CHIA-LIN SIMMONS ON THE 'CONNECTED CAR' — Page 3

NewBay Media

RADIOWORLD

APRIL 10, 2013 | The News Source for Radio Managers and Engineers | $2.50 | RADIOWORLD.COM

INSIDE

TRENDS IN MOD MONITORS PAGE 20

Mark Grant
Belar

Ben Barber
Inovonics

Tony Peterle
WorldCast Systems

David Day
DaySequerra

Todor Ivanov
Deva Broadcast

NPR Puts Its Gear on Sale

Network places 'last of the great analog plants' on auction block

'This could be yours, if the price is right!' NPR's Mike Starling holds a CD player in the staging area for smaller items to be auctioned.

Photo by Erich Shea, NPR

BY SCOTT FYBUSH

Members of the technical staff at National Public Radio have been preparing to move for more than four years. As the staff transitions from one location in Washington to another, equipment at their current building is being liquidated.

The online auction, handled by Rasmus Auctioneers, is open to anyone, though NPR member stations get a leg up with special bidding credits.

NPR has called 635 Massachusetts Ave. NW its headquarters home since 1994. When "Morning Edition" signs off from that location at noon Eastern

(continued on page 8)

VORSIS

ULTRA HIGH RESOLUTION PROCESSING

FM-4

brilliant processing performance... brilliant(est) price!

Wheatstone's FM-4 brings the incredible technology we ve developed for our top-of-the-line Vorsis processors to the most cost-effective, high-performance, lean and mean FM processing powerhouse you can get for under $3K.

FM-4 features the **Vorsis Bass Management System** as well as **Vorsis Smart Stereo Enhancement**, giving you, along with its acclaimed Vorsis sound, the advantages you need to make it your "secret weapon."

Wheatstone's GUI interface, Audio Processing Guru®, isn't mandatory for setup, but it comes in really handy for fine tuning your signature sound or tweaking your on-air signal in real time – from anywhere. Start with a preset and fine tune to your heart's content. Using it is easy and intuitive.

Because your ears are the most important part of any equipment purchase, we invite you to listen and hear the difference FM-4 can make to YOUR station today. Evaluation units are always available.

Multiband Limiters and AGC

Fed by a four-band phase linear adjustable crossover, the FM-4's multiband limiters and AGC (derived from our AirAura 31-band technology), provide clean, loud, natural sound that'll impress even the most professional ears in your audience.

Powerful, Persuasive Presets

FM-4 is very much plug-and-play with presets that make the most of your programming. They sound tremendous and are literally dial-up easy to use.

All the Ins and Outs You Need

Equipped with a reference-grade stereo generator as well as analog, digital and SCA/RDS inputs, FM-4 can handle virtually any input program source. The versatility of its composite and digital outputs allows FM-4 to quickly interface with all FM exciters.

$2,875
MSRP

Visit us at NAB 2013 Booth C3112

WHEATSTONE TOOLS TO RULE RADIO NOW

Wheatstone

FM-4 DIGITAL FM PROCESSOR

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

For more info or to request an evaluation unit, give us a call or visit us on the web: fm-4.wheatstone-processing.com

What Is Radio's Place in the New Dash?

Simmons: Carmakers should modernize, not abandon, the car radio model

COMMENTARY

BY CHIA-LIN SIMMONS

The author is vice president of content and marketing for Aha by Harman, an interactive service that uses cloud-based technology to organize content from the Web into personalized "radio stations."

This commentary is the second article in a series about radio's role in the evolving world of consumer electronics.

Chia-Lin Simmons

Analysts report that the average American spends one to two hours in the car every day. Assuming they are following the law and putting away their phone, that's up to 10 hours per week that they are completely disconnected from the Internet: no Facebook or Twitter, no Google, no Siri, no Huffington Post or podcasts or Yelp. All the rich content services that — thanks to smartphones — consumers have come to expect wherever they go are simply out of reach at 65 miles per hour.

But this is all changing. Analysts also estimate that by the year 2030 there will be 1 billion Web-ready cars on the road. This means that radio broadcasters will be competing harder for listener attention than they ever have before.

Because of its five- to eight-year development cycles, the car industry lags behind the ever-changing Web and mobile industries in terms of integrating digital media. But car makers see that access to a hot, Web-based service like Pandora or Facebook is suddenly as important to car buyers as gas mileage and paint color, and they are racing to get Web-enabled vehicles on showroom floors now, not five to eight years from now.

Furthermore, young drivers expect their listening experience in the car to be personalized and at the ready. After all, they have grown up with TiVo and email, with Facebook their main source of news and with on-demand music wherever they go.

All of these trends mean major change is afoot for the radio industry.

CONNECTED CAR MARKET

The market for connected cars is crowded and complex.

Connectivity strategies vary greatly from one car maker to the next. Some automakers are trying to build their own "app stores" following on the success of smartphone app stores. Others think that mirroring the smartphone screen on the dashboard is the answer. Still others are collaborating to build an industry standard solution for all to adopt.

At Aha, we provide a 65-mph media experience specifically for the unique in-car environment. This means the service must work so well that a driver will choose to put down the phone during a drive and not pick it up again until they exit the vehicle.

It's almost universally accepted that drivers need to focus on driving, not on navigating complex menus, flipping between apps or attempting other tasks that will create cognitive overload or take their eyes off the road. In-dash app stores for drivers present challenges for driving: It's impossible to mimic the smartphone on the dashboard without seriously distracting drivers.

Any platform that can be adopted by all automakers easily and affordably will succeed in the long run, allowing publishers, including radio broadcasters, to easily reach millions of drivers with one effort. Requiring radio broadcasters to build a different app for each automaker, then support every app with regular updates, bug fixes and new features in perpetuity is simply unrealistic and prohibitively expensive. Not more than a handful of major media companies would be able to undertake that task, leaving drivers wanting more.

PROVEN PARADIGM

So, given all of these challenges, what does the future hold?

In order to move forward, the car industry must look back to the paradigm that has proven safe and easy to use for drivers for nearly 100 years: the car radio.

After extensive research, the U.S. Department of Transportation's National Highway Traffic Safety Administration has established that radio is the benchmark for appropriate infotainment while driving. With simple touch buttons, some personalization via "presets" and limited interactivity, it makes sense that the automotive industry should modernize, not abandon, the car radio model.

Solutions must also be scalable across the industry and around the

(continued on page 6)

IT Management Can Challenge Engineers

Pecena says don't overlook the value of what you can learn in the real world

RADIO IT MANAGEMENT

BY TOM VERNON

Recent years have seen tremendous changes in IT technology as applied to the radio and TV environments. Whether it's AoIP for radio or the "channel in a box" for TV, strategic planning and management of information technology can be a wild ride.

RW tapped industry experts Wayne Pecena and Gary Olson for insights into managing and keeping current with information technology.

Pecena is assistant director of Educational Broadcast Services in the Office of Information Technology at Texas A&M University. He is responsible for broadcast technology implementation at KAMU(FM/TV) and is approaching 40 years in the broadcast industry; he is a member of the national board of directors of the Society of Broadcast Engineers and chair of its SBE Education Committee, as well as a member of the Public Broadcast Service Engineering Technical Advisory Committee.

Gary Olson is a technology strategist in the information and communication media technology industries. He is author of a new SBE course "The New Lifecycle of Media — IP and File-based Workflows." Both are frequent speakers on IT topics.

'INTERMEDIATE'

IT, of course, has gradually taken over the broadcast plant. According to Pecena, the trend typically started in the accounting department, then spread to program log generation and news scripts; now it is fully integrated into the content side.

In radio we see AoIP plants with content delivered in multiple formats to multiple platforms. In the TV environment, it is implemented in multi-channel, multi-stream operations. Engineering tools have evolved along with them. "It started out with remote control, and we've moved way past that," said Pecena. Olson notes as an example that the transition began at ABC in early 2000, when it transitioned from a paper-based to file-based environment.

So broadcast engineers have needed an expanding level of IT literacy. As the level of expertise needed for the job continues to increase, the industry is responding, if slowly.

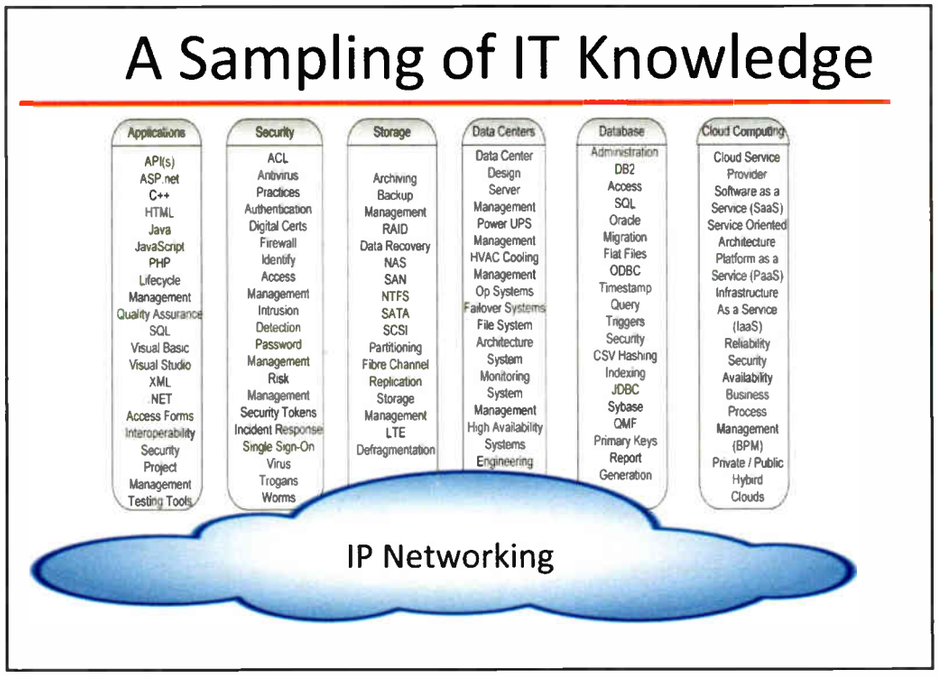
"When I began doing workshops for the SBE three years ago," Pecena said, "most attendees described themselves as being in the beginning to intermediate levels. Now most attendees see themselves at the intermediate level and seek more advanced IT knowledge. I still see very few in the advanced category." He adds that the shift is largely market-driven; even if one wanted to, it would be hard to avoid IT concerns entirely, even in the RF environment.

The evolution of engineers to IT is "a mixed bag," said Olson. "Most of the traffic on SBE e-mail lists is centered on traditional transmission systems, with less content about IP infrastructure or new streaming systems."

How should engineers build and maintain IT skills? There are opportunities both formal and informal for education.

Pecena urges engineers not to get too hung up on the need for formal programs, saying they should remember the value of informal education, which "often occurs in conjunction with other events and is experienced in the course of everyday life. It is often spontaneous."

Formal education may be overly structured, time-consuming and expensive. Pecena said the exam fee for a Cisco Certified Architect is $15,000. He adds there is research to suggest that job performance over time is the result of about 25 percent formal, and 75 percent informal education.



Wayne Pecena suggests that IP networking is the foundation of today's diverse aspects of information technology.

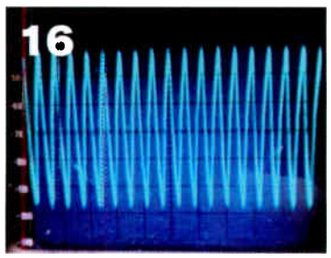
FROM THE EDITOR

Today's guest article is from longtime RW contributor Tom Vernon. I asked him to explore the subject of changes in IT technology with two experts in that field.

— Paul McLane

THIS ISSUE

APRIL 10, 2013



Meanwhile, many skills from the analog days retain their value, Olson says, if with a twist. "Multiple audio editing tools, for example, have been consolidated into a single package — Legos on a screen, if you will. You still need to understand the basics of analog audio: editing, equalizing, processing and filtering; but it works a bit differently in the desktop realm. Therefore, the way you approach problems is different; yet many engineers lack this understanding."

Both men said the SBE website provides a great deal of information. SBE University offers online/on-demand courses, as well as live and recorded webinars and other materials.

The main focus should be how to use technology as a tool to achieve business goals.

– Wayne Pecena

TECH AS A TOOL

Some problems of IT management don't have easy answers, even for experts. Strategic planning is one.

"It is an ongoing challenge," said Pecena. "Keeping up with the changes is always difficult. Also, making bad decisions or mistakes can put your career in jeopardy, especially in this economy. The main focus should be how to use technology as a tool to achieve business goals." This problem, he adds, is not unique to broadcast.

The best strategy for IT managers, he believes, is to retain sight of the big picture. "Many managers get too focused on the technology of IT, and forget that they are part of a business that exists to make money or an organization that delivers a service. Keeping a true business focus will better enable managers to define meaningful goals for their IT departments."

Another sticky topic in both radio and TV is metadata, a term that is used and abused, according to Olson.

"No one wants to talk about it, but you can't monetize metadata if you don't use it well. It needs to be about information that is meaningful to the end user. Once you do that, things get interesting."

For both radio and TV, a challenge for managers is keeping up with multiple platforms. Laptops, tablets, mobile phones and websites require content with different standards, bit rates and protocols; and these are in a continuous state of flux. For operations with smaller budgets, a decision often has to be made regarding which platforms to support. Olson notes that the way a station packages video for an LCD TV is different than the way it's done for cell phones.

Meanwhile, and in spite of the attention on new platforms, Pecena notes that in most cases, the majority of the revenue still comes from the RF side of things, though the future certainly looks to be the Internet.

And a further challenge facing technology managers in the public sector is fundraising. Pecena notes that the days of open-door funding are gone. Managers must seek out new and non-traditional funding sources.

"Ten years ago, you could break a large project up into Phase I, II, III, etc., and be reasonably assured of grant money at every step," he said. "It seems very unlikely that those funding sources or way of financing projects will come back."

One of Pecena's conclusions, when he speaks to broadcast engineers, is that their jobs are surprisingly similar to those of IT managers. Broadcast engineering has embraced an IT infrastructure while IT engineering has embraced audio and video content. Both jobs are highly tech-focused, and they share a number of workplace traits, often including long hours, deadlines, angry "clients" and a need to keep your education current.

He shows them a photo of an IT person pulling his hair out while looking at a screen that says "System Failure" in angry red letters. "Broadcast engineering and IT," the caption reads. "Are they really different?"

CONNECTED CAR

(continued from page 3)

world. Similar to how iOS and Android have emerged as the development platforms of choice in mobile, automakers will need to rally around no more than two or three standard platforms so that drivers can benefit from a healthy ecosystem of diverse publishers.

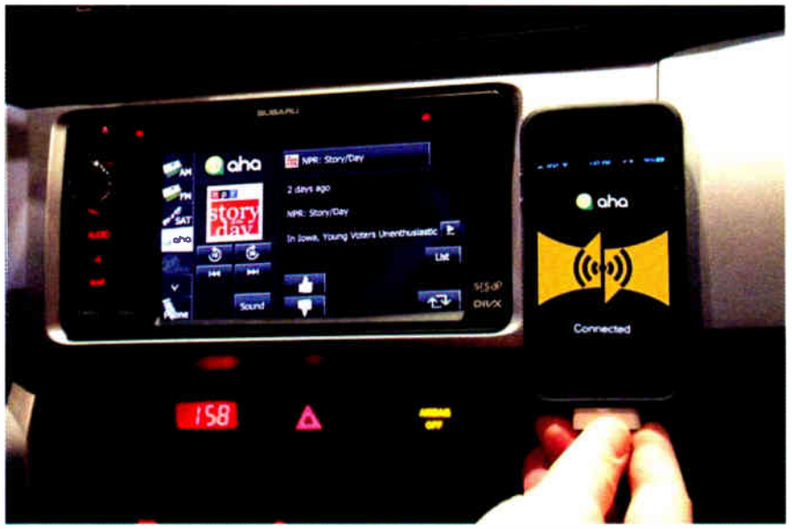
With more than 10 leading automakers adopting Aha this year alone, it is an early leader in the race to be one of the "standard" platforms for connectivity.

As more winning strategies emerge and drivers gain access to a world of content in the car, new opportunities for terrestrial radio stations become evident.

First, each station will have instant access to a global audience. For example, an AM bluegrass station in Jacksonville, Fla., with a small but loyal listenership can suddenly reach potentially millions of drivers as far away as South Africa, Germany or Australia.

Second, highly scaled distribution platforms level the playing field between radio broadcasters and Internet radio companies. An FM station manager who would never have the resources or expertise to build, distribute and maintain their own mobile app to dozens of different car manufacturers will not be left out.

For these two reasons alone — global audiences and a level playing field — radio broadcasters are beginning to embrace the connected car and see it not as a threat to their business, but an opportunity to reach new listeners on a global scale.



Subaru is one of 10 automakers that plan to integrate Aha into their infotainment platforms by year-end. When the phone is connected to a compatible in-vehicle entertainment system, the user's favorite Aha stations become radio preset buttons. Here, Aha displays an NPR feature program.

THE AHA MODEL

So, how do radio station managers and engineers take advantage of this new technology and get their content distributed globally? It may sound intimidating and highly technical, but the leading platforms must also make the process easy and affordable for content publishers if they want to offer the broadest content choices for listeners.

At Aha, we do the work for our content partners.

First, radio station engineers provide Aha's content team with the Application Programming Interfaces, digital audio streams and/or RSS feeds that they already use for their mobile or Internet services. If they don't already have an API, Aha introduces the partners to services that help them transform their broadcasts into easy-to-access streaming standards that we grab and bring onto our cloud-based system.

With simple touch buttons, some personalization via 'pre-sets' and limited interactivity, it makes sense that the automotive industry should modernize, not abandon, the car radio model.

Once established, content partners update their services and feeds as they normally would, and Aha manages the rest. There is no cost involved for stations, no special hardware and no additional software for radio stations to update. Aha engineers do the technical work via a cloud-based system, even incorporating station and show logos and other rich visuals to make each station's brand shine on the car's head unit. Adding new channels from a network of stations also is simple once the API or data feed has been established with the content provider.

Aha is a free platform and service for both stations and consumers.

There is no denying that tomorrow's car radio experience will look very different from what most of us grew up with. Consumers' expectations for personalization, broad content choices, social networking and on-demand controls are all here to stay.

AM and FM stations and the talented individuals who create them are not going away — there will always be a need for original, local content published and/or curated by humans. But radio station managers must adapt to remain competitive and compelling.

The good news is that emerging platforms like Aha make it easy to get into connected cars and reach listeners where FM and AM transmissions can never go. If broadcast engineers and radio publishers embrace these new models, the sky is the limit.

Comment on this or any Radio World article. Email radioworld@nbmedia.com.

NEWSROUNDUP

FCC DEPARTURES: Chairman Julius Genachowski confirmed in March he's leaving the agency. We've been reporting for months on speculation about his intention to depart after President Obama's first term was up. Two days after Commissioner Robert McDowell announced his plan to leave, Genachowski did so, telling FCC employees his departure would come in a few weeks.

President Obama appointed his former Harvard Law School classmate and campaign fundraiser as FCC chairman in 2009. The departures leave two slots at the agency to fill; nominations to big-ticket agencies like the FCC are often paired, with one Democrat and one Republican, to ensure easier Senate confirmation. Larry Strickling's name has been floated as a possible replacement for the Democratic chairman. He is chief of the NTIA. Blair Levin, former FCC chief of staff under former Chairman Reed Hundt, has been suggested, as have the two women on the commission, Mignon Clyburn and Jessica Rosenworcel, and others.

FCC DEPARTURES II: Commissioner Robert McDowell planned to leave the FCC "in a few weeks." The Republican has been at the agency for nearly seven years, making him the longest-serving member of the current five commissioners.

The last of the original staffers for outgoing Chairman Julius Genachowski is departing as well. Sherrese Smith, chief counsel and the chairman's senior legal advisor, exits after four years.

ADVERTISING: BIA/Kelsey forecasts local media advertising revenues to climb from $132.5 billion in 2012 to $148.8 billion in 2017. The firm reports national brands accounted for $42.5 billion of the $132.5 billion spent on local media advertising in 2012. National's share of local ad spending is expected to grow to nearly $51 billion by 2017. The researchers forecast digital's share of total local media revenues to increase from 17.4 percent in 2012 to 27.6 percent in 2017. The firm expects traditional local media revenues to decrease from $109.4 billion in 2012 to $107.6 billion in 2017.

HD STATIONS: Pew Research concludes fewer stations aired an HD Radio signal in 2012, compared to 2011. In its media consumption survey, researchers believe fewer stations, 2,048, were transmitting an HD Radio signal in 2012, compared to 2,103 the year before, citing BIA data and Pew's own analysis. The researchers don't detail whether those are main or multicast signals, nor why the number dropped. IBiquity Digital disputed the figures; it said that on Dec. 31, 2011, 2,034 stations were on-air in HD Radio, and said the number increased to 2,048 in 2012.

AUCTION 83: The Media Bureau announced an April 1–19 filing window for 639 FM transmitter applications pending from Auction 83. The window is limited to certain applications that specify transmitter sites that are inside spectrum limited markets and/or within 39 kilometers (about 24 miles) of the commission's Spectrum Limited Market Grid. Those pending FM translator applicants with proposals in spectrum limited markets can file minor technical amendments — such as channel changes or changes to site, power or antenna height and antenna pattern — to eliminate possible conflicts to protected LPFM channels.

IP • 3G • Wi Fi • 4G • BGAN / VSAT • PSTN • DSL

ACCESS 2USB

COMPLETE REMOTE STUDIO ON TWO WHEELS

We are pretty sure this is a first – an open-air moving studio broadcast on two wheels (well, six, technically).

All audio was fed to a Comrex ACCESS Portable, complete with optional mixer, which Dan used to mix the live on-air feed as the trio traversed the winding roads of Perth. How did it all work out? Absolutely flawlessly – the show went on without as much as a speed bump!

Dan Jackson, engineer for 92.9 FM in Perth, Australia was faced with a unique challenge. Breakfast hosts Paul Hogan and Lisa Fernandez would be cycling for hours in strong winds and pouring rain as part of the 92.9 Kids Appeal for Telethon.

The unique solution was to equip Dan's bike as a mobile production facility. The talent wore wireless mics AND in-the-ear monitors which communicated with receivers and transmitters in a rack bag on Dan's bike.

ACCESS Portable lets you send studio-quality live audio, real time over IP using 3G, 4G, Wi Fi, BGAN/VSAT, PSTN or DSL to make any remote broadcast really stand out. Connect with your audience from anywhere, live, with the easy to use, handheld ACCESS Portable!

comrex.com **Visit us at NAB 2013 Booth C2221** COMREX

19 Pine Road, Devens, MA 01434 USA Tel: 978-784-1776 • Fax: 978-784-1717 • Toll Free: 800-237-1776 • e-mail: info@comrex.com

TELL US HOW YOU USE YOUR ACCESS AND WE'LL POST IT AT OUR ROAD WARRIOR BLOG:

remotes.comrex.com

AUCTION

(continued from page 1)

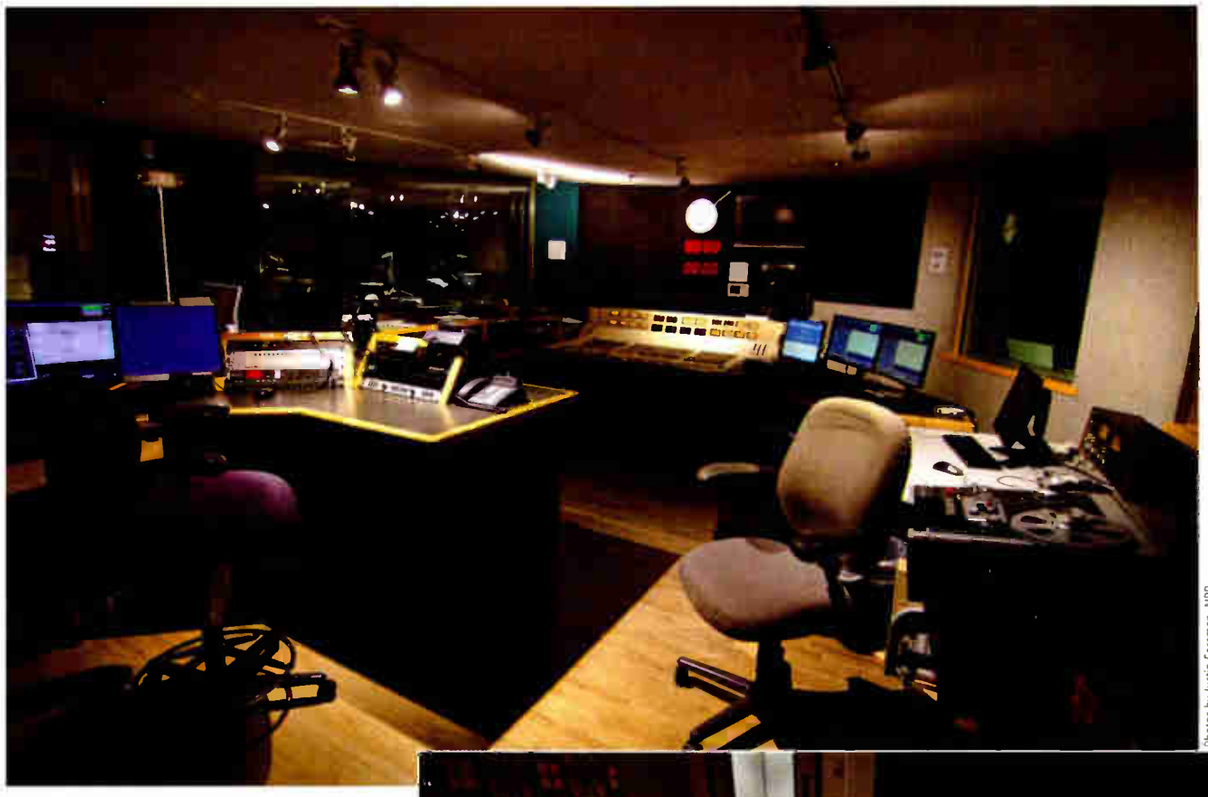
on April 19, NPR will have just a few days to finish removing everything of value from the old building before its lease runs out and the bulldozers move in.

Its new 440,000-square-foot home comes with nearly all-new digital equipment. Only the network's signature Neumann U87 mics, some powered speakers and a handful of other gear will make the move east, to 1111 North Capitol Street.

That leaves three floors' worth of studios and equipment that the network considered state-of-the-art in 1994. Now the contents of the plant are being sold off. The online auction began in March; by the time bidding closes, it promises to be one of the bigger studio auctions since last year's liquidation of the old BBC World Service plant at London's Bush House.

That auction, held in three installments, encompassed thousands of pieces of gear from dozens of studios, including huge quantities of tape decks, studio monitors and switching equipment.

Mike Starling, NPR vice president and director of its Technology Research Center and NPR Labs, is leading a small team that took inventory of the network's studios and storage rooms and prepared everything to be handed off to Rasmus.



Photos by Justin Foreman, NPR

Gear being auctioned includes Pacific Recorders consoles and custom furniture, including that from Studio 3A, home of 'Talk of the Nation.'

Studio 4B was built for music programming.

COMPLETE STUDIOS

Rasmus was approved for NPR's auction after clearing out another large public broadcasting facility, PBS in northern Virginia. Rasmus "got high marks from PBS on how all that went," Starling said.

NPR member stations get a 35 percent bidding credit for any items they want to buy, meaning a station that wins an item for a $100 bid would have to pay only $65 at the close of the auction. Why? "It was their membership dollars, without which we couldn't have purchased this gear in the first place," said Starling, who'd received inquiries from "a little over two dozen stations" as of early March.

As befits a facility that is described by Starling and other engineers as "the last of the great analog plants" when it opened almost two decades ago, the auction list includes a conservative estimate of 1,000 pieces of equipment, plus manuals and spare parts.

The contents of eight studios are being auctioned in eight blocks.

Starling said there are gems to be had, including the entire studios that have produced "All Things Considered," "Morning Edition" and "Talk of the Nation" for two decades. Even the studio doors will be made

(continued on page 10)

AUDIO FROM ONE, TO MANY

Genie DISTRIBUTION

OUT NOW

50 stereo IP multi-unicast streams, or 6 channels point-to-point
Dual Gigabit Ethernet ports enabling dual path diversity
24 Bit 96kHz stereo audio sampling
SmartStream IPv4/IPv6 technology
Dual redundant power supplies

Wheatstone WheatNet-IP Compatibility (Optional)

Tieline®
The Codec Company

Call: 1-317-845-8000 ext.118 **Email: sales@tieline.com** **Web: www.tieline.com**

ALSO AVAILABLE...

Merlin

BUILT FOR STUDIO REMOTES

ALSO AVAILABLE...

Genie STL

BUILT FOR STL NEEDS

AUCTION

(continued from page 8)

available to winning bidders who are able to remove them.

Master Control is outfitted with what Starling calls an "enormous" 700-by-500 BTS switcher. The two largest studios, 4A and 4B, were built for the kind of live performance music programming NPR seldom produces, complete with massive Studer D950 consoles. Some studios include Pacific Recorders consoles and custom furniture, including Studio 3A, home of "Talk of the Nation," and Studio 2A just below, where "All Things Considered" and "Morning Edition" originate.

For small items like rack-mounted audio processors and phone hybrids, NPR has been working with Rasmus to provide a packing and shipping service for winning bidders. For anything bigger, though, it will be up to winning bidders to fetch the gear themselves — and quickly. Starling and his staff took hundreds of smaller items out of service and staged them in two buildings next to NPR headquarters, to be picked up after the auction closes. Rasmus planned to stage an on-site inspection of the items on April 12 from 10 a.m. to 4 p.m.

Starling acknowledges that the timing of the auction was less than ideal, given that it overlapped the NAB Show, which draws potential buyers to the other side of the country. But the scheduling of NPR's move was set years ago, leaving little leeway for change, he said.

ONLINE BIDDING

Bids will close April 15 on a staggered schedule, five lots per minute, as Rasmus works through the catalog.

For the most part, Starling says, winning bidders get equipment that's working well and has been professionally maintained.

"The notion is that if someone wants to build an entire studio at their station, they can come in here, we can give them access to that room and let them disassemble the furniture. We'll get them elevator access and let them get everything onto their truck," Starling said. Winning bidders will have to do their own disassembly and heavy lifting, with NPR staffers on-site only to ensure access to the studios, elevators and loading docks.

By the time bidding closes, it promises to be one of the bigger studio auctions since last year's liquidation of the old BBC World Service plant at London's Bush House.

If that sort of buyer emerges, they'll have to be ready to work quickly. The contents of the studios won't be ready for disassembly until late in the process. That's noon on Friday, April 19, for Studios 2A and 2B when the last NPR News staffers walk out the door and head north to their new homes. By the time the clocks on the wall (they're for sale, too) strike midnight on the following Tuesday, April 23, NPR has to hand over the keys to landlord Boston Properties, which bought the property in 2008 and has been leasing it back.

ANALOG OBSTACLE

Will NPR find many takers? A quick check of several NPR affiliate station engineers in early March turned up little enthusiasm due to the equipment's age and shipping concerns.

"We have no use for analog gear of any vintage — everything is digital here, and has been for years," said Joe Puma, vice president of engineering and technology at Western New York Public Broadcasting Association FMs WNED/WBFO (FM), Buffalo, N.Y. "Plus, we don't have the manpower to fix or maintain the old stuff."

At a smaller pair of FMs, WIUM/WIUW, Macomb, Ill., TriStates Public Radio DOE Mark Garrett was interested in seeing what NPR would be selling, but expects the hassle of getting gear shipped from Washington would be a deal-breaker. "The costs associated with having a rep and shipping would probably negate any great deal we would receive."

At Boston's WBUR(FM), Chief Engineer Michael LeClair, who also is technical editor of Radio World Engineering Extra, said the most interesting auction items for him are patchbays.

"I am still a fan of jackfields and generally build studios with some jackfields to allow special ways to connect that routers aren't necessarily able to do without some wiring drama. I think those jackfields would be something people want and would grab for short money."

Starling said the auction is drawing considerable interest from stations closer to Washington that don't have to worry about having gear shipped long distances. "We'll see how many become serious bidders as the deadline approaches," he said in mid-March. "It's an absolute auction, so I expect some fairly incredible deals."

The network has set no revenue goal; NPR just wants to make sure that whatever it leaves behind finds a good home. "As one of our senior vice presidents put it, it's better to keep it out of the landfill," Starling said, as well as "recycle equipment that still has a useful life; and if we can get a few dollars for it, so much the better."

Anything that's left unsold when the auction is over will probably be trashed or left behind for the demolition crew, an unfortunate consequence of the tight timing, according to Starling.

"There's no time for us to do anything but get the right gear in the winning bidders' hands."

RADIO POT LUCK

A mere sampling of the equipment being auctioned:

360 Systems ShortCuts
ADC patch panels
Ampex Tape Reels, new in box
Anvil cases
APC Smart-UPS 600 UPS
APT World Net Ohio codecs
Audio foam
Benchmark distribution amps
Blank CD-Rs
Blonder Tongue Labs AM Series agile modulator
Broadcast Tools SM111 silence monitors
CCS Musicam USA Roadrunner ISDN codecs
Conference room equipment
Custom wooden racks
dbx 160x compressor/limiters
Dell monitors
Denon DNM991R CD recorders
Digidesign MX001 Test Set
Dolby noise reduction gear
Eventide BD980 broadcast delay
Glensound GSGC4 data phones
Grass Valley system controllers
IBM Selectric II typewriters
JBL 4200 Series Studio Monitors
Leitch cdd-5400 clock distribution drivers
Lexicon 300 digital effects system
McIntosh MC2100E Power Amplifier
On-air lights
Orban 526A dynamic sibilance controllers
Otari MX5050BIII 2 reel machines
Panasonic WVCS304 camera
PR&E STX34 console
RAM PS1000 phasescopes
Ramsa WR-DA7A Audio Mixers
Scientific Atlanta AD6320 C-band downconverters
Sonic Solutions 702503 A/D converters
Sony DAT recorders
Sony MDS JE480 MiniDisc players
Sony PCM7010 DAT machines
Sony, HHB, Technics and Harman Kardon CD players
Sony, Pioneer and other DVD players
Soundcraft LM1 mixers
Studer A827 24 Multi-Channel Tape Recorder
Studer A810 open-reel decks
Studer D9505 console
Switches
Symetrix 528E processors
Tascam 122MKIII cassette decks
Technics SL 1500 turntables
Telos 9202 Zephyr w/TA
UREI 565T filter sets

Photo by Erich Shea, NPR

Hundreds of smaller items were taken out of service and staged in two buildings next to NPR, to be picked up after the auction closes.

Announcing the new MOSAIC

Logitek's flagship console is now even better with enhanced styling and functionality.

Updated for use with today's advanced audio streaming and networking technologies, the Mosaic gives you fast, easy access to sources and smooth, consistent operation no matter where it's used.

The Mosaic provides anywhere from four to 24 faders in a durable, attractive tabletop enclosure that can be placed anywhere or moved out of the way when not needed. OLED screens are used throughout the console and have been added to the Softkey module for easier source selection. We've made access to controls more intuitive and have illuminated key controls for use in any type of studio lighting.

Available now, the Mosaic is perfect for operation with our JetStream Networked Audio platform.

New styling, new features, same Logitek performance

Logitek Electronic Systems, Inc.
Phone: (713) 664-4470
Toll Free: (800) 231-5870
www.logitekaudio.com

Logitek
Networked Audio Systems

NEWSROUNDUP

KEIF(LP): The FCC says KEIF(LP) in Enid, Okla., didn't comply with license renewal conditions, so the agency cancelled the authorization. Chisholm Trail Broadcasting fought KEIF's license renewal, successfully showing that the LPFM was operating with an antenna that was higher than authorized, and airing real commercials, not underwriting announcements. The Media Bureau proposed a $10,000 fine yet granted a conditional license renewal in 2010 with reporting requirements. The commission says KEIF never responded to the renewal order nor the fine, and that none of the reports was submitted. The Media Bureau thus deleted the call letters from its database and ordered the station to maintain the tower until the structure is dismantled.

PANDORA: Pandora Chief Financial Officer Mike Herring told attendees of an investor conference he expects the fees Pandora pays record labels to decline to 40 percent of revenue. The company currently pays 60 percent of its $125.1 million in revenue for the music it plays. A two-year arbitration process to set new rates begins in January.

DIAL GLOBAL: Former Time executive Paul Caine took over as chief executive officer for radio services and content syndicator program Dial Global April 5. He replaced recently announced CEO Spencer Brown. Both Brown and newly appointed company President Ken Williams stepped down on that date in the second corporate restructuring in a little more than a month for the company.

ARBITRON: Audience research firm Arbitron has expanded its social media guidelines to include face-to-face contact. On-air personalities have been warned for a while now by Arbitron that their listener interactions on Facebook and Twitter are subject to the same ratings bias rules as their on-air comments. Now, Arbitron adds emails, texts and in-person appearances to its rules in its updated Guidelines for Using Social Media. On-air personalities cannot discuss ratings periods or how a station ranks on social media sites — just like they can't on-air. The rules are meant to prevent ratings bias or distortion from PPM panelists and diarykeepers.

SPECTRUM: SBE blasted CTIA's spectrum reallocation proposal. Society President Ralph Hogan sent a letter to the FCC, describing as "reckless" recommendations made by CTIA, The Wireless Association, to reallocate a significant portion of the 2 GHz BAS band to mobile broadband. The SBE defends 2095–2110 MHz, saying reallocation would "deprive television viewers, regardless of their chosen delivery method (over-the-air broadcast television, cable, fiber or satellite) of the ability to view events as they happen and to respond to them appropriately."

Mendenhall Opens RF Consultancy

BY PAUL MCLANE

Geoff Mendenhall is shifting his career into a different gear.

Mendenhall, who turns 66 in May, officially has retired from Harris Corp. and his role as VP of transmission research and technology. He now has opened an RF systems engineering consultancy, Mendenhall Engineering LLC.

"I will be providing engineering consulting services to manufacturers and/or users of broadcast and other types of RF communications systems," Mendenhall said.

A career shift for a highly regarded RF engineer.

He likely will retain a visible industry role, in part because his first client is Harris Broadcast, his former employer and the part of Harris that was recently acquired by the Gores Group. He planned to attend the NAB Show this month and to work the Harris Broadcast booth.

Asked about the impact of the change on Harris Broadcast, Mendenhall said he didn't anticipate much in the near term.

"Ted Korte took the leadership of the transmission R&D team several years ago, and my role has become a new technology advisor to the transmission business. I will be continuing in that role and mentoring the engineering talent in Ted's group to take on more responsibility in the advanced technology area."

Photo by Jim Peck

Tim Anderson, meanwhile, will now be more active with Harris Broadcast's role at the National Radio Systems Committee. Mendenhall will continue to represent the company on the FCC Technological Advisory Council and at the Association of Federal Communications Consulting Engineers.

Mendenhall — who was honored with the NAB Radio Engineering Achievement Award in 1999 and named an Engineering Fellow by Harris Corp. in 2008 — has played a significant role in the transition of AM and FM transmission equipment from analog modulation technology to digital.

His first two jobs after graduating from the Georgia Institute of Technology were in land mobile communications and wireless security systems. He joined the Gates Radio division of Harris in 1973 and made an early mark by helping develop the MS-15 exciter, then spent much of the 1980s at Broadcast Electronics before returning to Harris as VP Radio Product Line Manager in 1993.

Projects have included the BE FX-30 and FX-50 in the 1980s; the Harris DIGIT, the first all-digital FM exciter, in 1994; and the current Harris FlexStar HDx HD Radio exciter. He has done notable work in the design of high-efficiency AM, FM and COFDM transmitter power amplifiers, both tube and solid-state, for digital radio and television, and is listed as the inventor on eight U.S. patents.

A registered Professional Engineer, he also is active in the IEEE and ARRL. He's an ardent ham, W8GNM.

EXCEPTIONAL VALUE

The Expanded

NV*LT* Series

COOL STUFF AWARD
RADIOWORLD
2012

Proven NV Series Architecture
Outstanding Efficiency
Exceptional Value
Intelligent Features

3.5 – 10 kW Analog FM

Meet the expanded NV^{LT} Series for analog FM broadcasting. They're built tough with integrated exciters, parallel power amplifiers, power modules and switching power supplies. Unmatched Nautel control helps save time, trips and money. Add class leading efficiency and the result is unprecedented value.

And MORE

- RDS generator
- Audio spectrum analyzer
- Powerful presets
- Scheduler
- Instrumentation
- Play lists

Videos, webinar and more at
Nautel.com/NVLT

nautel

NOW UP TO 40 kW

15 – 40 kW Analog FM

AUI Control System

Integrated Digital Exciter

Backup Audio

orban

Nautel PhoneHome

IP Audio

PUSHRADIO™

SHOUTcast

Streaming Input

When Your Silence Sensor … Doesn't

Paul Lyons takes us to the pilot, building a simple circuit to solve a problem

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

Loss of audio on your FM stereo station fails to trip your silence sensor. What's going on?

Clear Channel Dayton Senior Broadcast Technician Paul "Hitchhiker" Lyons encountered this interesting problem. Yet when he unhooked the tuner audio from the silence sensor input, the device tripped normally.

It turns out that the tuner Paul was using to feed the sensor was passing the 19 kHz stereo pilot through to the audio output, seen in Fig 1. This caused the silence sense to remain untripped even when program audio disappeared.

Paul came up with a simple fix: a 19 kHz notch filter, paralleled with the audio output. The schematic is shown in Fig. 2.

He chose to build the circuit on a perfboard and mount it inside the tuner, but the filter could just as easily be placed in line, external to the tuner.

The schematic shows values for the coil and capacitor, and is, of course, only one channel. If the silence sensor you use has a stereo input, you'll need one for each channel. Paul suggests using a slugtuned coil for fine-tuning of the circuit.

The oscilloscope shows about a 60 percent reduction in the level of the pilot signal at the audio output of the tuner. After installation, the silence sensor worked perfectly. Fig. 4 shows the reduction in pilot level.

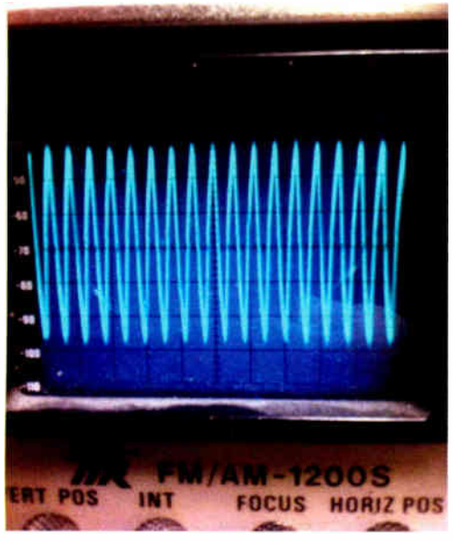


Fig. 1: The 19 kHz pilot appeared at the receiver's audio output.

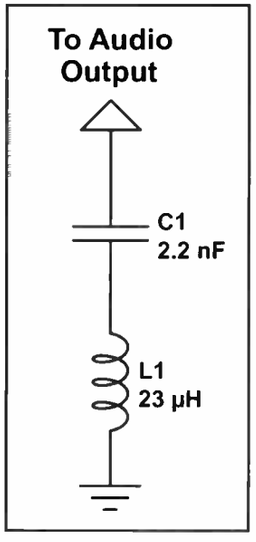


Fig. 2: A 19 kHz notch filter schematic.

Fig. 3: Paul built the circuit on a perfboard and mounted it inside the receiver.

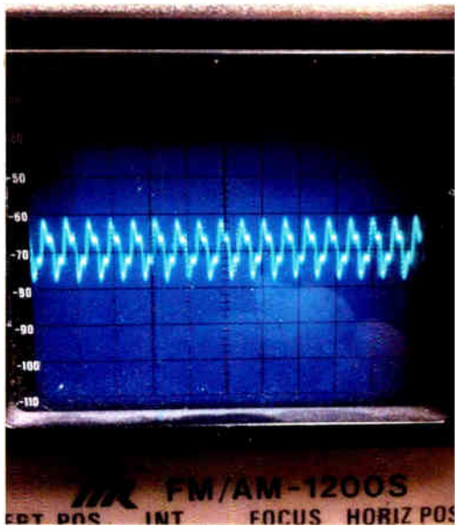


Fig. 4: With pilot level greatly reduced, the silence sensor works perfectly.

Paul has been involved with broadcasting since he was a teenager, following in his dad's footsteps. His father was an electronic technician and chief engineer.

Reach him at *paullyons@clearchannel.com*.

You may recall a suggestion from Frank Hertel about panel labeling in my March 1 column ("Your Panel Lettering Made Easy").

Engineer Leon Amstutz, CBRTE, offers a method that he has found to be simpler, with less mess, than gluing paper-based labels to equipment.

A couple years ago, Leon ran across a product from Avery-Dennison Office Products. Avery #6575 is a package of 50 sheets of 8.5-by-11-inch white durable multipurpose labels for laser printers. These full-page labels can be laid out and printed, as Frank mentioned. Leon, too, uses the OpenOffice/LibreOffice draw program for best results.

These Avery labels have a peel-away self-adhesive backing, which eliminates the mess of glue. Another benefit is that it incorporates "TrueBlock" technology, which appears to be a thin layer of foil embedded within the label. This helps mask what the label is covering, so that previous printing or markings on the surface to which the label is applied will not bleed through.

Finally, the label is specially coated to hold the laser toner well, and resists rubbing off — hence the "durable" aspect of the product's name. It is resistant to scuffs, smudges and moisture, so it doesn't need to be coated with varnish

(continued on page 18)

COMING TO NAB 2013 ONLY FROM INOVONICS

NEW!

INOmini 633 FM/RDS Monitor

- Receives all standard FM Broadcasts.
- Displays and exports important RDS info for logging & proof of play.
- Alarm tallies for Carrier Loss & Audio Loss.
- Analog L/R and AES digital Line outs.

NEW!

INOmini 634 AM Monitor/Receiver

- Performance AM tuner with variable bandwidth selection.
- Alarms for Carrier Loss and Audio Loss.
- Analog L/R and AES digital Line outs.

NEW!

INOmini 514 Multiplex Decoder

- Demodulates MPX to Balanced L/R Audio.
- Digital AES output.
- Alarms for Audio Loss and Pilot Loss

NEW!

610 - Internet Radio Monitor

- Professional hardware solution for uninterrupted monitoring of online radio performance.
- Balanced Analog L/R and AES digital outs.
- Decodes and displays live metadata for MP3, Ogg Vorbis and AAC formats.
- Local alarm tallies plus self logging alarms for Audio Loss, Stream Loss & Internet loss.
- Remote web interface & notifications.

At this year's NAB show (Booth #3031), we'll be introducing a total of **four new products** (yes that's right). That's more products than we've ever launched at a single NAB. Three of these expand our award winning **INOmini line**: small form factor broadcast gear all priced under $900.00. The fourth product deals strictly with **Internet Radio**, and is an industry first. Come see them all and sign up for your free after-show, in-station trial.

Visit us and learn more at:
www.inovonicsbroadcast.com

INOVONICS BROADCAST

WORKBENCH

(continued from page 16)

or clear coat.

Leon has used this on everything from mobile remote broadcast rack cabinets with the station logo to property ID labels on tools and parts bins. The labels hold up well, even for areas that are printed with a solid dark color on the white label surface.

The labels cost about $1 per sheet, but Leon finds that he can usually combine several jobs on one page, and even use the "waste" areas to print small wire identification numbers or terminal labels. Avery also makes this product in pre-cut smaller size labels, if you don't want to cut them from a whole sheet of paper.

Check your office supply vendor for these labels, or visit *www.avery.com*, keyword 6575.

(I fell in love with Avery years ago, when they started making an adhesive file folder type label that could be used to label audio tape cartridges. What made these labels so great was the label held secure to the cartridge plastic yet could be removed easily, putting an end to the gummy paper and glue residue caused by the typical file folder-type label.)

Reach Leon Amstutz at *wb9bat@sbcglobal.net*.

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

Author John Bisset has spent 44 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

PEOPLENEWS

Maxie C. Jackson III has stepped down as the **National Federation of Community Broadcasters'** president/CEO. NFCB Board Treasurer **Janis Lane-Ewart** will serve as the interim president/CEO.


Tony Coles

Clear Channel has tapped **Tony Coles** to be its new senior vice president of programming for the **West Region. Marc Riviecio** was promoted to director of marketing for **Clear Channel New York.**

The steering board of **RadioDNS** has a new secretary. Former secretary and Managing Director at **Media UK James Cridland's** position will now be filled by **Mathias Coinchon** of the **European Broadcasters Union**.

Michael Englehaupt has been named new chief technology officer of **KQED(FM)** in San Francisco.


Paul Caine

Paul Caine takes over as chief executive officer for **Dial Global**.

Nexus Broadcast has added **Dustin Williams** as a new technical services specialist. The company also promoted **John Gutierres Jr.** from a consultant to vice president of operations.

Hubbard Broadcasting Inc. Chairman **Stanley S. Hubbard** is the recipient of this year's Lowry Mays Excellence in Broadcasting Award from the Broadcasters Foundation of America.


Stanley Hubbard

Shawn Donilon joins the **NAB** as its new director of government relations.

CBS Radio has named **Chad Fitzsimmons** as the director of music initiatives, a newly created position that will require working with radio and TV stations and its digital assets to develop and launch partnership opportunities.

SATELLITE SIGNAL LEVEL METER AND SAT IDENTIFIER

Our new "SAT-BUDDY" satellite signal level meter will measure 950 - 2150MHz L band signals. The unit powers the LNB, and provides digital signal measurement for carriers. The unit can

identify satellites by name, measure signal levels -70 to 10 dBm, plus display carrier-to-noise (C/N), signal quality, and Bit Error Rate. Confidently recognize the satellite a dish is aimed at, and peak the antenna to maximum performance.

SURGE SUPRESSOR FOR LIGHTNING NEAR SATELLITE ANTENNA

Place the "LNB-Zap-Stop" in the coaxial cable line that runs from the dish, to the satellite receiver. Think of it as an "insurance policy" to protect

expensive indoor equipment from lightning hits. Transient Suppressing Diode technology works to block high voltage surges. The lightning protection units can take multiple strikes, with no need for resetting or replacing.

COVERSAT AND HEATSAT MAKE YOUR DISH RELIABLE IN BAD WEATHER

The COVERsat will prevent most signal outages caused by snow and ice. It is wrapped over the front face of a dish, creating a steep and slippery surface to prevent the accumulation of ice & snow. The cover is made to exactly fit the customers specified dish type. The HEATsat satellite antenna

heater will completely stop signal outages caused by snow and ice. This reliable dish back-side electric heater keeps snow & ice from forming on the dish, by heating the reflector when snow and ice conditions are present. Purchase the HEATsat to upgrade existing satellite antennas, and ask for it to be included with your new dish purchases.

HD-GRADE SATELLITE LNB WILL BOOST EBNO ON RECEIVERS

Invest a FEW-HUNDRED-DOLLARS into upgrading your satellite antenna-mounted LNB, to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers. DAWNco's latest generation of C and Ku band LNBs have best-in-industry specs for "1dB gain compression." Install these units to make a real difference in the reception of HD and other MPEG4 or DVB-S2 satellite channels. Internal circuitry has been completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 5 Khz rating.

IMPROVE RECEPTION WITH 3.7 METER SATELLITE DISH FOR LESS THAN $2K

Keep your dish cost under $2K, and permanently improve your satellite reception capability, with our fiberglass 3.7 meter satellite antenna. This is the perfect dish for rooftop or island locations, where the 8 petal design offers easy transport to site. Ground mount USA sites may prefer our HIGH-GAIN aluminum sat antennas, in sizes up to 5.0 meter. The customer will specify stationary or motorized configuration for the dish, and DAWNco offers all other items needed for a complete system.

Keeping track of all the satellite and fiber optic communications products out there is a full time job.

That's why so many people come to **DAWN**CO. They count on us for everything from satellite antennas, receivers, LNBs, and position controllers to fiber optic broadband links, satellite links and data links.

We offer the broadcast TV, cable TV, radio and educational fields high quality equipment at down-to-earth prices.

But more than equipment, we offer expertise. We can examine your situation and your budget, and recommend exactly what you need. You save both time and money by making the best possible buying decision.

Call a **DAWN**CO expert with your questions by simply dialing **800.866.6969**. Use the same number for our free catalog, or find it all on the web at www.**DAWN**CO.com.

DAWNCO

Reasonable prices, priceless reasoning.

Let's Talk About Mod Monitors

Manufacturers talk to RW about the state of the art

TRENDS IN TECHNOLOGY

In this, the second of a series of articles exploring technology trends, Radio World asked suppliers of modulation monitors about their business. The previous article explored codecs; see radioworld.com/codecs.

Mark Grant
Design Engineer
Belar Electronics Laboratory Inc.

How have mod monitors changed notably in the past five to 10 years?

Grant: HD Radio has been the biggest change in our focus over the last 10 years. Designing equipment to monitor the HD portion of the signal while at the same time providing the broadcaster with accurate analog measurements has been the challenge. The complexity of the monitor has increased considerably as a result of this change.

As far as the technology, we have moved away from alphanumeric, seven-segment and LED indicators on front panels to high-resolution graphical displays. This provides flexibility in how information is presented and features can be added or modified with software updates.

The internal processing of the monitor has also evolved to direct RF carrier sampling with down conversion, demodulation and measurements, all-software-based.

In what direction are they heading next?

Grant: The next generation of modulation monitor will be a general-purpose hardware and display platform with software-defined functionality. The term software-defined radio comes to mind, but instead think software-defined modulation monitor.

The next generation of modulation monitor will be a general-purpose hardware and display platform with software-defined functionality.

– Mark Grant

In addition to the ability to monitor standard analog AM, FM and shortwave signals, future monitors will also need to be able to monitor HD Radio, DRM, DAB and whatever else comes down the pike. This will require a monitor with a flexible wide-band RF input and lots of internal processing and display power.

What unique problems are generated by HD Radio, when it comes to monitoring and measurement?

Grant: Our standard analog monitors were designed with maximum bandwidth in order to pass the analog signal transparently. HD requires reduced bandwidths; this results in a compromise especially for total modulation readings. The HD carriers and analog FM sidebands overlap in the frequency range above +/- 100 kHz. When this portion of the spectrum passes through an FM demod, self-interference results, as David Hershberger has written in Radio World. When separate analog and HD transmitters are used, the analog TX sample can be feed to the analog monitor, but where a combined hybrid signal is fed to the monitor, internal filtering is the only option. The FMCS-1 uses a combination of selectable RF filtering to suppress the HD carriers, variable bandwidth composite filtering and peak weighting to achieve accurate total readings.

How about for RDS?

Grant: From a monitoring point of view, RDS is stable and mature technology without any major issues.

Does industry discussion about Single Side Band Suppressed Carrier affect your product sector?

Grant: Our current FMCS-1 and FMHD-1 monitor's stereo decoder is software-based and could take advantage of the reduced L–R bandwidth of the SSBSC signal. Currently both monitors decode the full 23–53 kHz L–R frequency range, but filtering to 38 kHz could be implemented in software. The monitor could also provide the ability to A/B compare the audio using the full and reduced bandwidth L–R signal.

What is the next big challenge facing mod monitor designers?

Grant: Adapting to all the emerging digital transmission standards.

Briefly, what is your newest or most notable product in this segment?

Grant: The latest addition to the FMHD-1 is a decoder expansion board that allows up to four HD streams to be monitored simultaneously. Also, customers using the FMHD-1 and FMCS-1, please check our website for software updates periodically at *www.belar.com/update/index.html*. ■

David Day
President
DaySequerra Corp.

Generally, how have mod monitors and station signal test gear changed in recent years?

Day: Faster digital signal processors (DSPs) and advances in software-defined radios (SDRs) give us the ability to deliver very precise measurements at a lower cost than at any time in the past. And engineers can use these monitors remotely, in some cases even from their cell phones.

In what direction is this business segment heading next?

Day: Customers want more automated monitoring systems that provide email and other methods for notification and correction of problems before the listeners are aware of them. Corporate groups want quality-of-service reporting to the headquarters to manage the issues in the field. Coupled with the advances in system integration, this means more autonomous interaction with the transmission chain.

Technology changes mean that radio monitors are much more software-based network appliances than they were even five years ago.

– David Day

You've been active in HD Radio monitoring and measurement. What's the most common problem or misperception in this area?

Day: From an engineering perspective, I think maybe the most frustrating problem is maintaining HD Radio MPS and HD-1 time alignment. In the beginning, we all believed that you set the time alignment once and the streams stayed aligned. Experience has shown that once

(continued on page 22)

ecreso
WorldCast Systems | Group

Yes, we are offering a 10 YEAR Warranty

on compact FM transmitters

There are 4 THINGS you must do to get this extraordinary warranty:

1. Purchase an Ecreso compact FM Transmitter with TCP/IP option
2. Subscribe to our EMR service for only one year
3. Maintain an internet connection to your Transmitter for the duration of the warranty
4. Okay, it was only 3 things

No, we're not crazy

We've been building FM transmitters for nearly 35 years. Our new compact Helios is the most reliable, most advanced, most efficient transmitter in the world.

See for yourself: Visit us at NAB Booth C2546 or give us a call

Service & Parts in the US

Powerful Performance | Powerful Control | Powerful Savings

ussales@ecreso.com | tel : 305 249 3110 | www.ecreso.com

MOD MONITORS

(continued from page 20)

either stream drops a packet (or packets), the streams come unglued and drift. And then the PD calls — again …

What's the next big challenge in this sector?

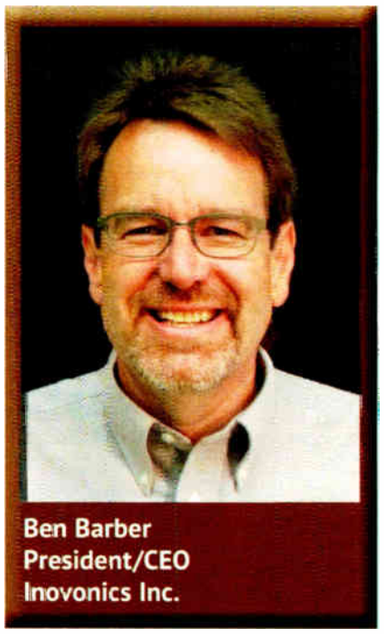
Day: Technology changes mean that radio monitors are much more software-based network appliances than they were even five years ago. This drives systems design much more towards software programmers than hardware designers, changing the very makeup of our workforce.

What is your newest or most notable product?

Day: At NAB 2013, we'll introduce our new line of DSP-based AM-FM analog and HD Radio modulation monitors, and our breakthrough HD Radio M4DDC TimeLock, a single box solution that automatically maintains MPS and HD-1 time and level alignment. The M4DDC is the first solution like this and solves a nagging, real-world problem for HD Radio stations.

Anything else we need to know?

Day: Scarce and thinning engineering resources truly have their hands full today. Imagine you have an FM HD Radio station that depends on a repeater, translator or synchronous transmitter to fill in a few holes in the main station's coverage area. If you maintain these facilities — particularly in the case of synchronous transmitters — it is critical to the HD Radio signal that the signals are in perfect synchronization. This is just one more crucial aspect to keeping a quality signal on the air that keep engineers focused in 2013. ■



Ben Barber
President/CEO
Inovonics Inc.

You make AM/FM off-air monitors and demod/metering for A and D measurements, among other products. How has this class of products changed notably in five to 10 years?

Barber: Over the time period noted, a need certainly remains for accurate, yet simple hardware for day-to-day transmitter setup and "confidence monitoring." That is, a standalone box in the rack room, or even in the studio, that can be trusted for accuracy to confirm legal operation, and something the owner and PD can read and understand.

But as broadcasting technology evolves with advances like HD Radio and AM carrier control, instrumentation becomes more complex. Much of the responsibility for plant maintenance has shifted toward contract engineering services where full-time staffing is not available.

In what direction are mod monitors heading next?

Barber: Just as consumer radios are becoming more and more "software-defined," so will professional monitoring equipment need to keep pace with advances in broadcast and receiver technology. As an expensive piece of test equipment, a mod monitor should be easily upgraded with firmware updates to handle whatever comes down the pike over the expected life of the product.

What unique problems for monitoring and measurement are generated by HD Radio?

Barber: I wouldn't say the HD Radio generates unique problems, it's simply a second transmission that rides along at the same center frequency as the analog signal. The monitoring equipment actually needs to be two independent receivers in one to do justice to both transmission channels, rather than one receiver

that simply switches between modes. On top of that, the analog/HD mod-monitor needs to keep watch on the overall spectrum to snag any nasties generated by having two, unlikely-bedfellow signals occupying common bandwidth.

And for RDS?

Barber: RDS has taken a very long time to penetrate the U.S. broadcast market, though today with the availability of so many more receivers out there, stations are seeing the benefit through branding, advertising and simply enhancing the listener's experience.

We were very early proponents, offering an RDS encoder back in the mid-'90s, and have been pushing RDS ever since. And just as very basic RDS encoding has become incorporated into new FM exciter designs, RDS monitoring should be a natural part of the FM mod-monitor function. We believe that its added value is finally being appreciated.

> **Just as** consumer radios are becoming more and more 'software-defined,' so will professional monitoring equipment need to keep pace.
>
> – Ben Barber

Does industry discussion about Single Side Band Suppressed Carrier affect you?

Barber: This is an interesting concept, and one that we are keeping an eye on. Fortunately the implementation of this technology is a relatively simple matter in the digital domain, though there are questions about consumer receivers being able to deal with the Single Side Band Subcarrier that will have to be answered.

What should a smart buyer know about mod monitors today?

Barber: A smart buyer should make certain that the product he chooses comes from a manufacturer with a strong track record, is well supported and is easily upgraded to embrace technologies on the horizon.

Briefly, what is your newest or most notable product?

Barber: At NAB 2013 we will debut three monitors, one for FM and RDS, other for AM and a third for Internet Radio Monitoring. The first two are not modulation monitors as such, but budget-priced units that meet a basic need for signal, program and data confidence monitoring.

The third is a unique product in that there is nothing else available in the market like it! The unit is a dedicated hardware solution for monitoring your stations' streaming and metadata, with logging functions and notifications via text/email if there are any issues with it. We anticipate a lot of interest in this product sector. ■

(continued on page 26)

follow the gigabit road

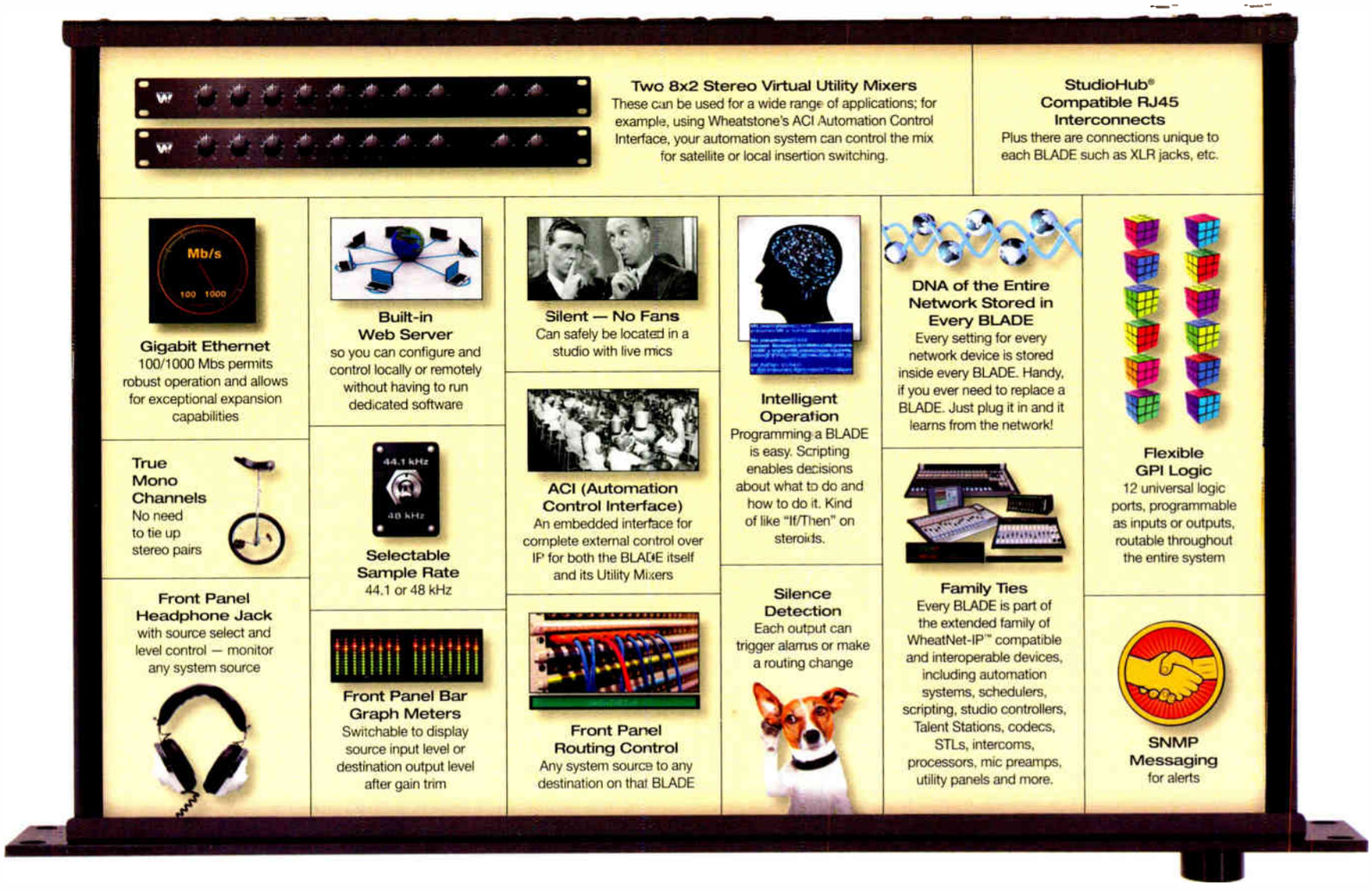
Somewhere in this, the Emerald City, there is an Intelligent Network with more than a million crosspoints connected through a 1,232 x 1,232 audio matrix shared between 21 studios and seven stations, all via AoIP running at gigabit speed. The equipment tally so far: 77 Wheatstone IP88a BLADE access units with 15 Wheatstone control surfaces, 12 crosspoint controllers, three Producer Turrets, 43 Headphone Panels, 23 Mic Control Panels and 45 Mic Processors. Still to come are at least seven more IP88 Blades, 17 mics, 17 headphone panels and 17 mic processors.

Wanna know more about it? Learn how you can benefit. Get the whole story here: **seattle.wheatstone-radio.com**

pictured: Wheatstone LX-24

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

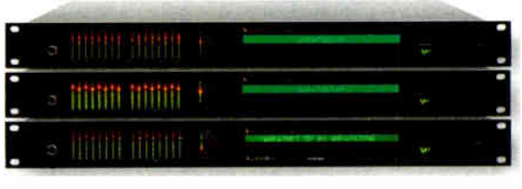
Visit us at NAB 2013 Booth C3112



Each BLADE on the Intelligent Network is exceptionally powerful... but do you know about the incredible functionality inside *EVERY* BLADE?

By now, it's a good bet you're aware of the WheatNet-IP Intelligent Network. You know about its advantages - how it's obsessively compulsive about redundancy. How it can repair itself, configure itself, run rings around the competition while still having much greater bandwidth (due to its Gigabit Ethernet throughput) - enough, in fact, to not only handle our increased functionality today, but well into the future.

So we figured it's time to let you know a little more about those boxes you plug into the Intelligent Network. The ones that contribute to its intelligence. They're called BLADES and from inception have been far more advanced than any boxes on any other networks out there. Take a look and consider how you'd put all that to work in YOUR WheatNet-IP system.

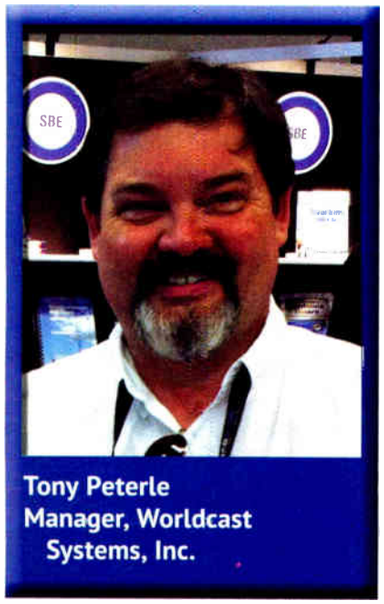


WHEATNET-IP: THE INTELLIGENT NETWORK

Wheatstone

MOD MONITORS

(continued from page 23)



Tony Peterle
Manager, Worldcast Systems, Inc.

How has monitoring gear changed?

Peterle: One word: plastics!

Actually the word is "digital," of course. Monitoring gear has become smarter, more agile and more connected in every way imaginable. Not to mention the proliferation of new digital broadcast formats all over the world, and monitoring for things like streaming audio, podcasts, cable and other alternate delivery methods. We have more signals and services to monitor, while at the same time the economy has been forcing reductions in staff and equipment budgets.

Fortunately, modern monitors are stepping up to the task, monitoring multiple frequencies and formats automatically with a single unit has become much more commonplace, and our ever-more-ubiquitous network access means that we can connect to our devices on demand — and have the devices contact *us*, when something is amiss, anywhere and anytime.

We're also seeing smarter devices that can perform multiple functions, so a single monitor can not only keep track of the four hybrid IBOC signals you have in a given market, it can also act as a remote control device for other equipment at the site. And high-performance DSP technology has allowed development of audio and FM test equipment with extraordinary precision and ease of use.

What is the state of the art?

Peterle: State of the art would be the "set it and forget it" kind of monitor. Something the user can put in place, make some simple adjustments to establish nominal performance levels and then completely ignore. The user can trust that their monitor is keeping track of everything, 24/7, and will let them know if any parameter is out of tolerance. ...

As with all electronics, the market is moving towards smaller, more affordable units with even greater capabilities. Primary among them is autonomy — the ability to detect, and in some cases even correct, a problem without need for human intervention. Blending of monitoring and remote control functions is a natural step towards the concept of autonomous, "self-healing" sites. Mobile test and measurement gear has a whole new Frankensteinian thing going on now with the explosion of mobile computers — smart phones, tablets, etc. — that allow an equipment designer to focus just on the sensor package and the interface, and do all the raw computing and display generation with an off-the-shelf device.

I expect we'll see more broadcast products exploiting this available processing power.

What unique problems are generated by HD Radio and RDS?

Peterle: When we first were shipping our Goldeneagle HD, we heard from a lot of early IBOC adopters that their heritage analog modulation monitors were not tolerating the HD signals well, and were showing inaccurate readings. This was of course before the power increase, the IBOC sidebands introduced a lot of new energy into the spectrum, and the analog filtering in the older mod monitors couldn't block it out well enough. We were able to address that point in the Goldeneagle with a digital demodulator, to more precisely separate the analog signals from the energy in the IBOC carriers.

Since then, other than some issues with interference, HD Radio has posed no significant problems to monitoring and control; but there is a bit more of that to be done, with new or additional transmitters and other gear being added to each site as it goes digital. Now stations are offering data services using the IBOC bandwidth, so monitoring the quality and continuity of the data broadcasts is increasingly important.

Similarly, RDS it does not pose any significant problems to monitoring, it just increases the workload a bit. Traffic data (TMC) broadcasts on RDS have become much more common in U.S. markets, GSSNet is rolling out their first responder/homeland security alerting system using RDS, lots of stations are now paying attention to RT+ broadcasts, cell phone companies have announced their commitment to support and enable the FM receiver chips, which will expand the market for RT+ and other RDS/smart phone communications.

What do you have that's new?

Peterle: Our Modulation Analyzer. It is one lightweight unit that can test and measure everything in the FM broadcast chain from audio to RF. It's freaky scary powerful, to the point where we only need one analog filter — on the RF input, limiting it to the FM broadcast band. All of the other filtering, frequency selection and measurements are done in the digital domain, with incredible accuracy. Plus, it's smart enough that the user can program a whole series of tests to be run in sequence — like a frequency response sweep of a transmitter, for example — and walk away. The Modulation Analyzer will run all of the tests autonomously, and when the user returns they can see the results and automatically generate a printed report with the data and graphic displays.

Anything else we need to know?

Peterle: Other than next week's lottery numbers or Jennifer Aniston's phone number, I can't think of anything. In fact, now I *really* can't think of anything. ■

Blending of monitoring and remote control functions is a natural step towards the concept of autonomous, "self-healing" sites.

– Tony Peterle

Todor Ivanov
President and CEO
DEVA Broadcast Ltd.

How have FM monitoring receivers and analyzers evolved?

Ivanov: Until recently we could not have imagined that we would be able to get the full picture and analysis of the signal of a given radio station while traveling on a plane or on a business trip. Today this is perfectly possible even via a mobile phone.

Nowadays, to produce a mod monitor without it being able to provide remote connectivity is next to pointless. All our products offer this option regardless of the platform used, Android iOS or Windows. Through an intuitive Web interface you can check at a glance what your RDS is, as well as the modulation, RF or audio levels. Another essential feature is the option to remotely listen to your audio signal; we were among the first to have this function embedded.

In what direction are FM monitors heading?

Ivanov: A good question! All manufacturers are striving to ride the crest of the wave. We are continuously trying to implement serious improvements, add features, to offer wider opportunities.

We are increasingly aware of the question whether radio will be able to retain its position among leading media or if it will be replaced by something new and better. We all work hard so that radio can remain one of the main channels in an increasingly expanding media market. We have witnessed significant events to ensure radio's market share: DAB, HD Radio and DRM; with these changes, we will need newer, more modern and high-tech solutions.

Thoughts about Single Side Band Suppressed Carrier?

Ivanov: Although the discussion is still in a relatively initial stage, it is becoming increasingly popular. Its application entails a number of advantages over the classical stereo encoding method. I very much hope that the FCC will legalize SSBSC as standard

(continued on page 28)

AXIA MAKES THE NET WORK.

Choosing an IP-Audio network? Some companies treat AoIP as if it were an RCA jack — nothing more than a way to get audio into a console. But Axia fans know that the network's real value comes when devices truly communicate.

Axia Livewire™ networks are much more than glorified punchblocks. Axia consoles integrate with a big family of more than 70 broadcast products, from 45 partners, to intelligently share audio, data and control between studio devices with the click of an Ethernet cable.

Phones, codecs, delivery systems, audio processors, profanity delays, pro audio cards and more, all form a sophisticated ecosystem. So phone and codec callers receive automatic mix-minus. Satellite feeds record unattended. Broadcast-quality intercoms can go straight to air. Shows are smoother and more error-free. And Axia is a charter supporting member of the AES X192 standards project, so your investment is future-proof.

So when you choose your IP-Audio network, choose the one with all the connections. Axia: we make the net work.

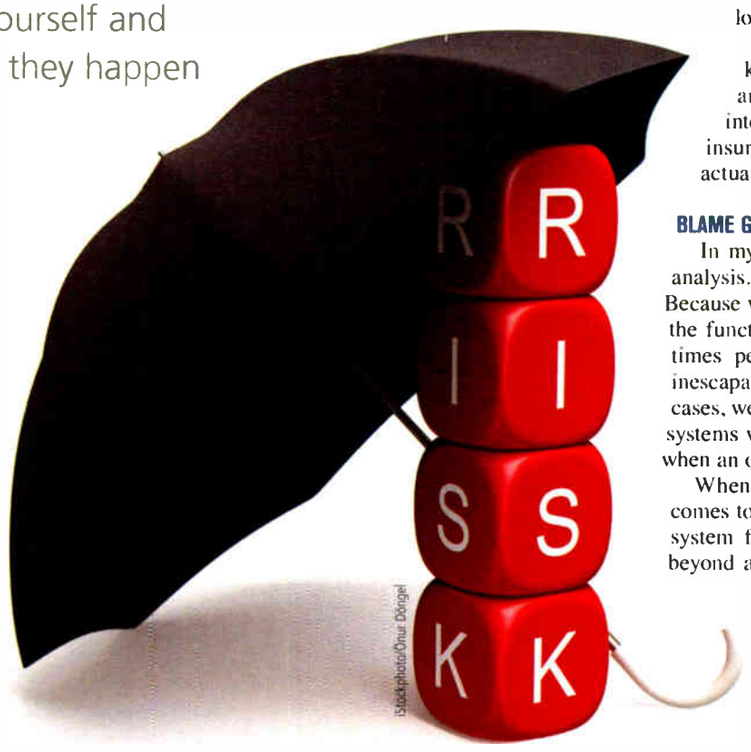
AxiaAudio.com

Assess Your Station's Risk Factors

Dear Engineer: Go easy on yourself and account for problems before they happen

ENGINEERING MANAGEMENT

BY FRANK MCCOY



In my experience, a significant part of what we call "broadcast engineering" is, in fact, technical risk mitigation.

As engineers, we seek to prevent outages at the product generation and delivery chain we call a radio station. This means we build various systems that allow our stations to switch automatically or manually to one or another kind of alternate facility.

Most of us see this as a primary responsibility. We plan and provide for backup transmitters, backup studios, backup links from studio to transmitter and other similar facilities. There are systems that duplicate existing, working installations and add no function or value except added reliability. All consume precious capital and operating expense.

Relatively little emphasis is placed on reasoned expense analysis, particularly where it elevates the risk of interruption of the product.

Recently, I visited a station and toured with its chief engineer while he explained the station's workings. This facility had no fewer than five separate, redundant systems for delivering audio from the downtown studios to the transmitter and tower.

Of these, at least two rode on facilities leased from the telephone company. Another two likely carried antenna rental expense. The fifth was, as I recall, an Internet-based last resort scheme. It presumably runs on an Internet connection that the station would maintain anyway.

Obviously, one link from studio to transmitter is a requirement of being in business at all. But at this particular station, redundant paths two through five consumed capital expense at installation. Two, three and four will consume operating expense for as long as they remain available.

What if we looked at such systems as a kind of insurance policy (which they really are)? They "insure" against the risk of product interruption. This begs the question: How many insurance policies are necessary and what is the actual value of the risk they insure?

BLAME GAME

In my experience, stations rarely do this kind of analysis. As station engineers, we're partly to blame. Because we generally own our responsibilities toward the functionality of the stations we serve, we sometimes personally take on failures that are simply inescapable statistical realities. And because, in many cases, we are the only individuals who know how the systems work, so our co-workers look to us instantly when an outage occurs.

When everyone's livelihood and involvement comes to an abrupt stop when the broadcast delivery system fails, all eyes are on us. If failures extend beyond a few minutes, we begin to project feelings of "maybe our engineer isn't as smart as we all thought he/she was," and this isn't pleasant.

No one likes to be the center of attention when that attention is negative.

I believe this drives a decision-making process that overstates the risk of outage and places excessive weight on deployment of redundant facilities. This wastes money which could be better deployed elsewhere.

A second motivation is the feeling of pride experienced when the systems we've built solve the problem. And if, while sitting at your computer in your bathrobe, you can correct any failure by remote control, that's certainly pref-

(continued on page 30)

MOD MONITORS

(continued from page 26)

in analog FM radio.

After the appearance of the first forums and articles, we took the interesting challenge to experiment with SSBSC. Our first attempt was with an LPFM transmitter fed with MPX generated by our own DSP-based stereo generator, where we rejected the upper side band of the 38 kHz subcarrier. After our tests, we feel SSBSC would reduce the impact of multipath in cities and on rugged terrain.

For many mod monitors in the market, accurate measurement of the FM carrier's modulation level in case of HD Radio sidebands is problematic. This method is the right approach to narrow the RF bandwidth of the carrier, which would decrease interference with the HD Radio sidebands and adjacent channels.

What should a smart buyer know?

Ivanov: The choice of a good mod monitor is not an easy task. The competition is severe while the market has dwindled. Some clients may choose based on a brand's former glory but are left disappointed.

Spend time getting acquainted with the products of leading companies. Important factors include the technology used, the ease of interface and device connectivity. It makes no sense to buy an entirely analog mod monitor in view of the DSP technology available. An option for remote Internet LAN connectivity is a must; and regardless of your smartphone type, imagine the amount of time you could save if your signal could be checked through it.

What is your most notable offering?

Ivanov: Our DB4004. We pride ourselves on this powerful product, which we developed for demanding professional operators. It has a high-resolution OLED graphical display and ultra-bright bargraph LED 60-segment indicators. Its oscilloscope represents all components of the observed signal; spectrum analyzer mode allows analysis of the input signal and other features. MPX Power and other level measurements are supported by measurement history data. RDS information in the processed MPX signal is easily visualized and represented as RDS/RBDS Data and detailed statistics.

Until recently we could not have imagined that we would be able to get the full picture and analysis of the signal of a given radio station while traveling on a plane or while we are on a business trip.

– Todor Ivanov

The monitor supports USB and LAN communication interfaces. The user can do channel status monitoring or audio listening from anywhere through a mobile phone. With the Audio Stream Server you can listen to, skim and record audio. Off-air monitoring enables you to keep an eye on other stations and measure your own signal. And Adjustable Alarms enable alerting for important signal components and parameters.

Anything else we should know?

Ivanov: DEVA is deliberately trying to impose a new pricing policy on the mod monitor market. Until recently, most of our competitors' products were very costly to buyers. I am glad that in the last few years, this has started to change.

Our policy is to create products affordable for all types of users, from large corporations to small LPFM stations. Radio is a passion for us. ■

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

WHERE GREAT RADIO BEGINS

Seven of the 10 top highest revenue U.S. Radio stations rely on Harris® PR&E™ networked audio consoles and furniture. Hardly surprising though, since more customers trust Harris than anyone else to design and build their studios. With more than 5,000 studios deployed globally, PR&E knows its business so you can keep the spotlight on yours.

PR&E™ *Learn more at pre.com*

HARRIS

SCMS INC. RADIO

Call SCMS for more information
1-800-438-6040 or go to scmsinc.com

West Coast
Cell (866) 673-9267
Doug Tharp

Central
Sales (731) 695-1714
Bernie O'Brien

North-East
Sales (315) 623-7655
Jim Peck

North Central
Sales (760) 478-3737
Pam Leffler

Latin America
Sales (760) 650-1427
Lily Massari

South-West
Sales (772) 340-0850
Ted Nahil

Mid-South
Sales (877) 391-2650
Bob Mayben

Mid-West
Sales (513) 899-3036
Mary Schnelle

ProAudio
Sales (877) 640-8205
Ric Goldstein

Southern Gulf States
Sales (866) 205-6905
Andy Cole

Bradley Division
Sales (800) 732-7665
Art Reed
Bob Eburg

RISK

(continued from page 28)

erable to being hauled out into the cold, dark night for a trip to the radio station, all the while listening to static on your frequency.

That's how we engineers get to a place where there are five layers of redundancy and the business is burdened with the attendant expense. Our profession would benefit from a more arms-length approach to business decision-making.

For any such analysis, the starting point is an assessment of the reliability of the core system. This provides data on the likelihood that we'll have to file a "claim" on our insurance, which in this case means falling back to a redundant system.

SCENARIO EXPERIMENTATION

First, identify the core elements of your content origination and delivery system. Then, use any available historical data to try to reasonably model what is a "typical" outage. For systems that live entirely within the station, such as the studio equipment, transmitter, antenna and related devices, look back through your memory (or logs) and try to develop a reliability quotient for each required sub-system.

This quotient is the uptime divided by the total time. Reliability of the whole system is the product of each chained sub-system's individual reliability.

Is your content generation and delivery system a .99999 (five-nines) performer? This means, on average, you'll experience less than six minutes per year of downtime. That's a high standard. AM stations that change pattern twice daily probably fail this level of reliability. Overall system reliability of .9999 might be a more reasonable goal.

In any event, each component in the delivery chain deserves analysis. Where redundancy is present, assess both (all) systems independently. The statistical rule for redundant systems is to multiply the probability of *failure* for each redundant component (i.e., 1 minus the reliability quotient), and then subtract this overall product from 1.

Say you have a microwave STL with reliability of .999 and a backup Internet-based link with reliability .95. The potential for failure of the microwave is .001 (1 minus .999) and the potential for failure of the backup is .05 (1 minus .95). The product is .00005 and the *combined reliability quotient* (1 minus .00005) is .99995.

(This is the probability that both systems will be unavailable simultaneously. As you can see, a little insurance goes a long way.)

Use these reliability quotients to determine the likely lost airtime for any given time span. Add an appropriate value for the time required to respond to the failure, in the event that manual intervention is required.

I've used STLs as my example here, but the principle applies universally. Make use of quoted reliability specifications where available (like from your T-1 provider, for example), and estimate from experience and intuition everywhere else.

Pay particular attention to sub-systems that share components. For example, if you have both T-1 and leased equalized loop services from the telephone company, both would fail if a cable is cut or the associated central office switch is disabled.

A spreadsheet is well suited to this analysis and serves to be a living document that will identify issues and allow reasoned planning. Best practice might be to bracket the outage expectations for high and low into two categories, based on this analysis: The total outage expectation over time and the anticipated length of any particular outage.

Next, attention should be directed to the impact of outages. This assessment should take into account all value and revenue factors. Perhaps missed spots can be made up, perhaps not. Revenue associated with program-length content may be forfeited in whole or part. These impacts should be reasonably quantified and perhaps graphed across the station's typical week.

DAYS, HOURS, MINUTES

This is analysis best done with the help of the general managers and sales managers, because revenue analysis can be something of a touchy subject at many stations. Start with annual top-line revenue and dissect it both seasonally and by day and daypart.

The latter is obvious, but seasonal trends impact exposure as well. Suppose an ice storm takes out power in the weeks prior to Christmas. This might put generator availability ahead of several other redundancy strategies. Or maybe not. Your results will and should vary.

Ideally, you should connect the revenue and outage risk information on the same spreadsheet. Outage risk metrics are used to predict outage time, which then is applied to revenue. Consider tabs for separate categories of revenue or risk, perhaps dividing by daypart or any other reasonable criteria.

For example, your station may be staffed more fully at some hours than others. This might increase outage response times for failures that require human intervention, or make spot revenue less recoverable. Once you've built your model, you can begin doing some "what if" analysis towards the goal of best reliability and lowest expense.

These will probably be mutually exclusive goals, but hopefully patterns will emerge. At the very least, this qualifies as useful due diligence in which spending is planned or savings are proposed.

Relatively little emphasis is placed on reasoned expense analysis, particularly where it elevates the risk of interruption of the product.

IRREPLACEABLE?

Finally, avoid letting hubris influence decisions.

It may come as a surprise, but in this day and age, I believe no radio station provides an irreplaceable service. Given the difficulty of inducing listeners to change a radio preset, I also believe no outage will significantly diminish listener loyalty. Outage experiences can be dispiriting to staff, but are forgotten soon, provided they don't become a pattern.

These are just my opinions, of course, and should be part of the discussion and strategy for each station that does the reliability analysis I recommend. Perhaps your station bills $30 million a year. In that case, outages are more concerning than the station that bills only $1 million.

And "insurance," in the form of hardware and fixed expense, cost about the same for both. Thus the decision for each would be different, but the analytic techniques remain the same. Identify and quantify the risks, assign a value, then allocate solutions accordingly. The larger goal should be a collaborative approach to reasoned risk assessment and wise allocation of resources.

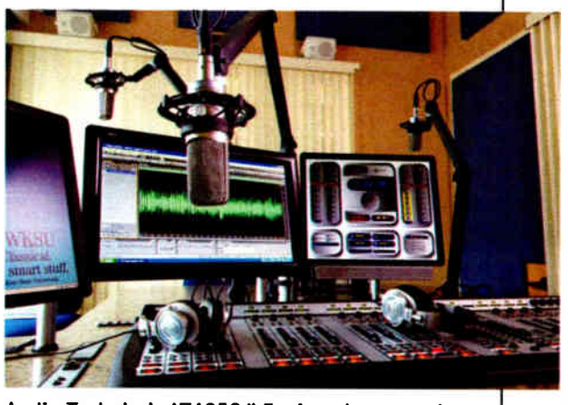
In the end, this will result in a stronger, more secure broadcast enterprise.

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

Frank McCoy is the former vice president of engineering for Gulfstar/Capstar, executive vice president and later chief executive officer of American Media Services LLC. He is in his "retirement job" as chief engineer for Salem's two AM stations in Chicago, WIND and WYLL.

WHO'S BUYING WHAT

Kent State University's **WKSU(FM)**'s new Akron News Bureau in Kent, Ohio, is using **Audio-Technica** equipment for microphones and headphones. Five AT4050/LE multipattern, large-diaphragm condenser microphones and five ATH-M50s/LE headphones are in the studio. The models are limited-edition, made to celebrate Audio-Technica's 50th anniversary in 2012.



Audio-Technica's AT4050/LE microphones and ATH-M50s/LE headphones are visible in this engineer's-eye-view of the new WKSU(FM) studios in Akron, Ohio.

Radiate Media, a digital middleman connecting advertisers with radio and TV stations, along with online ad opportunities, has adopted **Matrix Solutions**. Matrix customer relations management and sales analytics software.

Wheatstone's processing division reported that **WPST(FM)** (Trenton, N.J.) purchased an AirAura audio processor. **Univision** in Austin, Texas, purchased an AirAura audio processor. **Cumulus** in San Francisco purchased three M-2 digital voice processors for the "Randy Savage Show."

KEYZ(AM) in Williston, N.D., purchased an R-55e control surface, while **KZMT(FM)** in Helena, Mont., purchased an R-55e console and an Air-4 console.

Elmhurst College in Elmhurst, Ill., is streaming online with a **Telos** ProStream streaming processor/encoder. **Family Radio** purchased five Z/IP One IP codecs for use in its Oakland, Calif., network origination studios. Clear Channel's **KDMX(FM)** in Dallas has a new Nx12 digital talkshow system.

www.bwb.fm/V2

bw broadcast
Smart Gear. Priced Right.

Power with control.

NEW

V2 FM Transmitter Range.

3 great reasons to buy V2

1 **SOUND BETTER.** Integrated multi-band DSPX audio processing means stations without a dedicated processor sound great right out of the box. One of the industry's cleanest exciters and ultra-low distortion modulator complete a highly stable FM transmission system.

2 **CONTROL EFFORTLESSLY.** "Gold clamp" transistors can be changed in minutes with only a screwdriver and without needing a soldering iron. Slide-in universal power supplies make replacement a breeze and a truly innovative heatsink design ensures ultra-long life thanks to ingenious airflow.

3 **TAKE CONTROL.** Ethernet connection on every V2 with smart phone apps for simple remote management. Intelligent alarms and email alerts ensure busy engineers can manage their stations with minimal intervention and logging is available for those who like to see more detailed status.

SCMS INC.
YOU KNOW WE KNOW RADIO
www.scmsinc.com
1-800-438-6040

Repairs Extend Lives of FM Exciters

Our intrepid engineer continues to find solutions to basic problems

TECHTIPS

BY MARK PERSONS

We don't need to throw away equipment that is capable of serving for many years to come if it is updated on occasion.

The Continental 802A FM exciter was produced from 1983 to 1992. Many remain in use but some have been sidelined because of a failure in the 50 watt RF amplifier section.

This model was made with a Motorola MRF315A transistor. Well, Motorola is out of the semiconductor business, and no company, to my knowledge, is making a direct substitute. Continental can replace the RF amplifier module, including heat sink and voltage regulator, with a plug-in compatible module; but this will cost around $2,000, which is a lot of money considering the exciter may not be worth that much when operational.

An 802A crossed my service bench recently with a problem. My answer was to remove most of the RF power amplifier circuit card and replace it with a pallet amplifier from Broadcast Concepts (*www.broadcastconcepts.com*).

Because the exciter's modulated oscillator puts out only about 20 milliwatts, they provided me with a modified version of a television amplifier and called it an "80 Watt FM Pallet, 40 dB gain, MTF173, 28 Volt (Custom)" amplifier at $249 plus shipping.

This dropped in nicely after most of the original amplifier card was removed. I left the directional coupler at the output of this assembly so forward and reflected power could be monitored.

One cautionary note. The pallet amplifier, any amplifier, needs good cooling. To do that, I carefully marked mounting holes on the original Continental heat sink. Then I drilled and tapped holes so six 4-40 machine screws could tightly secure the pallet's aluminum base to the aluminum heat sink.

Silicon heat sink transfer compound (Radio Shack 276-1372A) was used to ensure good thermal contact between the two. Both surfaces needed to be absolutely flat before they were joined. No accidental aluminum drilling burrs were allowed.

ANOTHER CASE

The Continental 802B FM Exciter is a later, updated version of the A offering. One arrived with serious burn damage on its RF amplifier circuit card, which could not be repaired.

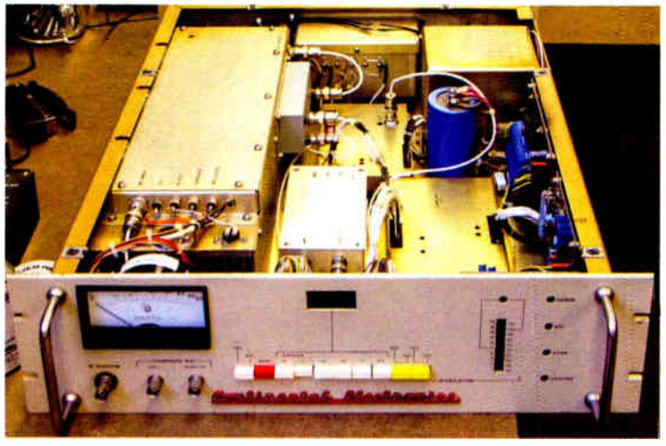


Fig. 1: The exciter, with the original RF amplifier section visible at left rear.

Fig. 2: The new pallet amplifier, inside the 802A.

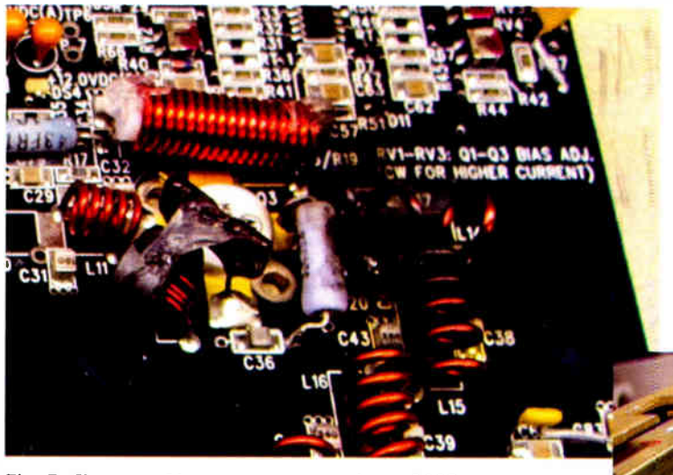


Fig. 3: Closeup of burnt components in an 802B.

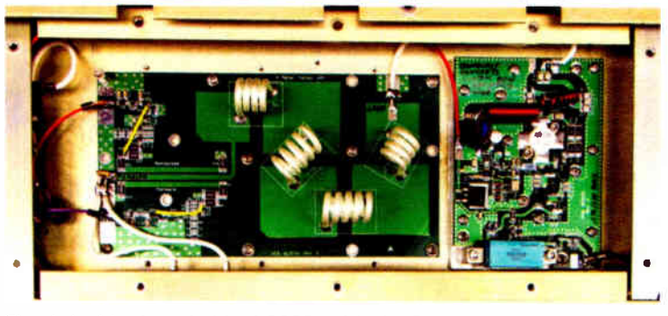


Fig. 4: Inside the rehabbed 802B, with the Broadcast Concepts module at right.

Investigation revealed that there were two or possibly three versions of RF amplifiers used in this model. Yes, another candidate for a pallet amplifier.

Doing the change on an 802B was a bit more complicated. In this model, an RF low-pass filter was required for restoration of the exciter to its former glory. The A model had a filter as an outboard option. That didn't apply here. So, I installed a Broadcast Concepts 1500-watt low-pass filter with directional coupler on the same module. The cost was only $125 plus shipping.

One problem I had was that the filter coils stood high enough above the circuit card so they would short when the top cover was put on the module. The answer was some 1/4-inch-high aluminum bar stock that raised the cover of the module by that amount. It seems much of my work while repairing and/or restoring equipment is as a machinist.

It all worked out, although I had to adjust component values on the directional coupler and exciter meter board to bring the forward and reflected DC sample levels up high enough to get proper metering.

A known problem with these exciters is seen in the case of the Darlington voltage regulator transistor on the RF power amplifier assembly. It will fail, causing the exciter to go to a full 50 watts or more of RF output. A couple years ago, in the pages of Radio World, I mentioned a modification that adds a 4-ohm resistor in series with the regulator, to reduce its heat dissipation.

I use two 2-ohm/50 watt resistors in series because 4-ohm resistors are not a standard item. Sometimes I put a switch in to short the resistors when full power is required from the exciter.

My latest revision to that module also replaces the original MJ3001 regulator transistor with an MJ11023G. This newer transistor is much more capable of handling voltage and current. When installing one, I remove the socket it belongs to, because the new transistor has larger diameter leads.

Yes, soldering is required here.

In one instance, the regulator transistor broke into oscillation at about 200 kHz, causing the exciter to transmit on three frequencies simultaneously. A 0.39 mfd poly capacitor from base to emitter on the transistor put a stop to that problem.

Mark Persons, WØMH, holds CPBE certification from the Society of Broadcast Engineers and has more than 30 years' experience. His website is www.mwpersons.com. *Find past Tech Tips under the News & Technology tab of* radioworld.com.

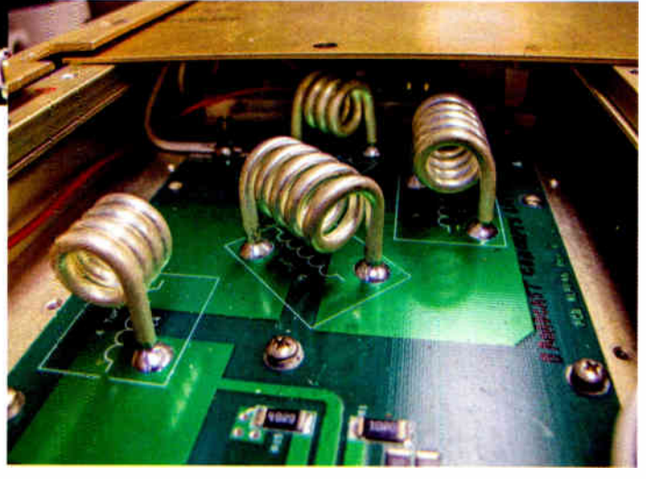
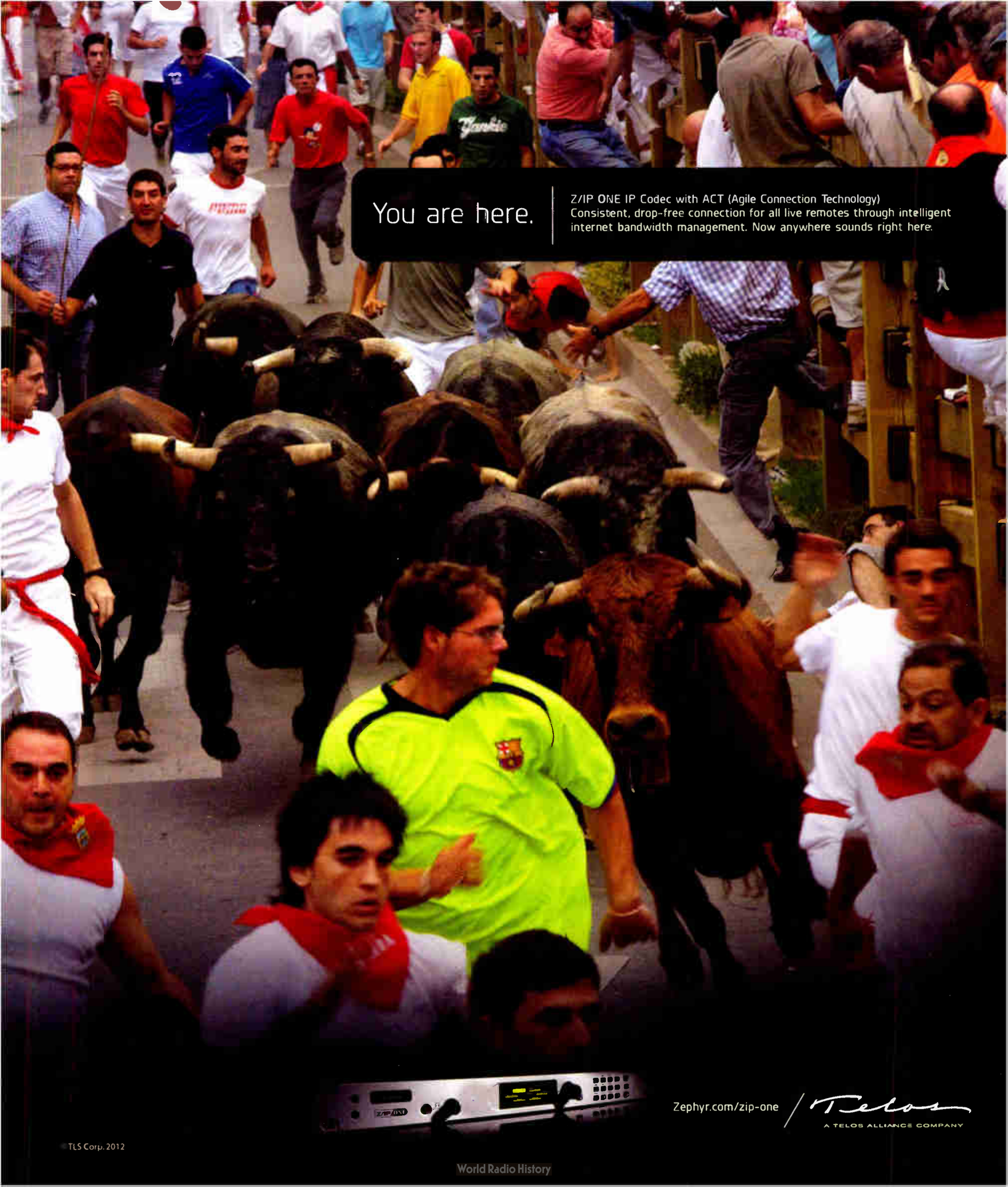


Fig. 5: Aluminum bar stock, visible at upper left, was added to clear low-pass filter coils.



Omnia.11 Serves Twin Purposes

Processor takes on both music and live sports on one FM station

USERREPORT

BY ROB GOLDBERG
Chief Engineer
KTWN(FM)

MINNEAPOLIS — I'm a longtime fan of the Omnia product line, having recommended and run Omnia.fm and Omnia-6 processors over the years. So once I heard that Frank Foti and Corny Gould were teaming up on a new box, I had to get my hands on it.

It was the Omnia.11, and it was introduced at an NAB Show where I could play with it but, disappointingly, not take it home. Soon enough, however, I had one in hand here and was able to perform beta testing and A/B comparisons against a competitor's flagship processor. The Omnia.11 was an impressive, clear winner; and we subsequently put it on the air at KTWN(FM).

DUAL PURPOSES

I'm a contract engineer who keeps an eye on 41 stations; and for five years I have been chief engineer for KTWN, or "96.3 K-TWIN." The station is part of Northern Lights Broadcasting, owned by the Pohlad family; it serves Minneapolis from its city of license Edina.

The Omnia.11 is well suited to K-TWIN, which uses the slogan "Radio for Us: Community, Sports, Music." As that phrase implies, the station airs a real mix of voice and musical content.

A recent half-hour gives you a taste of the musical selection: Blondie's "The Tide Is High," Phillip Phillips with "Home," Moby with "South Side," Peter Gabriel's "Red Rain," Emeli Sandé "Next To Me," The Power Station's "Get It On (Bang a Gong)," Aerosmith's "Rag Doll" and Adele's "Chasing Pavements."

For such content, in this market, our air processor must be musical, transparent, loud and clean.

But sports is an important part of the content mix too, and our newest addition is particularly exciting: The Pohlads own the Minnesota Twins, and just this year KTWN became the flagship home of the baseball club. We air those live games in mono. So for that content, our on-air box needs to be an effective, faithful voice processor.

Minneapolis is a competitive market for processing; there are powerhouse players here including Clear Channel, CBS, Hubbard and Cumulus, formerly Citadel; and some of these guys spend serious money on processing.

Traditional loudness wars might be on the way out, but any jock or PD still wants to be the loudest. I work with them to get the most out of their processor, to work toward sounding better rather than just loud and distorted. Omnia's boxes were already loud; you couldn't get much louder; the push in designing the 11 was to make it as loud and exciting as the older boxes but with even more clarity and control.

Omnia emphasizes certain characteristics: loudness, a "thunderous" bottom, sparkling highs and crisp voice reproduction. The AGCs, compressors and limiters, Omnia says, analyze music in real time and adjust parameters for the best performance across a broad range of material.

Among features that Omnia put in are a Density Detector that enables it to handle very compressed content; an "ultra-multiband limiter" system; a significant bass enhancement algorithm; and an Ultra LoIMD Distortion Controlled Clipper System to reduce IMD in the pre-emphasized final limiter/clipper. (You can read a useful explanation of that last one at *http://omniaaudio.com/11*.)

I love the parametric EQ control and great stereo space enhancement; I really like the way the box handles the high end. Where other processors produce a strident or lifeless sound, I can get a real nice, sparkly top end with the 11, and a rich sound throughout the rest of the spectrum.

I've got a couple of tricks up my sleeve to try make vocals pop, to control the most audible area of the sound yet still attack it. I'm very particular about my station sound; I started with a few of

(continued on page 36)

ABOUT BUYER'S GUIDE

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

IT'S LIKE A SAVINGS VAULT IN DISGUISE.

The cost of a transmitter extends well beyond the purchase price. But with groundbreaking innovations like PowerSmart™, Harris Flexiva™ and 3DX® transmitters provide higher performance that saves money, every day. Less space, power and maintenance required — this is technology you can bank on.

Where Great Radio Begins — broadcast.harris.com/Radio

harris.com

HARRIS
assuredcommunications

Ramar Hails the Audemat Digiplexer

Texas broadcaster appreciates its functionality and audio performance

USERREPORT

BY TEE THOMAS
Chief Engineer
Ramar Communications

LUBBOCK, TEXAS — Ramar Communications is a locally owned broadcaster operating several Fox-affiliated FM and TV stations about an hour and a half east of the New Mexico border and an hour and a half south of Amarillo. We operate with an attitude of excellence. As chief engineer, that means finding and using the best quality equipment at the best price for the job.

My first experience with the Audemat Digiplexer happened just over a year ago, when we were embarking on a new station build. For a brand-new build we needed everything new, so the fact that the Digiplexer could also offer transmitter site remote control and RDS, in addition to audio processing, definitely sparked my interest.

There is an understandable tendency with audio processors to opt for the big name brands, but I believe it is important when purchasing new equipment to define the goals of the system and then research the best fit for this job, all the while keeping an open mind.

In practice, this means we have a diversity of systems in operation.

While the functionality that the Digiplexer was a bonus, I was still looking for the highest quality possible and made sure I demoed the system before even thinking of purchasing. Not only did the sound quality match up to the level we expected, but I believe that it was better than other processors on the market; this was our main reason for selecting the Digiplexer system.

In reality, there are only a few things that control the sound of an audio processor: Bit depth, IO quality and algorithmic performance. The Digiplexer's 24-bit/192 kHz audio and a studio-like quality for a broadcast station is not available in any other processor.

It really is not important how many bands of processing are made available. Often, the more there are, the worse the performance. I believe that the true determining factor is whether the processor samples at a rate high enough to construct the waveform properly on air without artifacts that fatigue the audience.

In side-by-side comparison tests with other equipment, the output of the Digiplexer is more constant, fuller and more accurate to the source material.

The main differential is in the bottom and highs. Mids are relatively easy, but many multiband processors move things around in the mix in the hope of obtaining loudness. However, when you turn on the station processed by the Digiplexer, the ability of the processor to maintain loudness in excess of 7 dB and maintain the proper mix quality is amazing.

In terms of installation and configuration of the Digiplexer, the ability to achieve the sound I desire is easy. While I do have experience in recording studio work, I don't think this is necessary as the presets supplied are perfectly adequate for use and in many ways superior to other processors. However, if you want to spend the time, you can tailor your station's sound to achieve exactly what you want.

As I mentioned, the Digiplexer also offers us extra functionality in addition to the audio processing capabilities. These include audio back-up via hard drive or Shoutcast/Icecast server, the same full RDS encoding power as Audemat's FMB80 and extensive remote control and monitoring of the transmitter site with digital input and relay output boards and Audemat's Scripteasy software. While this functionality is optional and therefore adds cost, the Digiplexer with these options is still significantly less expensive than purchasing these units separately. It also occupies less rack space and makes for much easier management.

With the Audemat Digiplexer working great for us for just under a year, we had no hesitation in ordering another one recently when one of our big brand processors started failing. Overall, the Digiplexer is the best-sounding, most accurate audio processor available that I have found. The ability to have graphical, Web-based remote control is a major plus and the cost makes it affordable.

For information, contact Tony Peterle at Audemat/WorldCast Systems in Florida at (305) 249-3110 or visit www.audemat.com.

KTWN

(continued from page 34)

the factory presets, but I quickly tweaked up my own and locked them down.

Our new Operations Manager Michael Steele, who came from Los Angeles, has very high expectations for audio; and he said we have the best-sounding station in town, bar none.

CONTROL IN THE FIELD

The user interface on the I1 also is a vast improvement over other offerings. It uses the same sort of topology as past Omnia boxes but offers a lot more control.

Its big 10-1/2-inch touchscreen draws attention; but I particularly appreciate how easy remote access is via browser or Wi-Fi. We run the processor at the transmitter site and I have a private extension of the WAN out there. I really enjoy that I can get into the box from about anywhere so that I'm adjusting processing in the natural listening environment.

In fact, I can access my Omnia.11 by remote from my car. The programmers might say, "Hey I need a little more here, some drum kick there," and I'll take them out into the car so we can play with it. I also do it at home; I can actually sit there and adjust the processing in the real environment.

The single sideband suppressed carrier option on the stereo generator is pretty cool; 96.3 is a little "height challenged," so we do have a bit of multipath. I was sitting in a parking lot downtown; I heard some multipath, so I dialed in from the car and turned the SSBSC option on, and bam, it was clear.

The Omnia.11 serves "twin" purposes in one other way: You can buy this box with or without HD Radio processing. The FMHD model offers separate processing paths for analog and digital; or you can get just the FM version, with the option to upgrade to HD later.

I met Frank Foti when I was working for a Clear Channel station, KDWB(FM), here in town; this was before the first Omnia.fm was released, in the mid-1990s. He came in with one that didn't even have front-panel control; you had to Telnet in via a PC.

It was really cool to be part of Omnia when the company launched. Its latest offering is no less impressive.

For information, contact Omnia at (216) 241.7225 or visit omniaaudio.com.

TECHUPDATE

INOVONICS UPGRADES DAVID IV PROCESSOR

Inovonics introduced its DAVID IV (Model 719) in late 2011 as a comprehensive, all-digital audio processor intended for FM air chains. Nine months later the product was on air in more than 100 stations; it has been the firm's fastest-selling broadcast audio processor.

Now with the introduction of Rev. 2 firmware and corresponding updates for the controlling PC software, the company adds features and improves performance. These free changes are downloadable at the Inovonics website and are standard on new models.

New features include an adjustable HD Radio and DRM "diversity delay" provision of up to 9.999 seconds for the analog FM carrier with optional drop-in delay board; a balanced L/R analog and AES digital outputs that can now be independently set for 20 kHz flat, FM-pre-emphasized or FM-flat; and ITU Multiplex Power Control to meet the European standard ITU-R BS.412-9.

Additional improvements are a tweaked PIPP limiter section algorithm for greater density and symmetry; select factory processing presets that have been refined to better showcase the genre of music they represent; and changes in the DAVID IV firmware, resulting in certain performance-related improvements like THD, stereo separation and signal-to-noise ratio specs.

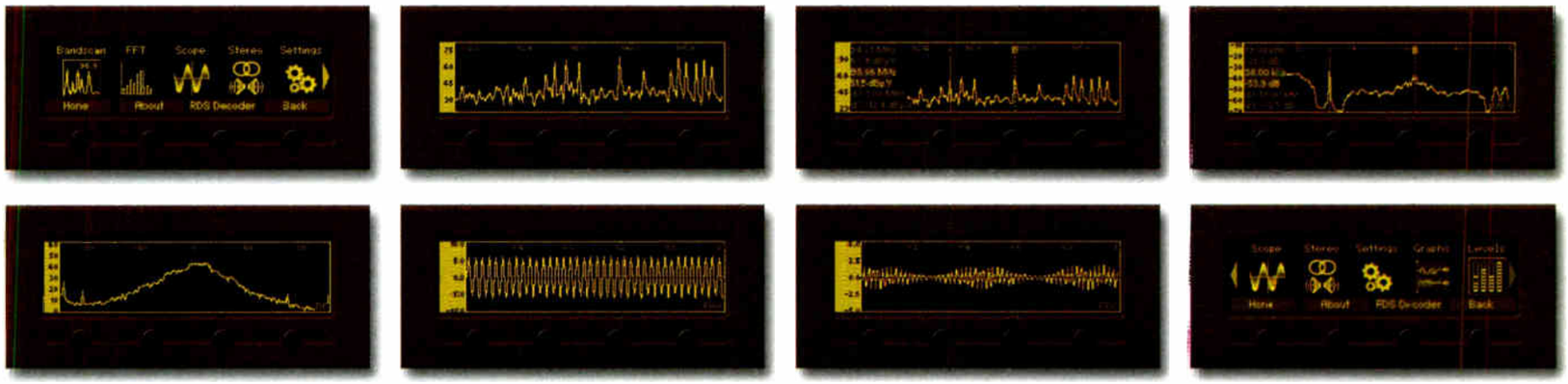
For information, contact Inovonics in California at (831) 458-0552 or visit www.inovonicsbroadcast.com.

DEVA® BROADCAST

DB4004 Modulation Monitor

Product with no equal in the industry

... it's Simply the BEST !!!



Fully Digital DSP-Based IF Filter
iPhone • iPad • Android Compatible
Built-in Audio Streamer for Remote Listening
Alarm dispatch via E-mail, SMS, SNMP and GPO
Easy to use WEB interface • FTP Server
Built-in 50 channels Data Logger

Price: $2700

Available in the US from SCMS, Inc. Call: 800-438-6040

www.scmsinc.com

SCMS INC.
YOU KNOW WE KNOW RADIO

BW DSPXtra FM Rocks WTKW

Galaxy Communications utilizes the BW Broadcast product range

USERREPORT

BY TIM BACKER
Director of Engineering
Galaxy Communications

SYRACUSE, N.Y. — WTKW(FM) is the flagship station for Syracuse University sports. TK99 (TK105 in Oswego) is number one for classic rock, spearheaded in the mornings by Gomez and Dave. TK99 and TK105 are independently owned and operated by Galaxy Communications.

When we were looking for a new processor, I knew we had to compete with the "O" boxes without spending "O" money. I also prefer low distortion ahead of being 1/10 dB louder than the next guy, but still, we must be at least on par loudness-wise.

We used to run some older 8100s that I had done extensive modifications to in order to stretch their competitive lifespan, but as soon as I took a demo of the DSPXtra FM from BW Broadcast, there was no comparison. The improvement was unbelievable.

The installation itself was quick and easy. I started tuning a custom preset on the bench before installation and after a few tweaks was very happy indeed.

We use a DSPXtra FM on WTKW because it gives me the tools to achieve a market-leading sound without giving my CFO heartburn. The DSPXtra FM has proven to be excellent value for money.

The attention to audio quality along with the Ariane leveler gives me the tools to sound big and loud, but not fake. The DSPXtra maintains control and doesn't easily go "over the top" like other boxes on the market. The beautiful Ariane stereo image allows me to sound louder by filling the sound stage consistently, allowing me to back off the traditional limiting and clipping levels.

The box is the right number of bands, six, for cohesive and smooth sound, big stereo image thanks to the Ariane and plenty of control over parameters — all in a small package. My rack thanks BW for not having to give up 2RU or 3RU, making more space for other products.

Thanks to the DSPXtra FM, our station competes comfortably with the other guys who are running much larger, more expensive boxes.

Galaxy Communications now has a number of BW products including several DSPXtras, the brilliant RBRX1 FM receiver and the ever-reliable TX150 transmitter, which seems to just keep going forever. I have recommended BW to a number of people — admittedly, outside of our market.

For information, contact BW Broadcast at (866) 376-1612 or visit www.bwbroadcast.com.

TECHUPDATE

DAYSEQUERRA LBR4 IMPROVES HD RADIO, DAB AND DRM

The DaySequerra Eclipse LBR4 Digital Radio Processor is a four-stream AES stereo audio processor, designed to improve audio performance of low bit-rate HD

Radio multicasts, DAB and DRM channels, with particular focus on stereo at 24 kbps.

It features the latest generation of DTS Neural preprocessing with advanced artifact reduction and significantly improved cascading codec performance; the company says it will significantly reduce artifacts from "lossy" codecs and low-bit rate transmission.

The LBR4 supports four stereo channels and has an EAS/CAP input for FCC compliance. DaySequerra has announced a factory-direct trade-up program from the first-generation Neural processor to the LBR4.

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

OP-X AUTOMATION

SIMPLE • POWERFUL • REDUNDANT

- Modular Operation in Op-X allows for a tiered system at a fraction of the cost of its competitors.
- Each studio client is capable of accessing all Audio Server modules on the network.
- Remote voice-tracking allows for creation of content for remote studios also running Op-X.
- The revolutionary design of Op-X's clock builder turns the previous task of scheduling satellite programming into a few simple clicks.
- Share serial devices from any machine using the Op-X Serial Server.
- Importing logs now gets its own module that takes confusion out of the process.
- Engineers will enjoy Op-X because it's easy to install, maintain, and has automatic backup features.

iPad app Features

- Live show real-time control from almost anywhere
- A powerful tool for remotes or voice tracking
- Take a show on the road
- Start, stop, copy and paste functions from the log
- Insert audio items into the log
- Initiate audio playback from hot buttons
- Run macro command from hot buttons
- Secure access to your system

See us at the NAB Show Booth # C1446

Broadcasters General Store
352-622-7700
www.bgs.cc

BSI
RADIO AUTOMATION SOFTWARE

25-Seven PDM: 'It Just Works'

Demo unit arrives and never leaves, impressing skeptical broadcaster

USERREPORT

BY GARY A. SMITH
Director of Engineering
Bonneville Phoenix

PHOENIX — KTAR(AM/FM)'s engineering department had one of those visits, from Rick Sawyer from 25-Seven Systems.

We were shown a box that, like most of these demonstrations, would solve all the world's problems. It was the 25-Seven Precision Delay. This box was touted as the solution for HD diversity delay and smooth transition in and out of delay for sports programs, etc.

It was also promoted as a precise delay for FM booster synchronization and large delays such as time zone shifts. We did not need any of that.

We were, however, in the market for a profanity delay system that would stay in AES sync on the incoming AES input, provide simple front-panel control, allow engineer-selectable access to controls, easy remote control and provide precise time delay in order to function as both a profanity delay and an audio sync to TV during simulcast baseball games.

Our existing profanity delay was notorious for losing AES sync; and its front-panel controls allowed the user to switch the input from digital to analog accidently and not be aware of what he had done.

Since we had an elaborate set of remote controls for the existing profanity delay tied into our Harris RMX digital consoles and the host turrets, we were not easy to convince that the 25-Seven Systems Program Delay Manager could do the job. After all, we'd had to design and build outboard power supplies and relay systems to make the existing system work and get the Harris remote panels to light up properly. On top of that, the 25-Seven PDM was not able to provide the precise time increments we needed for synching up to the TV audio.

Rick told us that we would need the 25-Seven Systems Precision Delay along with the PDM to do what we wanted. No deal! But the day after our visit, I got the following email from Rick:

Gentlemen:

First, let me thank you for the warm Phoenix hospitality and the station tour. I appreciate it! You certainly have a gorgeous facility and it is nice to see one so well designed.

Second, a 25-Seven PDM is departing our California facility today headed your way. Two things to note about this unit:

(1) You WILL be able to set delay in tenth-second increments using either the menu settings on the front panel or the configuration page on the web interface. From FP, select MENU, CONTROLS, DELAY SIZE. This should address your sports broadcast synchronization requirement

(2) All audio settings are in a category of their own: MENU, AUDIO. This should dramatically reduce the likelihood of someone inadvertently changing inputs/outputs when resetting delay increments.

And remember, since PDM can be completely controlled via its browser interface, it should be easy for your sports guys to adjust the delay while watching/listening to TV from a non-studio location.

This is a factory new unit (not a demonstrator), so if it meets your needs, which I am confident it will do, you can just let BGS know you are keeping it and work directly with them on the purchase without our having to swap machines.

I look forward to hearing from you after your "test drive" and, as always, I am available to assist in any way.

BIG SURPRISE!

With the 25-Seven PDM in hand, it took only an hour with the fully programmable remote control relays and inputs to interface to our Harris controls. The internal power supplies in the PDM were more than adequate to light the Harris controls. We have not experienced any AES synchronization issues. The front-panel controls are easy to use and the operators can tell at a glance the status of the system.

A helpful feature of the 25-Seven is the ability of the box to send an email whenever the dump button is pressed. The email includes the dumped audio file. This is particularly useful to our programming department, since most of the bleeps are necessitated by our own on-air talent.

The 25-Seven Program Delay Manager is a feature-rich box that is easy to program and easy to use. It just works.

For information, contact Rick Sawyer at 25-Seven Systems in Massachusetts at (888) 257-2578 or visit www.25-seven.com.

TECHUPDATE

NEW FOUR-IN-ONE MIC PROCESSOR BY WHEATSTONE

Wheatstone says that four is the magic number of microphones used in most air studios these days, and it has a new voice processor that can handle all of them in 1RU.

It's called the M4IP. It is actually a WheatNet Blade equipped with four high-quality mic preamps, four mic processors and onboard storage for 80 presets. Like the Aura8IP and AirAura processors, the M4IP can be part of a Wheatstone audio-over-IP network or can operate standalone.

The M4IP's four matched mic preamps have a low noise floor, wide dynamic range and faithful transient and frequency response, the company says. Operating at a 96 kHz base sample rate and a 24-bit depth, the M4IP adds no undesired coloration to the signal and preserves the sound of any microphone and talent combination.

As in Wheatstone's M2 two-channel voice processor, parameters of the M4IP can be controlled from anywhere inside the WheatNet network using a Windows GUI. Voice talent can recall his or her personal sound presets at the press of a button.

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

TECHUPDATE

OPTIMOD-FM 8600 ADDS RATINGS ENCODER SUPPORT

The Orban Optimod-FM 8600 now ships with software and hardware support for a "ratings encoder loop-through" that allows a ratings encoder to be inserted between the output of the audio processing and the input of the stereo encoder.

Running the processed signal through the ratings encoder minimizes the number of low audio-level alarms. To achieve this functionality, older 8600s require a modification to the input/output circuit board (removal of a resistor and addition of a jumper wire). Orban recommends that this small mod be done by its service staff.

Featuring versatile five- and two-band processing for both analog FM transmission and digital media, the Optimod-FM 8600 provides consistent sound, track-to-track and source-to-source, according to Orban.

This consistency allows users to create a sonic signature for a station with the assurance that individual signatures will stay locked in, branding a station's

sound. Ethernet connectivity is standard, as is a PC remote control application that runs on Windows 2000 and higher and that can control many 8600s on a TCP/IP network.

In addition, programmable contact-closure (GPI) control plus ACSII terminal control via the 8600's RS-232 serial and Ethernet ports and gives the user freedom to interface the 8600 with a facility's remote control infrastructure, whatever it might be.

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

SHOWCASE

PRODUCTS & SERVICES SHOWCASE

BROADCAST EQUIPMENT EXCHANGE

Submit your listings to: dcarson@nbmedia.com

ACOUSTICS

ANTENNAS

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO BUY

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

AUTOMATION EQUIPMENT

WANT TO SELL

It's free and it has been expanded. The only cost is to keep us informed as to how the system is performing and let us know how you are using it. DIY-DJ, is a Linux based radio automation system and now sports a record scheduler (DIY-DJ-RECORDER) which allows you to schedule the recording of a network or any other program for replay later as well as a basic logging system. Beside these additions the system schedules music, does voice tracking (ALWAYS hit the vocal), create a shell, live assist, exact time events, join satellite feeds, automated temperature announce, do unattended remote events and more. Call (406) 679-0527 or email krws@digitaldevelopment.net for a copy today.

WANT TO BUY

Wanted: old analog automation equip, filters and EQ, tube amps, reel to reel, cart machines and parts. Pacific NW area. 503-493-2983.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO BUY

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

MISCELLANEOUS

WANT TO SELL

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

Like new Potomac Instruments SD-31 w/RX-31 100 KHz to 1999.5 KHz frequency synthesizer & receiver, $6500 w/ new batt pack. Tom, 816-506-4151 or schulzet@vmi.com.

WANT TO BUY

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

2" plastic "spot" reels 6.S or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or **audiovlg@gte.net.**

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

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

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

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

CONSULTANTS

WANT TO BUY

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

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

American Made SCA Decoders, 417-881-1846.

RADIOWORLD

RECORDING & PLAYBACK HARDWARE

WANT TO BUY

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

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

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

Fidelipac model 300 (Grey) carts and pads, must be in airable condition. Kent Lankford, WAKO Radio, 618-943-3354.

TAX DEDUCTIBLE EQUIPMENT

Donations Needed: All Volunteer, Non-profit Low Power community radios stations need Equipment. Will offer tax deduction letter, You determine donation value, We will pay shipping. Equipment shared between three Wisconsin stations. Looking for Mics, Mixers, field equipment, etc. You name it. Email: Dan@WIECradio.org.

DISTRIBUTOR DIRECTORY

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

TRANSMITTERS/ EXCITERS/TRANSLATORS

WANT TO SELL

CCA AM 10,000 D – Call John KQSS 928-595-0263 between 10 & 6 PM Pacific Time.

Classic Gates BFE-10B xmtr, 10 watts, M-5534 exciter, partially restored, works well on 91.7 MHz, complete new tube spare set w/5 finals, $125 + shpg. Pete Russell, 321-773-2746.

Free 20 kW FM xmtr: Gates 20H tuned to 92.3, complete with good PA and IPA tubes. Fully operational on its removal in 2012. Custom remote control interface to accommodate low voltage momentary closures for filament, plate, power control. Complete with manual and some spare parts. Free for pickup in St. Louis, MO. Email: bhoffman@hubbardradio.com.

WANT TO BUY

Non-profit looking to upgrade station, need QEI 675T150 xmtr or similar. Please email Badodge@live.com.

TRANSMITTERS/EXCITERS/TRANSLATORS

TUBES

EMPLOYMENT

POSITIONS WANTED

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com for samples. Call 214-384-5812 or email: adam@rubbinsracingshow.com.

On-air DJ/Newscaster strong in prep work, News delivery, and production. I'm flexible and professional; ready to join the team! CookJoseph963@yahoo.com or 405-550-8896.

A Must Hear Voice! Seeking Announcer, Traffic Reporter, Copywriter, Board-Op, Commercial Voiceover Artist, Engineer or Producer at your radio station. Crome Alexander, 214-280-2022 or calex83@verizon.net.

Accomplished pianist/vocalist seeking on-air/newscaster position in Southeast. Voiceover/editing with devotion to detail and production. Hard and honest worker, dynamic voice and entertaining! Dave, 828-384-0987 or ddavester3@gmail.com.

Ambitious & Persistent with Charisma! Talented and entertainment oriented, animated, cheerful with good sense of humor. Promotions/Broadcasting/Modeling experience. Kiera, 469-364-0522 or kywarren01@gmail.com.

Enthusiastic, diligent, effectively able to meet demands of networking, promotions, production and broadcasting skills, along with management and delays of leadership. Sonny, 682-558-9870 or sonnymills1@gmail.com.

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

Fascinated by media! Seeking opportunities within Programming, prep, production, voiceover and Promotions/Community Relations. Strong customer service/listener focus, diligent, versatile, and respectful. Mark, 817-681-6392 or markjsmail@yahoo.com.

Seeking positions in programming department of a broadcasting company. Good voice, adaptable, observant and follows news, current events and pop culture. Kalep, 214-680-7439 or kalep6@gmail.com.

Strong love for the radio! Great personality/talent wants to work for your station. Nice, honest, reliable, and diligent with strong ethics. Eric, 757-393-6292 or eemoore1972@aol.com.

You've Got to Spend It to Make It

Broadcasters must adapt to how our audience's habits are changing

COMMENTARY

BY VALERIE GELLER

I believe in radio and I believe in radio's future. But the hard truth is that if broadcasters don't evolve with both the technological shifts and an understanding of how our audience is changing, we may sink our own ship.

With Internet radio becoming available in the car, the entire landscape is changing, and fast.

But radio itself is still solid. Everyone knows radio. Even those not technically making radio still *call* it radio (XM Satellite "Radio," Pandora "Radio," etc.)

WHERE IS YOUR AUDIENCE?

The great Green Bay Packers coach Vince Lombardi once explained the secret of his team's success. He would tell his players, "Go where the opening in the lineup is, not where you think the opening ought to be."

It worked for football and it works for radio. As a broadcaster, if you want to thrive in today's digital world, you need to go where the audience is.

Your listeners are getting their media, both information and entertainment, online or from their mobile devices, which they are using constantly.

And while the metrics haven't caught up with the new delivery systems, the audience is there. Arbitron and Nielsen are trying to figure out a way to measure it accurately, but in fact, the audience is likely not declining. It's probably growing.

Radio is, and always has been, in the content business. But now it's time to add another element: Content in combination, delivering across multiple platforms.

Valerie Geller

And that content had better be good. Most listeners are distracted easily and have short attention spans. PPM proves it: If they're bored, they're gone.

Radio now includes written pieces, photos, video and headlines for social media (Twitter, Facebook, etc.), as well as long-form audio. All content is online, interactive and mobile.

Newspapers that are staying afloat are surviving because they embraced this multiplatform approach early on. While it may not have paid off immediately with instant cash, those who invested early are now reaping the rewards of a faithful following. They saw the writing on the wall and knew that they had to change.

The entire world is online, and radio has got to keep up. Name one business you interact with that is not online. You probably can't. From banking, to buying groceries, to shopping for birthday presents, to checking the weather forecast … it's all online.

Name one business you interact with that is not online. You probably can't.

Look at Arbitron numbers in Los Angeles, where Clear Channel encodes the stream of KFI(AM). A year ago, the online stream of the morning drive show with Bill Handel actually beat KABC(AM)'s over-the-air signal in the 25–54 demographic for that time slot.

Norm Pattiz, who created Westwood One, just launched PodcastOne.com, an aggregated one-stop site that offers "radio" shows from hundreds of online broadcasters for listeners to download. With stars like Adam Corolla, it will make money by packaging online content, for shows with more than a million listeners, to sponsors.

Public radio station sites creatively grow audience by providing extra content that you can't get on air, and continue to maintain a connection with the listener. This is what radio does best.

It's the answer no manager or station owner wants to hear: Creating quality content costs money. Invest money in talent and producers. Hire good people. It takes vision and it takes risk. You've got to spend it to make it.

Look at top-rated WTOP(FM) in Washington. By working across all platforms and adding staff to create relevant, unique content, they've grown both their audience and their revenue.

Castanet radio in Kelowna, Canada is thriving entirely online. And there are ever-increasing numbers of examples.

DON'T KILL THE GOOSE

Companies and stations that have shortsightedly cut personalities and support staff, and run satellite or automated programming to save on personnel costs, are finding they have lost their connection to their audience. Instead of profiting from radio's golden eggs, they've actually killed the goose.

To win our audience back, it will cost money. To hire personalities that attract audience with unique content and who can make the emotional connection? Costs money.

When was the last time you heard a birthday dedication? Or some way a station host made a local personal connection with a listener; one that created a feeling of community? That has all moved online.

You can win in a digital world by investing in people who specialize in digital, whose full-time job is connecting with the audience online. You can't just hire an intern or make this one more thing the promotion or sales assistant has to take care of.

TV stations, newspapers and online media have made social media a full-time gig. It's a dedicated professional position. And it involves a lot of work.

If you want to win the digital audience, make your digital content manager needs to be a full-time gig. The job description includes packaging and developing specific content for digital and online, in conjunction with your on-air programming. This will increase your brand and help you better connect with, serve and grow your audience

WHAT ABOUT THE NAB?

The National Association of Broadcasters has been in a strange position. It wants radio to succeed, but seems somewhat ambivalent about promoting any form of media other than traditional broadcasting. This could be an overabundance of caution, because traditional broadcasting loses viability when stations don't get onboard across platforms.

All business has an element of gambling to it. If you're in business, you know that to succeed, you have to invest, try new things, hire good people and take risks. It takes time, but the pay off can be great.

The one question from all managers is, "How do we make money off of this

(continued on page 46)

READER'SFORUM

MORE MEMORIES OF CATALINA'S KBRT(AM)

Thanks for the great Scott Fybush article on the Catalina Island 740 AM facility and its history ("One of America's Most Remote AM Sites Is Signing Off," Jan. 16). I feel compelled to provide a few additions and clarifications to his story.

I have stood in both KBIG/KBRT(AM) and KMEO(AM) in Phoenix at sign-off and have had KCBS(AM) come in with such clarity on the studio monitors the moment the local carrier was silenced, it was easy to think the station had simply changed formats (not signed off).

I had the opportunity to visit the Catalina transmitter site on more than one occasion in the early part of the 1970s, accompanying the engineer on his weekly run. We'd drive down from the KBIG studios on Sunset Boulevard over to the San Pedro area, fly over on a Grumman Goose seaplane and then jump into the station Jeep kept in Avalon.

The KBIG staff's emphasis was on AM. They considered FM as nothing more than a big automation system in the back room that depended on someone remembering to change reels occasionally. The AM station, meanwhile, was generating revenue by doing such specialty programming as covering Mexican road races and whatever else would attract a sponsorship.

After our dramatic success at co-owned WRFM(FM) in New York, in 1970, Bonneville President Arch Madsen deemed that all of the remaining six company FM stations would transition to the musical format that I had brought to WRFM.

Since this required the packaging of our music on reels and the assembly of instructional materials and guidelines for creating the complete on-air product, it was decided that we should offer these services to stations in other markets as well, and Bonneville Broadcast Consultants was established as a separate division.

I went to Los Angeles in July 1971 to launch the programming on KBIG(FM) and re-focus the staff's attention to the FM side. On nothing more than word of mouth, the station's popularity and ratings began to soar ... and the AM from Catalina finally became the "stepchild," although I don't remember what it actually aired over the next couple of years.

However, later in the 1970s, it began offering a brighter, more vocals-oriented version of the FM's easy-listening format. At that time, the call letters were changed to KBRT and the stations were promoted as the "Big & Bright" duo.

Marlin R. Taylor
Program Director
"Escape & enLighten"
Sirius XM Radio
Washington

14 RADIOWORLD | radioworld.com

FEATURES

January 16, 2013

One of America's Most Remote AM Sites Is Signing Off

For more than 50 years, keeping up KBRT's signal was a worthy challenge

KBRT chief engineer Bill Agresta stands in front of the station's island transmitter site.

BY SCOTT FYBUSH

"Twenty-six miles across the sea, Santa Catalina is a-waitin' for me ..."

The Four Preps didn't quite get the distance right — it's only about 20 miles from the nearest point on

his attention to Catalina in the late '40s.

While conventional wisdom said there was no room for another new signal on the already-crowded Los Angeles-area AM dial, Poole quickly figured out that by locating offshore, he could blast out a 10,000-watt daytime signal at 740 on the dial that would carry over the Pacific salt water to blanket the coast from Santa

By the 1960s, KBIG-FM's fulltime signal had outpaced its AM sister in the ratings. The downtown Avalon studio was closed, and whatever limited Catalina-produced programming on the AM station remained was originating from a small studio at the three-tower transmitter site up in the hills.

Poole exited the broadcasting business in 1969, starting yet another new career as a winemaker. (After his death in 2003, Poole's son took over operations of the Mount Palomar Winery, which continues in operation.)

Bonneville took over the KBIG radio stations, and 740 began a slow transition to a mix of music and religious programming. In 1980, Bonneville sold KBIG(AM) to Crawford Broadcasting, which renamed the station KBRT ("K-Bright") and moved to new mainland studios in Costa Mesa, Orange County.

Under Crawford, KBRT's programming went entirely to religion, still using that big signal from Catalina to reach listeners up and down the coast. The breakdown of the clear channels in the 1990s landed KBRT a limited night authorization, but with a measly 113 watts, KBRT after dark couldn't overcome the big KCBS signal anywhere on the mainland, and so it continued to operate daytime only.

KBRT's next big brush with the headlines was an unfortunate one: In the spring of 2007, a contractor working on replacing the station's guy wires was using a circular saw to cut up the scrap metal from the project. Sparks from the saw ignited the dry brush around the site, touching off what would turn out to be a 4,200-acre blaze that scorched much of the central part of the island, destroying power and electric lines and stopping just short of the edge of Avalon itself.

The towers and transmitter building remained standing, and KBRT was back on the air within days on generator power, first playing CDs from the on-site studio and then establishing a satellite link to the mainland. The fire's aftermath brought lawsuits that weren't settled until just last year, and helped to push Crawford to seek out a more accessible site off the island.

CORRECTIONS

Our story on all-digital AM testing in the March 13 issue misspelled the name of **Alan Lane**. He's the market engineer/IT manager for CBS Radio in Charlotte, N.C.

Also, a caption in our March 13 story about KNOM(FM) misspelled the name **Lucus Keppel**.

Our story on the **Bext XL Series transmitters** in the March 13 issue used the wrong picture. The correct product is displayed here.

ADVERTISER INDEX

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

PAGE	ADVERTISER	WEB SITE/URL
23	25-Seven Systems	www.25-seven.com
12	AM Ground Systems Co.	www.amgroundsystems.com
22	Arrakis Systems Inc.	www.arrakis-systems.com
16	Audio Compass	www.audiocompass.com
5	AudioScience Inc.	www.audioscience.com
1, 27	Axia - The Telos Alliance	www.axiaaudio.com
41	Bext, Inc	www.bext.com
38	Broadcast Tools, Inc	www.broadcasttools.com
39	BSI	www.bsiusa.com
3	BSW	www.bswusa.com
8	Burk Technology	www.burk.com
31	BW Broadcast	www.bwbroadcast.com
41	Coaxial Dynamics	www.coaxial.com
7, 47	Comrex Corporation	www.comrex.com
19	DAWNco	www.dawnco.com
34	DaySequerra/ATI	www.daysequerra.com
37	Deva Broadcast Ltd	www.devabroadcast.com
21	Ecreso Worldcast System	www.ecreso.com
40	Grace Broadcast Sales	www.gracebroadcast.com
35	Harris Corporation	www.broadcast.harris.com
44	Heil Sound, Ltd.	www.heilsound.com
17	Inovonics Inc	www.inovon.com
4	Lightner Electronics	www.lightnerelectronics.com
11	Logitek	www.logitekaudio.com
14-15	Nautel Ltd.	www.nautel.com
13	Omnia - The Telos Alliance	www.omniaaudio.com
41	Progressive Concepts	www.progressive-concepts.com
18	RCS	www.rcsworks.com
29	SCMS	www.scmsinc.com
33	Telos - The Telos Alliance	www.telos-systems.com
9	Tieline Technology	www.tieline.com
2, 24-25, 48	Wheatstone Corporation	www.wheatstone.com

READER'SFORUM

A RECOMMENDATION FOR SPECTRUM ANALYSIS

I read "IBOC at Night, Five Years Later" (March 1) with interest.

James O'Neal mentioned that he wishes he had a spectrum analyzer. I have a suggestion. I use an RFSpace SDR-IQ receiver connected to my computer using SpectraVue software. This gives me a very high performance radio that receives anywhere from tens of kilohertz to 30 MHz.

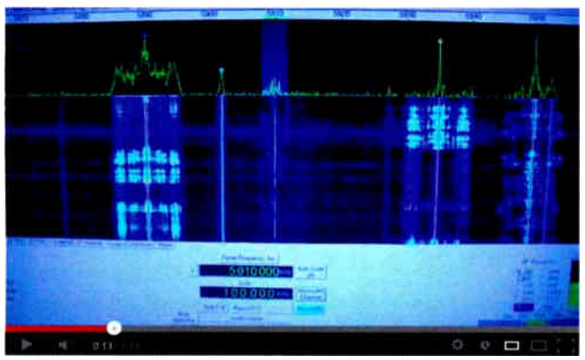


Image from a YouTube video of AM reception using SpectraVue.

It can receive many different forms of modulation and has adjustable bandwidth. The beauty of this system is that it has a spectral display in the normal style plus a waterfall display.

That display is awesome. You can see the IBOC carriers and you can even immediately tell where the station has set their band pass filters.

This is such an awesome way to DX that it becomes addictive. To visit the manufacturer's website, visit *radioworld.com/links*, where you can also find a link to a YouTube video of AM reception using SpectraVue. It is interesting that the foreign stations being displayed are running digital sidebands of some sort but are not limiting the analog bandwidth as we do on IBOC.

Hope this is useful to you.

Steve Minshall
Director of Engineering
KOSO(FM), KJSN(FM), KQOD(FM)
KMRQ(FM), KFIV(AM), KWSX(AM)
Clear Channel Communications
Modesto, Calif.

HOW TO

SEND A LETTER TO THE EDITOR:
Email **radioworld@nbmedia.com** with "Letter to the Editor" in the subject field. Please include issue date.

CHANGE YOUR MAILING ADDRESS:
Visit **radioworld.com**, click on the subscription button and follow instructions to change a subscription address.

CONTRIBUTE FREELANCE ARTICLES:
Email **radioworld@nbmedia.com** and request our Writer's Guidelines.

GET INFORMATION ABOUT ADVERTISING:
Download a media kit including editorial calendar at **radioworld.com/advertise.shtml**.

HAM RIFT STILL RANKLES

I am disappointed that you actually chose to give more space in your opinion column to the rants of Burt Fisher (*Reader's Forum*, March 13). It is one thing for someone to spend their free time on a personal tirade and mission to rip on a hobby that they choose to voluntarily participate in. It's another for a broadcast engineer who should be encouraging others to learn and better themselves.

I am not impressed by the attitude that Mr. Fisher has displayed. Rather than QSB, going QRT would better suit those of us who still care.

Allan A. Augustyn, W8FYZ
Director of Network Engineering
Radio Results Network
Escanaba, Mich.

GIVE CUSTOMERS WHAT THEY WANT

We are slowly losing AM around southwest Pennsylvania — the little stations of 500 to 5,000 watts. Yet some are doing well there. Not bringing in buckets of money, but paying the bills.

What about older listeners? We have the second biggest senior population outside of Florida. Very few stations serve them; but the ones that do are still in business. What the 50+ generation listens to is radio, not iPods or Internet radio.

If you always think your signal is poor when it gets dark, and no one listens, I've got news for you: Lots of seniors went out and got those C. Crane radios to pull in a better signal. I know. I see them in people's homes as well as some of the businesses I serve.

Yes, time and again I have seen AM and FM radio be its own worst enemy and take the easy way out instead of putting in the effort to give the customer what he wants.

"Give the customer what the customer wants." The single biggest mystery in business, solved.

Nick Markowitz Jr.
Contract Engineer
Verona, Pa.

SPEND TO MAKE

(continued from page 44)

right now?" What's the return on investment? If they don't see an immediate payoff, stations are reluctant to invest. But remember, it's a long game. If managers in radio aren't willing to risk investing now for payoff in the future, everyone loses. Quality content across multiple platforms pays off.

Again, consider public radio: Podcasts in public radio are bringing in lots of money. Sponsorships on the podcasts (check out "This American Life" or "Radio Lab" online, to start) are sold at a premium. They have verifiable numbers of listeners.

Public radio invested early in online products, by hiring specific producers to help create content. And they are now reaping the rewards in ratings and revenue.

Put in the time to do it right, and spend the money, and we can win this.

Valerie Geller is president of broadcast consulting firm Geller Media International; she leads workshops and seminars and trains broadcasters to become more powerful communicators in the digital world. She also is author of "Beyond Powerful Radio: A Communicator's Guide to the Internet Age." Visit www.gellermedia.com.

RADIOWORLD

Vol. 37, No. 9 April 10, 2013

Next Issue of RADIO WORLD April 24, 2013
Next Issue of ENGINEERING EXTRA April 17, 2013

Website: www.radioworld.com
Email: radioworld@nbmedia.com | Telephone: (703) 852-4600
Business Fax: (703) 852-4582 | Editorial Fax: (703) 852-4585

For address changes and subscription renewal, please visit radioworld.com and click on the "Subscription" button. To submit letters or story proposals, to request writer's guidelines, or for other editorial matters, email the editor at radioworld@nbmedia.com.

EDITORIAL STAFF
EDITOR IN CHIEF, U.S. Paul J. McLane
NEWS EDITOR/WASH. BUREAU CHIEF Leslie Stimson
GEAR & TECHNOLOGY EDITOR Brett Moss
U.S. ASSOCIATE EDITOR Alexis Hauk
TECHNICAL ADVISER Thomas R. McGinley
TECHNICAL EDITOR, RWEE Michael LeClair
PRODUCTION EDITOR, RWEE Karen Lee
CONTRIBUTING EDITOR John Bisset
INTERNATIONAL EDITOR IN CHIEF Marguerite Clark
LATIN AMERICA EDITOR IN CHIEF Rogelio Ocampo
LATIN AMERICA EDITOR Karina Gerardi
EDITORIAL ASSISTANT Emily Reigart

EDITORIAL CONTRIBUTORS
W.C. Alexander, Barry Blesser, James Careless, Harry Cole, Ken Deutsch, Mark Durenberger, Charles Fitch, Harold Hallikainen, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Daniel Mansergh, John Merli, Laura Mir, Jim Peck, Mark Persons, Sharon Rae Pettigrew, Stephen M. Poole, Carl Lindemann, James O'Neal, Tom Osenkowsky, Rich Rarey, John Schneider, Randy Stine, Richard Strickland, James G. Withers, Tom Vernon

ADMINISTRATION & PRODUCTION
PUBLISHER John Casey
EDITORIAL DIRECTOR Paul J. McLane
PRODUCTION DIRECTOR Davis White
PRODUCTION PUBLICATION COORDINATOR Karen Lee
ADVERTISING COORDINATOR Caroline Freeland

CIRCULATION
GROUP DIRECTOR, AUDIENCE DEVELOPMENT Meg Estevez
CIRCULATION MANAGER Kwentin Keenan
ASSOCIATE CIRCULATION MANAGER Michele Fonville

SUBSCRIPTIONS
Radio World, P.O. Box 282, Lowell, MA 01853
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)
978-667-0352 (Outside the US) FAX: 978-671-0460
WEBSITE: www.myRWNews.com
EMAIL: newbay@computerfulfillment.com

CORPORATE
NewBay Media LLC
PRESIDENT AND CEO Steve Palm
CHIEF FINANCIAL OFFICER Paul Mastronardi
CONTROLLER Jack Liedke
GROUP CIRCULATION DIRECTOR Denise Robbins
VICE PRESIDENT OF WEB DEVELOPMENT Joe Ferrick

VIDEO/BROADCAST GROUP
EXECUTIVE VICE PRESIDENT Carmel King
VICE PRESIDENT / SALES DIRECTOR Eric Trabb

ADVERTISING SALES REPRESENTATIVES
US EAST: John Casey, jcasey@nbmedia.com
T: 212-378-0400, ext. 512 | F: 330-247-1288
US WEST & CANADA: David Carson, dcarson@nbmedia.com
T: 212-378-0400, ext. 511 | F: 866-572-6156
EUROPE, AFRICA & MIDDLE EAST:
Raffaella Calabrese, rcalabrese@broadcast.it
T: +39-02-9288-4940 | F: +39-02-7004-36999
LATIN AMERICA: Susana Saibene, susana.saibene@gmail.com
T: +34-607-31-40-71
JAPAN: Eiji Yoshikawa, callems@world.odn.ne.jp
T: +81-3-3327-5759 | F: +81-3-3322-7933
ASIA-PACIFIC: Wengong Wang, wwg@imaschina.com
T: +86-755-83862930/40/50 | F: +86-755-83862920
CLASSIFIEDS: David Carson, dcarson@nbmedia.com
T: 212-378-0400, ext. 511 | F: 866-572-6156
LIST RENTAL: 914-925-2449, danny.grubert@lakegroupmedia.com

Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 28 East 28th Street, 12th Floor, New York, NY 10016. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

For custom reprints & eprints please contact our reprints coordinator at Wright's Media: 877-652-5295 or NewBay@wrightsmedia.com

Globe graphic ©iStockphoto.com / Edward Grajeda

1664: Just what it looks like. Two tin cups and a string. But it transmitted sound!

1876: Alexander Graham Bell's commercially viable telephone.

1900: Phones become fixtures in more well-to-do and steam-punk homes.

1920: Every home is working toward having a telephone!

1936: The advent of the dial desk phone. No more asking the operator to connect you.

1963: Push buttons usher in the thoroughly modern world. Touch tones enter pop culture.

1983: The mobile phone is a reality. Plots in all TV shows get a boost!

2004: IP Telephones begin to become the staple of modern business.

2007: Smartphones are complete communications centers. AND they can sound great!

AS PHONES GET 'SMARTER,' YOUR ON-AIR CALLERS SHOULD SOUND 'BETTER,' RIGHT? NOW THEY CAN...

STAC-VIP leverages VoIP (Voice over IP) technology to deliver a new way to manage *all* your phone calls for talk shows, interviews and contests. It breaks new ground by handling calls from HD Voice-capable telephones as well Smartphone apps. Give your listeners the best sounding shows on the air. Get **STAC-VIP**.

NOW SHIPPING

plugged into Skype™

STAC VIP is Plugged Into Skype™

comrex.com

Visit us at NAB 2013 Booth C2221

COMREX

19 Pine Road, Devens, MA 01434 USA Tel: 978-784-1776 • Fax: 978-784-1717 • Toll Free: 800-237-1776 • e-mail: info@comrex.com

WHEATNET

THE INTELLIGENT NETWORK

modern : classic

LX-24

gotta have it!

Wheatstone

LX-24: ADVANCED MODULAR NETWORKABLE CONSOLE

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

Visit us at NAB 2013 Booth C3112