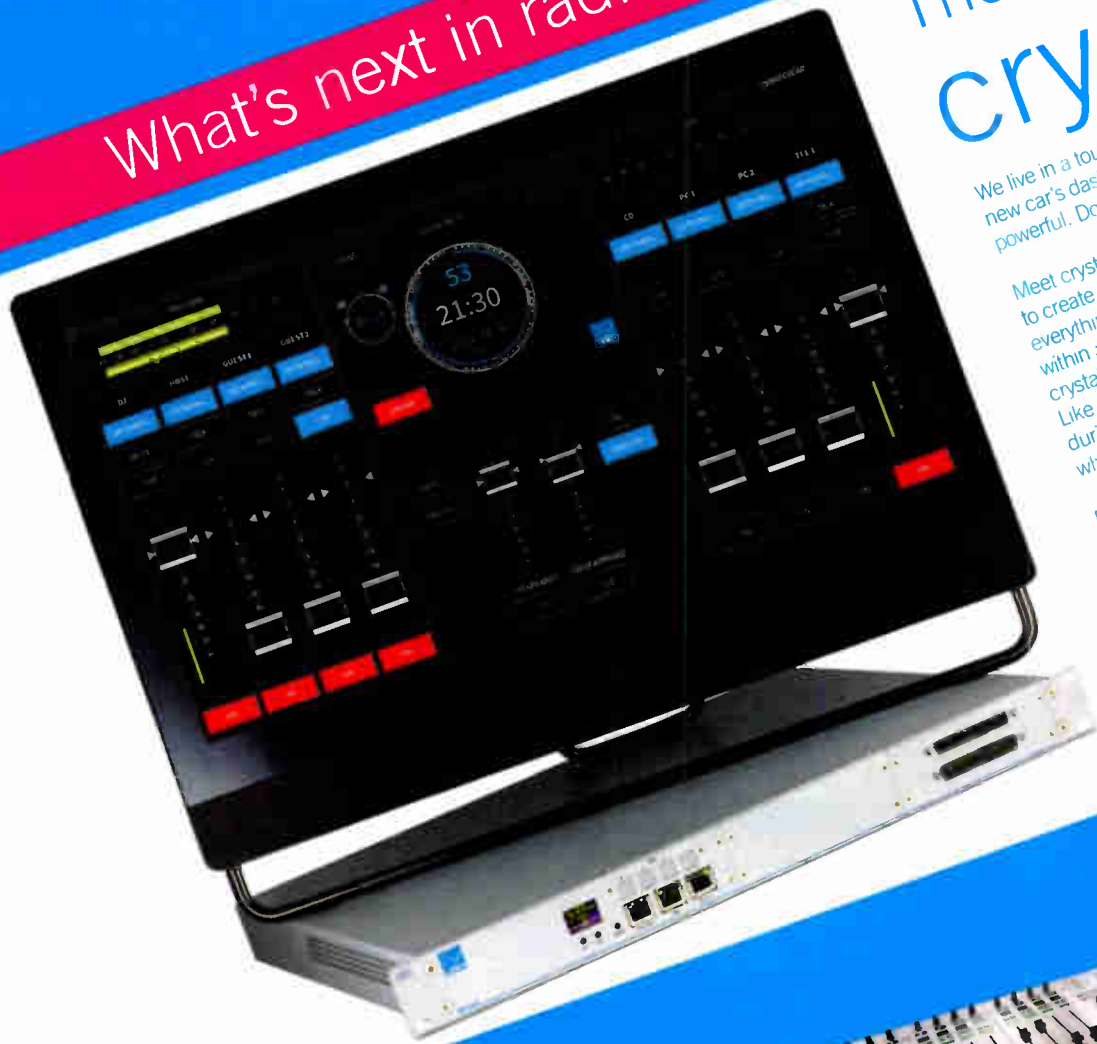
Meet crystalCLEAR, the world's first virtual radio console. crystalCLEAR puts power to create compelling radio right at your fingertips. Its multi-touch interface presents everything – source selection, faders, metering, talkback, timers and more – within an elegant, instantly-understandable graphical interface. Not just a pretty face. Like AutoMix, the intelligent hands-free algorithm that automates fader levels during multi-mic morning shows and talk segments. And AutoGain, which calibrates individual mic gains perfectly with just a touch.

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Join us at NAB: North Hall, N1822

For those who prefer the feel of physical faders, crystal is also available with a compact and intuitive control surface.



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MARKET PLACE



Bass-ic Facts: Pesky bass waves muddying the sound of that live act in your studio? Or maybe enthusiastic users of the production studio have fallen in love with the subwoofer?

Auralex might have a solution for you with the new Studio6 bass trap panels.

The Studio6 is a 2-foot by 4-foot, 6-inch acoustic absorption panel that Auralex says will dig down to 40 Hz. Depending on mounting, the noise reduction coefficients range between 1.45 and 2.20.

The Studio6 is stand-mountable (with Auralex's ProMax stands). They can also be mounted to walls.

Info: www.auralex.com

Wee Speaker: For the production professional, IK Multimedia has introduced a small powered monitor, the iLoud Micro Monitor.

The two-way monitors are biamplified by a pair of Class D amps. The bass is handled by a 3-inch woofer, and a 3/4-inch tweeter handles the high notes. There is a simple -3 dB EQ system along with a volume control.

The units operate in a master-slave relationship, not untypical of desktop monitors. Inputs include RCA, 1/8-inch and Bluetooth wireless.

Frequency response is listed as 45 Hz–20 kHz (with EQ). Price: \$299

Info: www.ikmultimedia.com



K-Phones Influx:

Microphone and headphones maker AKG has a new group of "K" headphones available — K52, K72 (shown) and K92. These are aimed at the "affordable" price point for working audio professionals.

All models have 40 mm drivers and a closed-back design. AKG says, "The closed-back design features an innovative acoustic chamber, which eliminates audio bleed and preserves privacy, keeping the sound in the ears of even the most mobile listener."

Other features include replaceable earpads, a 3-meter cable and a 1/4-inch plug adapter. According to AKG specs are: K52 — 18 Hz–20 kHz; K72 — 16 Hz–20 kHz; and K92 — 16 Hz–22 kHz.

Prices: \$39.99–\$59.99

Info: www.akg.com/pro



Pliers Aplenty: Can you ever have too many sets of pliers around?

The latest from Platinum Tools is the Linesman's Pliers. Available in 6-inch and 8.5-inch versions, the handles have a two-toned molded grip with a shoulder.

The body is made of 6140CrV drop-forged carbon alloy steel. The body has level of 45 ±3 and the blades rate at hardness level 58–61.

Platinum Tools President and General Manager Lee Sachs said,

"Designed for gripping, twisting, bending and cutting wire and cable, the two-tone molded comfort grip handle helps

make any job a breeze." He added,

"The 6-inch version is the miniature version of its 8.5-inch big brother, but the compact smaller design allows it to get into places the larger

Linesman's Pliers won't fit."

Info: www.platinumtools.com

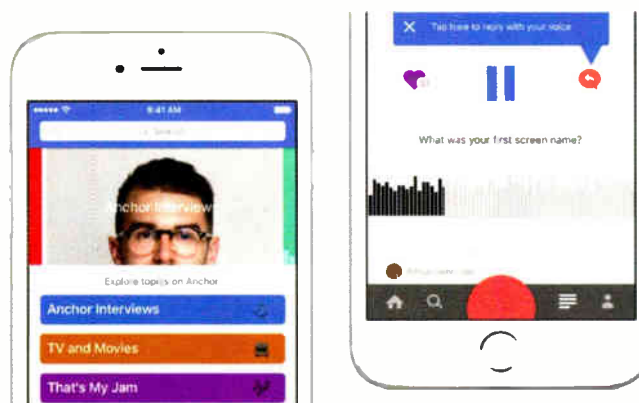


INTERACTIVE

(continued from page 22)

AIM is a cloud-based video production platform that lets the on-camera talent interact in many ways with their viewers, either directly or by having a second staff member handle the switching. Because it is cloud-based, AIM is easy to install and operate.

"We offer a radio station the ability to do anything with their audience in real time," said Michel Carignan, Ares Interactive Media's president and founder. "This includes live video, contests, surveys, video on demand, shopping cart, document sharing and webcam communication with up to three listeners/viewers and the host." In turn, this level of interactivity opens



The Anchor recording app makes it easy for stations to conduct man-in-the street interviews over listeners' iPhones without leaving the studio.

new possibilities for advertisers: both as sponsors on onscreen events and to make direct contact with viewers online.

STREETERS

A "streeter" is slang for a "man in the street" interview package, those often colorful montages of listener comments. They can be time-consuming to capture.

Anchor is a free iPhone app that takes the pain out of recording streeters. Instead of sending a reported outside to canvass passersby, Anchor lets broadcasters (or indeed any Anchor user) record initial thought-provoking messages up to two minutes in length. These are made available to Anchor app users: Each gets up to one minute per response to offer their thoughts through their iPhone. The collected audio clips can be accessed, edited and used by broadcasters on air. Anchor users can also access these answer feeds directly on their iPhones through the Anchor app.

A range of Anchor user-recorded "conversations" can be found on the company's Facebook page at www.facebook.com/anchor.fm. This is a powerful, convenient and free way for radio stations to boost their interactions with listeners, and create usable on-air content at the same time.

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AFVN: The GI's Companion

Makers of radio documentary sought to provide an authentic representation of the real AFVN

BY KEN DEUTSCH

"That's going to do it for another fantabulous 'GO' radio program, a happening phase number two, and we'll do the whole thing over again tomorrow night at 2100 hours." — Harry Simons on American Forces Vietnam Network, 1969.

For 13 years in the 1960s and 1970s, American Forces Vietnam Network comprised a group of radio and TV stations with their headquarters in Saigon and local stations or "detachments" in Danang and several other cities. AFVN was an arm of the U.S. Department of Defense's Military Assistance Command Vietnam and was supported by Armed Forces Radio and Television Service in Los Angeles.

For most American civilians, their introduction to AFVN came via 1987's film "Good Morning, Vietnam" starring Robin Williams as the exuberant disc jockey Sergeant Adrian Cronauer. But that was a Hollywood depiction. To get a flavor of what it was really like, talk to another man who worked in AFVN radio in the late 1960s, Marine Corporal (later Sergeant) Harry Simons, who in 1967–68 served as chief engineer and announcer for the Saigon stations and in 1969 as an announcer at the AFVN Danang detachment.

The stories of this network, and many of those involved with it, are told in an ambitious 10-hour audio documentary, "AFVN: the GI's Companion," that

aired recently on WEBY(AM) on the Gulf Coast of Florida and can be heard online. Simons played a key role in the production and provided much of the vintage audio.



Harry Simons works the mic at AFVN Danang in 1969.

Featuring fresh interviews alongside airchecks that had not been heard in almost 50 years, the show takes listeners back to the Johnson and Nixon presidencies, a time when the cost of a typical new car was under \$3,000, a serviceman could expect 10 percent interest on his savings account, and terms like "groovy" and "far out" were uttered without irony.

Included in the program are radio luminaries Scotty Brink, Scott Manning, Dick Orkin, Gary Gears, Chris Noel, Pat Sajak and Adrian Cronauer.

During the Vietnam War, AFVN played hits by The Doors, Steppenwolf, the Beatles and other artists, providing a little touch of home for the 3 million or more American servicemen and



Above: The AFVN detachment in Danang, 1969.

Right: Mike Bates stands in front of a rooftop structure, once part of a CIA residence, familiar from 1975 news coverage of the evacuation of Saigon. He holds a photo of the spot taken during the evacuation.



WORK HAZAROS

Straight out of high school, Simons signed up for a tour of duty with the Marines. After arriving in Vietnam in 1967, he found himself at AFVN in Saigon where his first job was chief engineer, a post for which he admits he was unqualified at the time.

"Fortunately my job was primarily administrative, and we had good support from

—women stationed there. In place of commercials, listeners were treated to government-sponsored reminders to clean one's weapon properly, take malaria pills, change socks frequently, refrain from shipping home items purchased in communist countries and avoid marijuana.

For many men and women, AFVN was the soundtrack of the war in Vietnam — and an immediate morale-booster.



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age to the front and one side of the building. Ceiling tiles and fixtures collapsed throughout the building onto people and equipment and many windows were blown out, glass was everywhere. A similar attack was launched at the South Vietnamese facility later in 1968. The extremely close proximity of the two facilities allowed for collateral damage.”

Both Simons and his colleagues endured those and other attacks. Not the kind of work hazard one typically meets in a U.S. broadcast facility.

Later in Saigon he added the job of disk jockey to his duties, hosting the

nightly “GO Show,” a request rock and roll program. Simons belted out the hits for anyone listening throughout Vietnam and 13 other countries.

Norm LaFountaine was a helicopter crew chief stationed near Danang in 1968 and '69. In the documentary, he discusses the importance of AFVN to the spirit and the motivation of the troops.

“One night we were flying a Medivac mission and it was raining like crazy and it was cold,” said LaFountaine. “I dialed in AFVN, and here comes Sam and Dave singing ‘Hold on, I’m Coming,’

and that’s what we were doing, coming to get these guys. That always stuck in my mind.”

The modern interviews heard in the documentary were recorded by Simons and WEBY Program Director Mike Bates; the task of assembling the elements fell to Bates.

“I had known Harry for about 13 years,” said Bates. “He mentioned that he had many hours of tapes of himself and others on the air from the Vietnam era and asked if I’d like to hear one. Out of curiosity I listened and my reaction

(continued on page 28)



American civilian employees and locals who were real engineers,” he relates in the documentary. “Also, the equipment was brand new, so we had relatively few technical problems.”

Of course, the bombings presented challenges.

“AFVN was one of the top three primary targets of the enemy in Saigon,” Simons told Radio World.

“Inside our fenced perimeter compound in Saigon AFVN was co-located with the South Vietnamese radio and TV stations separated by a single chain link fence in the middle of a large concrete driveway. Several attacks occurred targeting at each of the facilities separately.”

In the documentary a recording of one such attack in 1968 is included, narrated by Scott Manning. That attack was 250 pounds of plastic explosive delivered to the AFVN side of the compound in a taxi cab.

“The blast caused considerable dam-

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THE GI'S COMPANION

(continued from page 27)

was, 'Hey, this guy was really good!' But as I heard more of the tapes, I recognized the historical significance of them and thought they should be shared with the world. That's when we decided to work on this project together."

QUIET, TOO QUIET

The project afforded Simons a chance to go back not only in spirit but in body. In September 2015, he and Bates made an 18-day research trip to Vietnam. For

Bates it was a first visit; for Simons it was an eerie return to a strange yet familiar land.

"The first reaction I had was an immediate flashback to 1967," he said. "I wasn't sure I wanted to get off the plane, and I was dazed for some time. I thought, 'Oh my God, what am I getting into?' My whole body was shaking."

Even within the safety of his hotel Simons was uncomfortable.

"I didn't feel secure at all," he said. "I

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Bates and Simons, third and fifth from left, tour a TV studio in Saigon where AFVN once operated.



Bates, left, and Simons discuss AFVN in the WEBY studios.

had to keep reassuring myself that a war was not going on. It was so quiet. When I was there the first time there were constant sounds of bombs, rockets, mortars and small arm fire and now none of that was taking place. Where was the war?"

Of course much had changed in the nearly five decades since Simons had seen the city. The airport was modernized and the AFVN building had morphed into a TV digital production facility owned and heavily guarded by the government. It took complex negotiations with the Ministry of Foreign Affairs before the duo was allowed inside the station.

When Simons and Bates were allowed to visit the building that had housed AFVN, they were escorted by a polite group of Ho Chi Minh City Television employees, some of whom had worked there for many years. Simons was told he was the first former AFVN staffer to enter the facility since its evacuation in 1975. He found it a good ending to a difficult journey.

LISTEN NOW

Bates said most of his job on the documentary was done in an air-conditioned radio studio in peaceful northwest Florida. "The real credit and glory



memorable PSA warns of the dangers of pot: "You know what the VC and NVA do when they get ready to go into battle? They get high, man. Yea, they smoke grass. Then they don't care if they die or not."

With its extended-aircheck format, "AFVN: the GI's Companion" is something of a time capsule not only of AFVN but American life in the late 1960s.

However, Simons emphasizes that the show is also about much more than music and jocks. Nine months of careful research went into its planning.

The program features an interview with Lyn Watkinson, a "pen pal" in the United Kingdom who wrote to U.S. servicemen in Vietnam; hundreds of letters to her are in the British Museum of History in London.

There's also a 1969 interview with an officer of charge of a special operations outfit assigned to defoliation using Agent Orange; a recent interview with Harry Ettmueller, the only surviving POW of the attack and annihilation of the Hue, Vietnam, AFVN detachment; and a recent interview with West Point Professor Greg Daddis, speaking

about the version of the song "White Christmas" played by the one remaining FM station in Saigon, to signify the final evacuation on the morning of April 29, 1975.

Said Simons, "It is a story that has never been told in this manner."

Ken Deutsch is grateful to Sergeant Simons and all the men and women who have served in the American forces. Former AFVN staffers connect with each other on Facebook, in a Yahoo group and via frequent reunions. Much more about AFVN can be found at www.afvnvets.net/home.html.

should go to the people who served in Vietnam. After the documentary aired we got a lot of phone calls and emails from veterans who remembered listening to AFVN. It brought back memories for them, good and bad, but they really enjoyed hearing it. If there was a good part of the war in Vietnam for these guys, it was AFVN."

The documentary originally aired in two-hour segments over five weekdays in October, commercial-free; it was rerun on Veterans Day and streamed live over WEBY's website both times (www.1330weby.com). You can hear the full 10-hour audio documentary at <http://rockradiascrapbook.calafvn.html>.

"This isn't about the sound of the war itself," Bates says in the program's opening minutes. "It's about the soundtrack of the war. AFVN was heard everywhere: on bases, in hooches, in trucks, aboard ships, in cockpits, and even in the fields of battle. Wherever Americans were, AFVN accompanied them."

Much of the top 40 music in the program's vintage sections will be familiar, though there are plenty of forgotten gems too. Part of what sets the show apart are the fascinating DJ patter, the jingles and the government-sponsored PSAs programmed with the serviceman in mind.

We hear "boss radio" jocks celebrating "million dollar music for the Aquarian Age." The National Center for College Admissions promises to submit a veteran's college application to more than 100 colleges. Servicemen wondering where to spend their R&R hears a spot pitching Hawaii, where "the 'mod' sound is in! Hawaii after dark is grooving to the 'now' sound of today!" And a

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WLNG Sound Is Larger Than Life

Wheatstone processors handle oldies and remotes for iconic station

USERREPORT

BY BRIAN BANNON

On-Air/Operations Manager/Engineer
WLNG(FM)

SAG HARBOR, N.Y. — WLNG(FM) is indeed a unique station. Situated on the eastern end of Long Island, the station has served the Hamptons community with news, local information and music since 1963. Originally on 1600 AM, WLNG signed its FM on at 92.1 MHz in 1969 and in 1998 became an FM-only station.

Throughout its history, WLNG has had a special bond with its community. A big part of that is consistency. Newscasts, remote broadcasts and other community announcements are prominent features on the station every day. That consistency is not only present in the on-air content, it is vital behind the scenes in the technical department.

One of the features of the station is the “WLNG sound.” Crafted in the 1970s by then-President Paul Sidney, the sound has always been punchy and “larger than life” on both the AM and the FM. That included reverb and carefully selected processing pieces to shape the sound. As technology advanced, so did the sound. But care was taken to keep the reverb and keep the sound larger than life. You knew it was WLNG when you tuned in.

One of Paul’s calling cards was his desire to keep the station in mono, and the station remained that way into the millennium. But as times changed we knew we had to as well, and there was nothing technically preventing us from going stereo. Well, maybe finding the right audio processor.



GUI for Wheatstone FM-55



We looked at a number of processing options on the market and decided to turn to Wheatstone and Mike Erickson. Mike was a Long Islander (and WLNG employee in the 1990s) and spent more than a decade at CBS Radio crafting the sound some of their New York City FMs, including another legendary station, WCBS(FM). Mike suggested, at the time, the Wheatstone FM-4 processor. We auditioned one and purchased it.

All was well until Hurricane Sandy taxed our facil-

ity. WLNG made it through the storm, but on the other side we started to look for ways we could have redundant systems and improve our reliability during major storms — after all, WLNG is the go-to place for people to find out information during a storm. We get called before the power company!

We wanted another FM-4 so we would have a backup processor. We again turned to Mike. Fortunately, the FM-4 was discontinued. I say fortunately not because the processor was bad but because Wheatstone now had an even better option.

WLNG purchased one of the first FM-55 audio processors after seeing and hearing it at the NAB Show in 2014. We were immediately impressed on the increased consistency of the box both in modulation and tonal balance between cuts. As stated, WLNG’s broadcast day consists of lots of spoken-word segments intermingled with music that spans five decades of pop. To have a processor be able to deal with all of this using one preset was something to hear. The FM-4 did a good job, but we had a few tradeoffs at the time. One of the few things about the FM-4 was latency. Our jocks listen off air and the FM-4 had about 9 ms of

latency. The FM-55 just about cut that number in half. Latency is a mere 5 ms, quick enough for even the most discerning air talent.

Setup was easier than the FM-4 as well. A front-panel OLED screen got us aligned with input levels as well as the output composite and pilot injection levels (the processors are located at the studio with a composite STL). While there are flexible sound adjustments on the front of the FM-55, the GUI is where the magic happens. We were able to quickly dial in our sound and save the preset. We literally haven’t touched the box since.

What is most interesting is how unique you can make the FM-55 sound. We could sound like the other stations in our market if we wanted, and if we ever needed to go there it’s just a few adjustments away. But the FM-55 can also break out of the mold of other processors on the market and yield a unique sound, one that fits WLNG to a T and has attracted listeners and clients for 53 years. Consistency and flexibility to evolve and we wouldn’t want it any other way.

For information, contact Jay Tyler at Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

TECHUPDATE

WORLDCAST REWORKS HQSOUND

WorldCast Systems is offering the HQSound processor, previously known as the Audemat Digiplexer, with updated feature set and pricing structure.

Several features which were optional are now included as standard and the overall cost has been reduced by 30 percent.

The company says the quality and power of the processor have not been altered. The core processing engine offers approximately 20 times more processing power than competing products, it says, while the FM limiter sampling rate of 1.5 MHz is at least twice that of most other audio processors. Designed for FM and HD broadcast, it also offers a suite of processing tools including AGC, tone FX, stereo FX, stereo limiter and multiband processing and limiters.

The HQSound processor now includes the following as standard: a built-in RDS encoder; advanced audio backup capability providing silence detection, auto fade-in/out and back-up to an audio streaming service or a local audio source with multiple playlist management; and ScriptEasy software monitoring solution for the unit and co-located devices.

The HQSound is available in one-band, two-band and four-band versions and can be tried for free for 30 days before purchase.

For information, contact WorldCast Systems in Florida at (305) 249-3110 or visit www.worldcastsystems.com.



ABOUT BUYER'S GUIDE

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TECHUPDATES

DAYSEQUERRA ISSUES M4 SERIES 2

DaySequerra has developed a Series 2 of its M4.2 TimeLock processors. The new M4 TimeLock Series 2 offers greater versatility in identifying and synchronizing diversity delay in HD Radio broadcasts, the company says.



The original DaySequerra TimeLock algorithm measures the time alignment of the MPS and HD1 streams with accuracy to one audio sample. The Series 2 TimeLock algorithm maintains this precision with the added capability of working under the most adverse conditions including situations where an FM station is operating in mono on the legacy analog side and in stereo on the HD Radio side.

Delay capability in the new Series 2 is doubled to +7 seconds, allowing a greater range of diversity delay correction even with extremely high HD Radio data payloads.

In addition, full SNMP support on the M4DDC version (shown) allows broadcasters to create their own monitoring software or integrate other monitoring systems with the new TimeLock M4DDC.

The M4 TimeLock is compatible with numerous Orban, Omnia and Wheatstone processors as well as GatesAir HDE200 exporter and the Nautel Exporter Plus.

The Series 2 update is free for existing TimeLock customers.

For information, contact DaySequerra in New Jersey at (856) 719-9900 or visit www.daysequerra.com.

INOVONICS RELEASES NEW PROCESSOR

Inovonics released a new DSP-based INOmini processor that it says meets multiple broadcast needs.



The company says the 223 is a quick, menu-driven, application-specific processor for NRSC, European or shortwave AM broadcast; Traveler's Information Service; monaural U.S. or European FM; and analog SCA applications.

Features include gated and windowed "gain-riding" AGC, three-band compression with adjustable EQ, and a "lookahead" final limiter coupled with overshoot-controlled multiple cutoff output filtering to suit a variety of uses.

The 223 is an alternative to the Inovonics 222 AM NRSC compliance processor, which has been in production since 1987.

The 223 finds application with other broadcast services including asymmetrical NRSC-compliant AM processing with 10 kHz, 9 kHz, 7 kHz and 5 kHz brickwall cut-offs; processing for TIS roadside information transmissions, stressing optimum-but-natural speech intelligibility; comprehensive monaural-FM processing for low-power and temporary installations; or an analog-SCA processing mode with smooth, peak-free response for spoken-word and background music services.

The 223 has an intuitive menu-driven user interface. All modes employ protection-limited pre-emphasis and bandwidth constraint specific to the service selected. The triband compressor section has selectable turnover frequencies, and its "smooth vs. loud" adjustment gives clear-cut control over program density.

The compact 1/3-rack-size unit integrates with other Inovonics INOmini products including RDS encoders and decoders, AM/FM/HD Radio confidence monitors with IP control and streaming audio, and other problem-solvers.

For information, contact Inovonics in California at (831) 458-0552 or visit www.inovonicsbroadcast.com.

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Processor pumps up WPKO's signal and adds RDS possibilities too

USERREPORT

BY WILLIAM BOWIN, CSRE, CBNT
AND SHERRIE BOWIN, CRO, CBNT
Bowin Engineering Services

BELLEFONTAINE, OHIO — Home to Olympic snowboarder Louie Vito, this town is a small bedroom community in northwest central Ohio. Many of its residents commute to nearby Columbus and Dayton, so they're familiar with large-market radio. With that in mind, the sound of one of our client stations, WPKO(FM), was starting to become a bit dated so we knew it was time for a new audio processor.

Having used the Omnia.9 at some of my other clients in larger markets, we were excited to try its little brother, the Omnia.7 FM, in Bellefontaine. It did not disappoint.

Installation was quick and painless,



Sherrie and William Bowin with an Omnia.7 FM.

although we did actually have to consult the manual to locate the password. While the front panel is easy to

navigate, it's much more convenient to use the remote software, NfRemote, to tweak the settings. In fact, through VNC it's possible for the operations manager to adjust the sound of the station from the comfort of his living room or even from his car.

WPKO plays a variety of music from the '60s right through to today. It dedicates whole segments to older music, such as the "Lunchbox Oldies" hour while evenings are reserved for requests and dedications, usually from the younger folks.

As with most small-market stations, Friday and Saturday evenings are time for high school sports. WPKO's Omnia.7 FM handles this variety of program-

ming with ease. The "Undo" feature restores a bit of life to today's overly processed music, and the rest of the processing algorithms don't bring up the noise often found in older recordings. Even the sports broadcasts sound a bit better.

One of the disturbing results of the installation of the Omnia.7 FM was the discovery of some of the flaws in the WPKO airchain. The .7 FM is so much cleaner and brighter than the previous processor (it has response out to 16.5 kHz) that WPKO is in the process digitally reloading some of the material into its automation system that was recorded years ago at a lower sample rate. Additionally, the .7 FM provides such a nice bass punch that we found some of the electrolytic capacitors in the console were a bit tired and not up to the task.

We purchased the .7 FM through a major broadcast supplier who offered a free RDS upgrade so for the first time, the station has RDS capabilities. Right now it's simply displaying a static RDS slogan, but the .7 FM can accept dynamic information and they're planning to add that at a later date.

It is also "futureproofed." With plans in the works to upgrade to HD, all that is needed is to purchase the HDI feature and install the unlock key.

The Omnia.7 FM can handle the analog diversity delay should it be decided not to implement it in the exporter.

Would we recommend the purchase of another Omnia.7 FM? Absolutely. In fact, when an FM translator is added to the AM, we definitely see another .7 FM in WPKO's future.

For information, contact Brian Kerkan at Omnia Audio in Ohio at (216) 241-7225 or visit www.telosalliance.com.

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TECHUPDATE

D&M'S VIBE FM OFFERS OPTIONS

D&M Broadcast's three- or six-band Vibe FM is fed by a wideband AGC, while DSP manages the audio processing and RDS/MPX encoding. It can operate in analog or AES/EBU modes.



The Vibe FM can be updated via software updates.

In addition, an optional Ethernet streaming card lets users play MP3/AAC+ streams and files. It forms a complete stream to the MPX+RDS receiver for use as a spare audio source or STL network. In this configuration, the audio signal coming from the network is processed by the DSP and converted to analog through the MPX output, thus creating an entirely digital processing chain.

For information, contact D&M Broadcast in Italy 011-39-051-0312903 or visit www.dmbroadcast.it.

TECHUPDATES

EVENTIDE FLAGSHIP BD600W NOW SHIPPING WITH WHEATNET

Eventide points to its history as developing the modern profanity delay in the 1970s, replacing costly analog tape-based solutions with a seven-second rack-mounted digital delay.

Its flagship delay is now available in three configurations: BD600, BD600E and BD600W.



The newest, the BD600W, includes the extended remote control functionality of the BD600E as well as integration of audio and control over IP with Wheatstone's WheatNet broadcast network.

Each BD600 offers 80 seconds of profanity protection, as well as up to 10 seconds of MicroPrecision delay, adjustable in real time in subsample increments, free of audible artifacts — suitable for syncing HD Radio signals, multiple transmission towers or audio with processed video.

The BD600E offers extended remote capability for integration with automation systems.

For information, contact Eventide in New Jersey at (201) 641-1200 or visit www.eventideaudio.com.

ORBAN INTRODUCES NEW FLAGSHIP PROCESSOR

Orban is introducing a flagship processor for the Optimod product line, the Orban Optimod-FM 8700.



The 8700 features Ravenna audio over IP connectivity (AES67-compliant), and two hot-swappable dual redundant power supplies with automatic fallover. Digital MPX connection is now standard in the 8700 with 192 kHz AES3 digital MPX output.

New dual-digitized SCA inputs, and a new Orban propriety-designed program adaptive subharmonic synthesizer to ensure ultra-low punchy bass, are featured. Orban says its Multipath Mitigator minimizes stereo subchannel energy without compromising stereo separation.

For information, contact Orban in Arizona at (480) 403-8300 or visit www.orban.com.

DEVA DEBUTS NEW PROCESSOR

DEVA Broadcast's new DB6400 is a four-band processor with ultralow latency, the company says.

The processing section includes dual stage wideband AGC with "intelligent gating," a multiband adjustable range equalizer, multiband peak limiter and advanced distortion-controlled final stage. There are onboard factory presets and user-customizable presets. The sample rate can be controlled externally by SNTP for automatic synchronization. The DSP-based stereo encoder guarantees precision of the MPX signal with peak control and two independently-configurable composite MPX outputs. A built-in RDS/RBDS encoder is part of the package.

Other features include a built-in IP audio player which supports MP3 and PCM



audio formats in the event of signal loss. Upon silence detection an email notification is immediately sent. Silence parameters are customizable.

The DB6400 can be operated via the front panel or remotely via TCP/IP and by using its Web interface through iOS, Android or any other mobile device or a PC. There are security settings to keep unauthorized personnel from changing settings. Connections include AES/EBU, S/PDIF and optical digital audio inputs along with a USB interface for local connectivity.

For information, contact DEVA Broadcast in Florida at (305) 767-1207 or visit www.devabroadcast.com.

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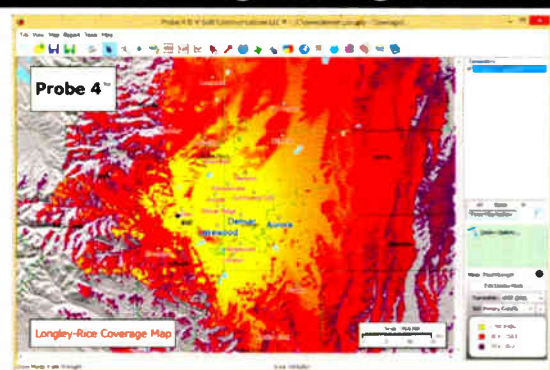
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SBE Files FCC Comments on AM Improvement

NEWSMAKER

It's time to get tough on ambient noise in the AM broadcast band and medium-frequency bands in general. So says the Society of Broadcast Engineers, filing comments in the FCC's AM revitalization further notice of proposed rulemaking.

Here is the text of the SBE summary; a link to the complete filing is at the end:

The Society of Broadcast Engineers filed comments in response to the Federal Communications Commission's further notice of proposed rulemaking and the combined notice of inquiry in the AM Improvement Docket, 13-249. Its comments focused on a single issue first raised in the SBE's comments filed in the proceeding in 2014, but not addressed by the FCC in its Oct. 21, 2015, first report and order: that of ambient noise in the AM broadcast band specifically, and in the medium-frequency bands generally.

The SBE's comments note that the commission has made, and is currently examining additional short-term improvements in AM broadcasting in this proceeding. Although those short-term initiatives may be necessary to help the serious economic conditions for AM broadcasters, they are not going to lead to any meaningful, long-term improvement in MF AM broadcasting. To do that, the SBE asserts, the commission is going to have to be willing to implement some difficult regulatory reforms that it has not addressed to date. It must develop and commit to a regulatory plan that, over time, will reduce the levels of man-made noise in the MF bands, and more broadly in the bands below 30 MHz.

The FCC noted earlier in the docket that "AM radio



is particularly susceptible to interference from electronic devices of all types, including such ubiquitous items as TV sets, vehicle engines, fluorescent lighting, computers, and power lines. The noise on the AM band that is caused by those sources is only expected to increase as electronic devices continue to proliferate."

The SBE suggested that this increase in noise is not inevitable. However, it is a serious and worsening problem. Citing the aggregate effects of Part 15 and Part 18 unlicensed devices, the SBE notes that the FCC does not have any practical ability to address the interference potential of unlicensed devices past the point of sale. Reductions in field staff available to conduct spectrum enforcement have made enforcement in interference cases involving unlicensed devices unavailable in the future. The only source of regulatory reform that has a meaningful chance to positively affect the noise floor over time are the regulations that create obligations on manufacturers and importers and dealers, prior to the point that the consumer deploys it.

Citing a study by the LBA Group, AM reception is dependent on the desired signal being typically some 26 dB above the ambient noise level. The AM band is subject to AM coverage distortion, increasing noise threats, and interference from the proliferation of wireless systems, electronic devices and low-frequency radiators that distort AM signals more now than as recently as 10 years ago. The electric power grid has expanded, bringing noise contributions from corona, arcing, and other modes. AM stations have increased power to raise their signal-to-noise ratio in an attempt to preserve their coverage areas, often interfering with other stations. But there is a limit to power increases, both economically and technically, and those limits are

now reached in many cases.

The SBE argues that AM listeners have media options, and that RF noise will make them exercise those options. When an RF lighting device or a Part 15 intentional radiator causes interference to their receivers, AM listeners receive interference. They will not suffer it; they will simply utilize different media. The SBE urges the commission to commence an interference management plan for the AM band, based on rules that limit RF noise before it becomes an issue, not after the fact, and those rules have to be enforced.

The SBE urges the commission to commence an interference management plan for the AM band, based on rules that limit RF noise before it becomes an issue, not after the fact, and those rules have to be enforced.

The FCC should also study current ambient noise in the MF band, with an eye toward updating older studies on the subject. This will permit a reasoned analysis of the commission's Part 15 and Part 18 rules and thus contribute to a controlled RF environment over time. The SBE suggested that AM broadcasting will never get better in the worsening RF noise environment in the bands below 30 MHz without some regulatory relief.

Read the SBE filing in full at <http://tinyurl.com/rw-sbe-am>.

READER'S FORUM

CBS TO SELL RADIO ARM?

I know this sounds old-fashioned, but what about their responsibility to the communities they serve ("CBS Eyes Departure From Radio," radioworld.com)?

Obviously it is a successful business, and dumping it just to make shareholders happier is a pretty sad excuse in radio today. Many mom and pop stations are struggling to stay on the air, and a big name like CBS Radio News is a real asset to them as a national news source.

In America, we have just become profit-driven, with no respect for the people served by the CBS News outlet for 90 years. I am sure Clear Channel [iHeartMedia] will jump in on the fray, if they have not already.

I traveled quite a bit in the country the last few months, and radio is as plain and bland as milk. I heard the same ads, with the same voices, no matter of where I was located. I know radio has been hit hard by the Internet and streaming, but there is still a place for terrestrial radio as a source of news, and emergency notifications. In the world today we cannot discount the possibility of a hacker attack, or even an air burst nuclear weapon designed to produce an EMP that destroys our infrastructure. Radio will be the only means of communication.

I keep a couple of radios in a steel box, and rotate out the batteries every year or two. Not that I am paranoid, but I subscribe to the Boy Scout motto: Be prepared.

Danny Waggoner
Eastport, Maine

A SLIDE WITH A TWIST

It is interesting that of all companies, it was RCA sending an "FM Coverage Calculator" to assist broadcasters planning FM stations ("FM Slide Rule Is a Treasure From the Past," Feb. 17).



Given the bitter and drawn-out court case between Major Armstrong and RCA, this was the height of hypocrisy. David Sarnoff and RCA did everything they could to dispute Armstrong's accomplishments, discoveries and findings regarding FM broadcasting.

If I had known what RCA and David Sarnoff had done to Major Armstrong when I built WKJA(FM) in North Carolina in 1981, I wouldn't have bought an RCA transmitter.

Bob Roach
Greensboro, N.C.

Preparing for TV Repack in the FM Universe

FM broadcasters can and should begin planning for disruption now, and understand their options

COMMENTARY

BY RICH REDMOND

The author is chief product officer of GatesAir.

Buzzwords and movements often bubble to the surface in the broadcast industry, only to disappear quickly under water. AM stereo. 3DTV. Many wonder today if 4K television will fully catch on.

One current movement that is a certainty is the TV spectrum repack. The FCC's recent release of the Reverse Auction Opening Prices serves as clear evidence that the process is moving forward. Between now and May, TV broadcasters across all 210 DMAs (and Puerto Rico) will either commit to going dark and selling their spectrum or remaining on the air. A commitment to the latter option will force the TV station to move to a new UHF or VHF channel assignment.

As with the original analog to digital TV conversion, FM broadcasters on shared tower sites can expect operational disruption on some level. However, taking immediate action and jumpstarting on plans will significantly lessen the impact.

BUILDING A PLAN

Today, approximately 1,200 tower sites accommodate shared TV and FM operations. GatesAir calculates the exact number of FM radio stations and translators on these sites at 2,368, of which 1,300 are full-power stations.

Most of these broadcasters can remain on the same tower. However, outside of the rare case where the TV station can retune existing hardware, there will be substantial changes both inside the plant and up the tower. This is because most RF systems from the transmitter to the antenna are frequency-specific.

This concept may seem foreign to some radio broadcasters. Generally speaking, today's solid-state FM transmitters, filtering, transmission line and antennas are

fully broadband, which makes them easy to retune to any frequency on the traditional FM band. The ability of a UHF station to retune a TV transmitter, antenna and associated RF systems to a new UHF channel is typically not possible, outside of the rare cases where the station is moving to an immediately adjacent channel. Stations moving from UHF and VHF will need completely new systems.

CHANGES IN OUR PLANT

FM broadcasters can begin understanding the potential disruption by evaluating changes inside the plant.

Transmitter buildings generally are

compact spaces with limited real estate. A shared site with one TV and one FM broadcaster may house as many as five transmitters, assuming each has a main and a backup transmitter. Perhaps the FM station also has a separate HD Radio transmitter, or the TV station has yet to dispose of its analog transmitter. The latter is more frequent than one might think, given the lack of a secondary analog TV transmitter market as much of the remaining world transitions to DTV.

Complicating the situation is the fact that most repack-driven channel changes will be immediate switchovers. Unlike the original DTV transition, there will be no overlap period where the broadcasters transmit content over two different channels. To prepare accordingly, the broadcaster will typically need to add a new UHF or VHF transmitter to the existing space — most TV broadcasters will opt for a new high-efficiency, energy-saving model even if they can retune their existing transmitters — new line and a new antenna. Therefore, the FM broadcaster could be moved to a new corner of the RF plant that requires changes in cooling, filtering, grounding and electrical access; or worse, if leasing space, be forced to a new, albeit temporary location.

Outside, changes will potentially be even more significant. We estimate that approximately 10 percent of TV broadcasters have a backup antenna on their tower. Most TV broadcasters built their DTV RF systems 10–15 years ago; given the longevity of antennas especially, few have replaced their original hardware.

Therefore, these TV broadcasters will need to find a new home for their new antenna. Since TV transmission generally favors top-mount positioning, the auxiliary antenna for the new channel will require a side-mount location. As most FM antennas are side-mounted — and always when the tower is shared with TV — it's likely that the FM broadcaster will be forced to move its antenna to a lower position on the tower.

The weight of that extra antenna will put more stress on the existing tower structure, along with the potential requirement for new transmission line. In rare cases, the TV station may be able to at least temporarily share the FM

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READER'S FORUM

TOUGH LOVE FOR RADIO

Regarding "Darryl Parks: Tough Love for Radio":

When Darryl says, "The Achilles heel of the whole system is breaking news and breaking weather," he is probably remembering September of 2008 when the remnants of Hurricane Ike blasted through the Midwest.

In Cincinnati, 927,000 households lost power. Approximately 2.1 million people were without power. In Dayton, 300,000 DP&L customers lost power. A lot of people were without power for over a week.

While 75 mph winds were whipping through the area, Darryl's station, WLW, the one he is so proud of, ran a Bengals game. None of his other stations in the market did news. None of the stations in his Dayton cluster did news. They all stayed on the air with the Prophet system but none provided public service to the community.

John Terhar
Chantilly, Va.

RF SPECTRUM ANALYZERS

Regarding Mark Persons' article "RF Spectrum Analyzers Not Just for Consultants," Feb. 17:

Well, if all you want to do is measure impedance and tune RF loads, I'd suggest saving a lot of money and buying a vector impedance analyzer such as the AIM or Power AIM, which will also allow accurate AM broadcast antenna measurements with real numerical values. Tracking generators typically raise the cost of an SA by \$3-4k! If you already own an SA with a TG, the addition of a precision four-port directional coupler such as an HP 778D will enable you to tune out variations in the generator output and bridge response by using the forward power port for feedback when normalizing a measurement with the SA.

Ira Wilner
Keene, N.H.

OTA'S FUTURE

Maybe I'm an optimist, but I see a decent future for over-the-air radio, at least on FM ("Why It Doesn't Look Good for OTA," March 2).

There's something to be said for a medium that blankets a local area, is free, and is easily and conveniently received through via convenient, basic, low-cost technology. And the bottom line is that FM radio is all of these things in its analog form, so even if HD Radio ultimately fails, the FM radio service will soldier on.

That's not to say that it will continue on with the current ownership structures in place — whether the steady decline in advertising revenue is due to increased competition, poor business models by the incumbent owners or a combination of both, I suspect that it will eventually force the sale of many of the underperforming radio stations currently owned by large groups that are up to their necks in debt. But those stations will live on regardless of who owns them, and they will continue to serve their listeners and their communities.

Tom Desmond
Plano, Texas

OTA'S EMERGENCY ROLE

I hope OTA radio will continue, it serves several important purposes — not the least of which is emergency information when Internet and cell systems are down or overloaded.

The problem is that upcoming generations are going to believe that digital connectivity is a constant, and will lose familiarity with "old" technologies like conventional OTA broadcasting. Ask a 20-year-old if he knows you can watch free television using an antenna. Many of them have no idea.

Radio is perhaps more understood because it's still ubiquitous in cars, but I suspect no young people use it at home like I do.

Eric Wenocur
Lab Tech Systems
Olney, Md.

REPACK

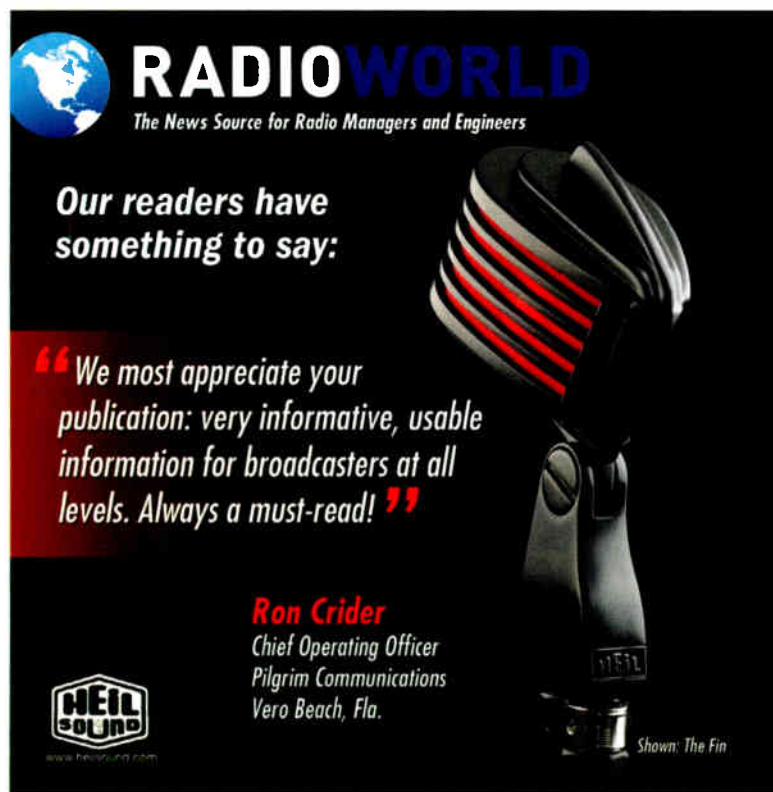
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broadcaster's line if extra capacity exists. This may reduce the stress on the tower structure by allowing crews to remove the old TV transmission line while making way for the new line.

To further complicate things, as tower work commences over a several-year period industry-wide, many towers will need to go dark at certain times of the day to ensure crew safety. Even if the FM broadcaster can remain on the tower at a lower antenna position and at lower power, chances are there will be, at minimum, occasional periods of being off the air. This poses a significant challenge, as over-the-air delivery remains the best way for the radio broadcaster to reach its widest audience.

FM broadcasters can and should begin planning for disruption now, and understand the options that exist to combat service interruptions. Engage TV stations today to understand their planning processes, and identify how work inside and outside the plant will affect each broadcaster's operation. It is recommended that broadcaster join forces and strategize joint timelines to address design and construction plans. Meanwhile, your transmitter and antenna suppliers, especially those with experience in both TV and radio, will be sure to help you navigate the oncoming — and ongoing — twists and turns.

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