

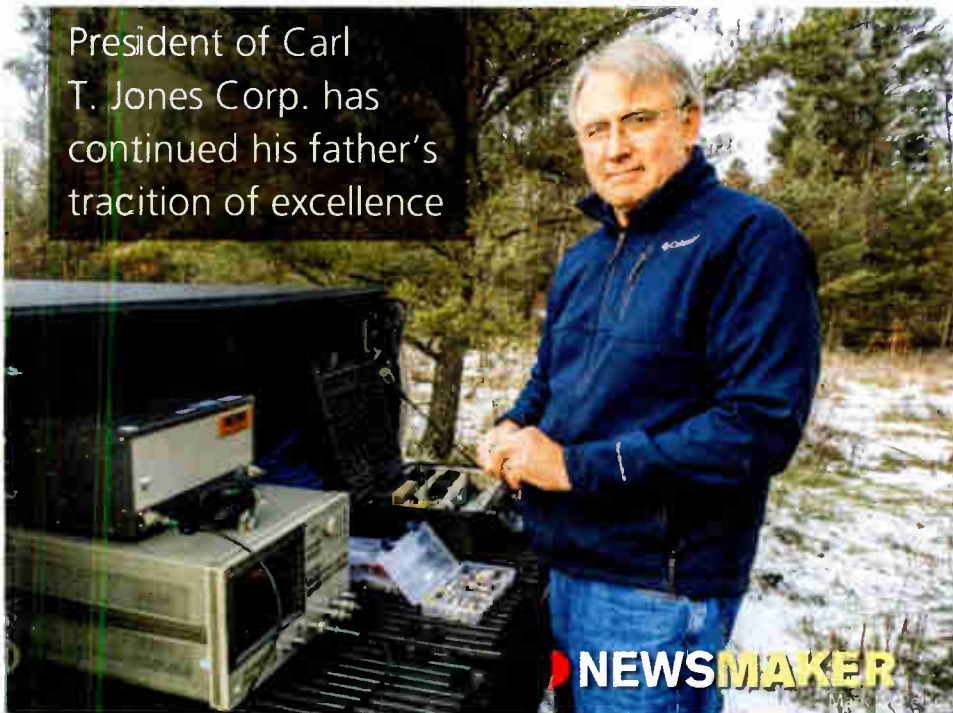


RADIOWORLD

APRIL 11, 2018 | The News Source for Radio Managers and Engineers | \$5.00 | RADIOWORLD.COM

Engineer Tom Jones Honored by NAB

President of Carl T. Jones Corp. has continued his father's tradition of excellence



NEWSMAKER

BY TOM VERNON

In addition to its exhibitions and seminars, the NAB Show is an opportunity for the industry to recognize

individuals for their outstanding contributions to broadcasting.

This year, the NAB has awarded its Radio Engineering Achievement Award to Carl T. Jones Jr., better known as Tom,

the president of Carl T. Jones Corp.

He has been a consulting engineer for nearly 40 years. Over that time, Jones has managed hundreds of complex broadcast engineering projects, served on industry and government advisory committees, and been heavily involved in the AM revitalization effort.

SIDE TRACK

For Tom Jones, the interest in radio and electronics began at an early age, due largely to his late father. The senior Jones had worked at the FCC and then in 1953 co-founded a broadcast consultancy, called at the time Gautney & Jones Communications Engineers,

doing specialized work in directional antennas and the design of radio and television transmission systems.

The younger Jones worked at the company while in high school and over the summers while he was in college. In 1971, he graduated from Georgia Tech with a BS in electrical engineering.

"Working for my father's firm was really important during those years," he said, "because it got me involved with the practical applications of all the theory I was learning in college."

The job market was tight when Jones graduated, so he took a detour from broadcast engineering for a while and worked at Ensco, a Washington-area company designing instruments to measure railroad track conditions at high

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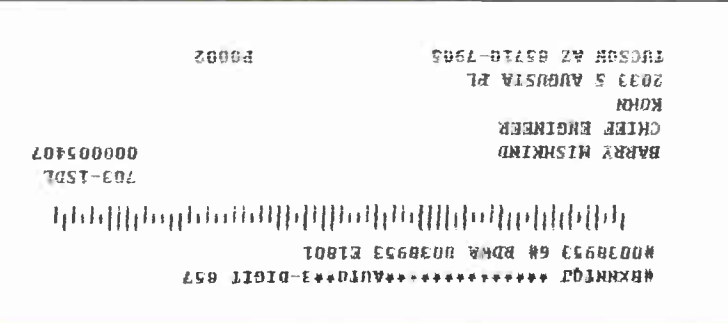
Need to Know: Blockchain

An overview of the technology and its potential

BY MARGOT DOUAIHY

NEW YORK — From using an app to order your morning latte to reading an eBook before bed, we're living more of our days — and our lives — online. As digital footprints grow and cyber infrastructures mature, more industries are exploring potential uses for blockchain. Blockchain is shared ledger technology for recording transactions and protecting the integrity of digital information.

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“Everything You Hear Is Everything You Should See”

Jenna Land puts visual strategies to work for Beasley Media Group Charlotte

*This article appears in the Radio World eBook “Visual Radio 2018.”
 Read it at radioworld.com/ebooks.*

You might call Jenna Land a prophet for visual radio. She speaks with humor and animation when discussing the need for radio industry people to think and communicate visually.

Land is digital sales manager for Beasley Media Group Charlotte. She gave the opening keynote remarks at Radio World’s recent Visual Radio Symposium.

Beasley Broadcast Group Inc. owns and operates 63 stations in 15 large and mid-size markets. Approximately 19 million consumers listen to its stations weekly over the air, online and on smartphones and tablets and engage with its brands and personalities through digital platforms such as Facebook, Twitter, text, apps and email.



Jenna Land

have an element of visual to it — whether that be social, whether that be website, whether that be podcast, whether that be pre-roll, it needs to have that visual element. It’s not just a

It’s not just one person or one department anymore. It’s every single department.

Land began her career in radio as a promotions assistant with CBS Radio. A graduate of UNC Charlotte, she majored in communication studies with an emphasis on journalism and organizational communications.

Radio World: *Having participated in the Visual Radio Symposium, what did you take from those conversations and what you heard other speakers say?*

Land: Going in, it was more of a question: “Are radio and video important together?” And coming out of it, the answer is: Absolutely, 100 percent, without a doubt, it’s vital for radio to have a visual element piece — not only have a piece but embrace it and use it, not only on social but on their website and so on. It was an astounding “yes.”

RW: *What does it mean to think visually at an organization, and how does it play out at a radio company like yours?*

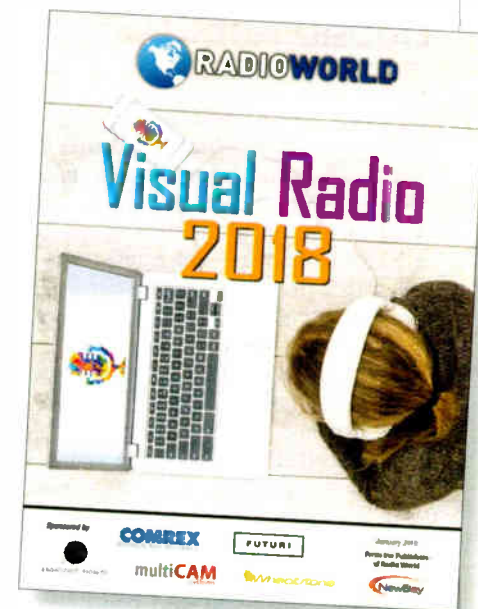
Land: Everything you hear is everything you should see.
 So everything you hear on air should

silo of audio; it is now a combination of appealing to different senses, visual being one of them.

RW: *At a 21st century radio media company, who should be responsible for leading and creating this visual strategy? Where will the impetus come from?*

Land: I don’t think it falls to individual sales managers anymore. It falls to all of the leadership and the talent. All of our talent on all of our radio stations need to embrace the visual piece of it. That’s what helps grow their base for listeners and their audience for their morning shows or afternoon shows.

The sales manager becomes important because it’s more offerings that we can offer to our clients. The program directors should embrace it because it will grow their audience base. And the market managers too. If you really want to be a leading market, or a leading cluster of stations in your market within your company, that’s a great way to grow revenue.



It’s not just one person or one department anymore. It’s every single department. Even promotions when they’re on site, they need to be using visual, whether it be pictures or videos or Facebook Live or Instagram live, to attract people to the events and to let people know that, “Hey, we are live and local on the street two doors down from you,” for example.

So it falls to everybody now — which is completely different than a couple years ago when it was the digital sales manager, maybe you had another manager; but now it really falls to everybody.

RW: *It seems safe to say that employers are beginning to look for different skill sets as part of the hiring process. How does that play out?*

Land: If you are looking for that video role, you obviously need to have some video editing skills. But we all now, for the most part, have access to phones with video cameras and access to social media accounts. I like to look at people’s social media accounts and what they’re doing personally. And if they don’t have professional experience but have the “know-withal,” it can be taught. I’m not a highly skilled video editor, for example; but I know what it takes to take a good Facebook Live video.

One of the biggest skills is just to embrace social media and to use it. Just like selling radio — if you want to be a great radio sales person, you have to

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VISUAL RADIO

(continued from page 3)

know your product; and the great news is that knowing your product is just listening. Same thing with social media and videos. If you want to know how to sell it or how to make it better, go online and watch some on social media, or go online and watch some pre-rolls on YouTube and see which ones stick out to you. It's a great way to learn some pointers about what really attracts that visual consumer as opposed to just audio.

RW: Specific to social media, are there one or two platforms that are critical to start with?

Land: I would start with Facebook first because it's the largest. It doesn't skew the youngest; it might not work as well for, like, a top 40 station. However it is the largest. And then depending on the format and the audience, I would either go to Twitter and/or Instagram.

But I would start with Facebook, start building an audience there and start boosting posts and really being rich with content — so that when your consumers and when your listeners interact with your brand on Facebook, it “pops” and you're giving them something of value. Because with social media, you're one click away from very bad negative comments or someone not following your brand. It's important that you provide the consumer what they want, which is great content.

RW: Can you give us a recent example of a project that made good use of visual communication?

Land: We just completed one that was really cool, leading up to the holidays. We did 12 days of giving with a local credit union. We were able to use four out

of the seven of our stations and 12 different talents. Each day, a talent would go out into our community with \$100 gift cards and give them away for the holidays. We captured this all on Facebook Live. People were able to share the joy not only on site but also with social media and provide that warm feel-good going into the holidays.

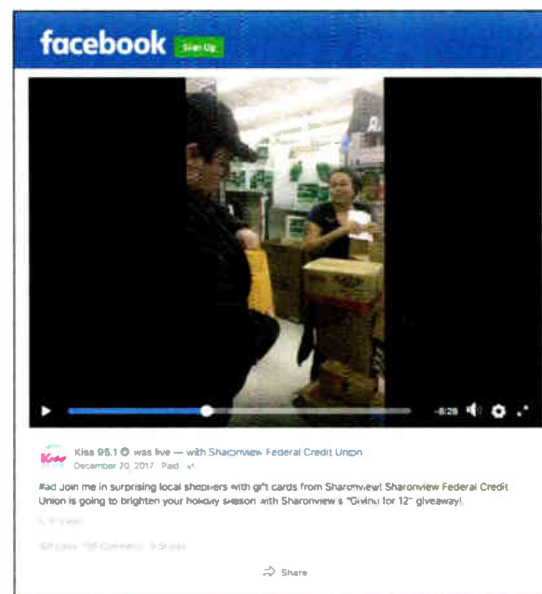
What was unique about this campaign is we did not use spot radio at all. It was all social media that we used to promote it. And it was interactive, it was versatile. We used some of our urban stations, our top 40 station, our country station and our adult contemporary station, which goes to Christmas music during the holidays. We were able to interact with all four brands with one client.

Many different people were not only touched and got a free gift card but they were also appreciative. And on social media, people liked it, shared it and commented. It provided this visual element of their favorite personality out at, let's say, their grocery store, giving away gift cards.

It's pretty cool. You can't do that on radio; but with the ability on social media and Facebook Live, people were able to sit or be on their mobile phone, be at their office, be on the airplane getting ready to take off, and watch these feel-good moments unfold.

RW: What else should we know?

Land: We work in a vibrant, thriving industry. Radio is not dead. It's very alive. And what has helped for it to stay alive is this visual piece. We see great growth potential in radio; we see great growth opportunities and great things that we can offer our client that other companies can't do, and other industries can't do,



As part of a holiday campaign with a local credit union, several Beasley stations sent air talent into the community with \$100 gift cards to give away. Watch a sample at <https://tinyurl.com/rw-videoclip>.

because we've embraced this visual piece. It's cool to watch kind of the “old radio,” if you will, evolve.

Radio hasn't changed as far as what it provides: information, entertainment. But what has changed is the consumption of radio. Radio has done a very good job changing to people's new behaviors and how they consume media.

EVERY SECOND COUNTS

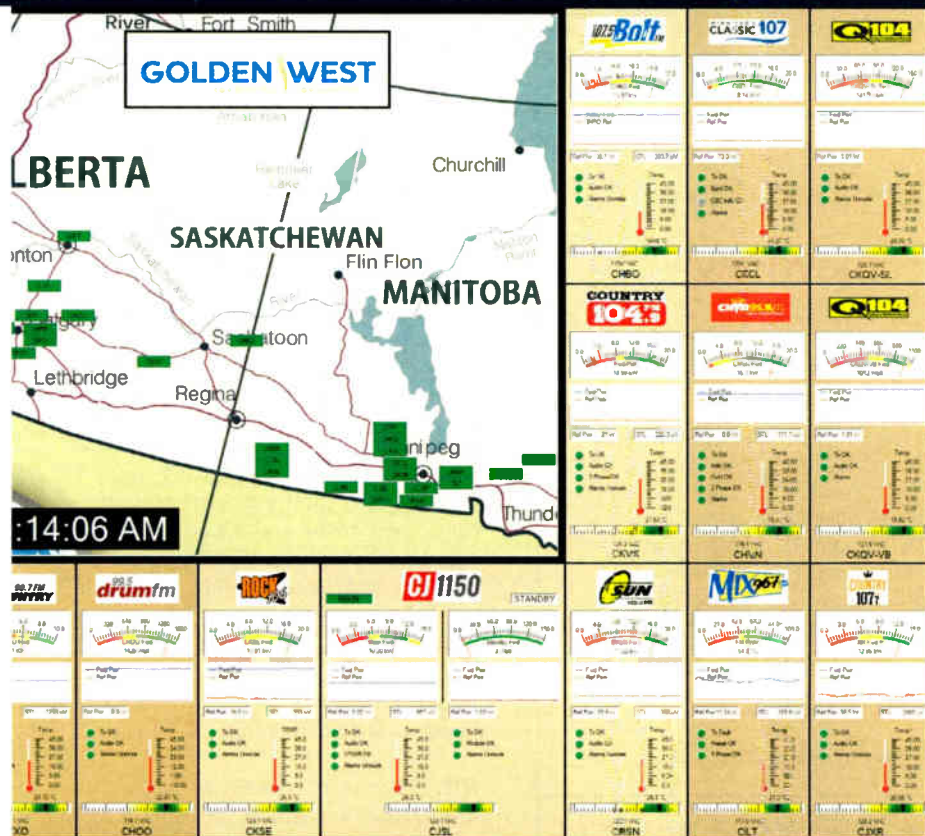
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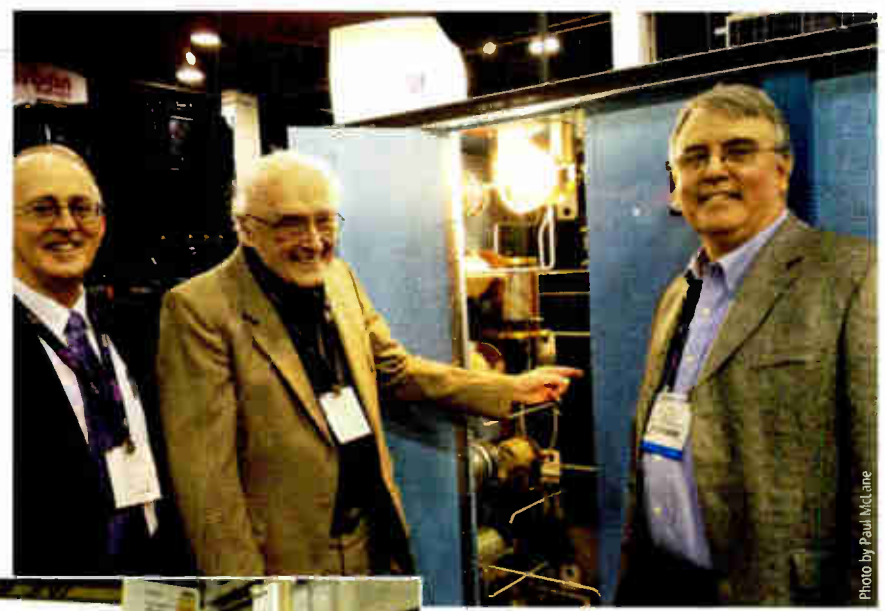
JONES

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speeds. "I worked on research projects involving inertial measurement systems, and data acquisition systems and analyzing rail car vehicle dynamics."

While at Ensco, he worked his way up from junior engineer to engineering manager of the rail division of the company. He also attended classes at George Washington University at night and earned his MSEE degree in 1979.

Jones returned to CTJC in 1979 as a senior engineer, and became a full partner in 1983. The company was sold



Above: Tom Jones, right, is shown beside his father Carl T. Jones, visiting Tom King of Kintronic Labs at the 2012 NAB Show. The elder Jones died in 2016.



Left: This picture was taken inside the transmitter building of AM station WNYM (previously WWDJ) in Hackensack, N.J. Jones is with Stu Engelke, Salem Media New York market chief engineer. Behind Jones are the transmitter and phasor cabinet for the directional antenna system.

to SAIC in 1984. His father retired in 1985, and Tom Jones assumed his current role as president. He repurchased the company from SAIC in 1991.

CTJC is focused on AM-FM-TV engineering projects, although work is also done for government agencies. Currently, there are 11 employees including eight engineers, a shop manager and two administrators. The corporation's offices are located just outside of the Washington beltway in Springfield, Va., with facilities including office and laboratory space, shielded enclosures, an open field test range and manufacturing plant.

While CTJC consults on a variety of broadcast projects, Tom Jones has a passion for AM.

"I've designed phasing and coupling equipment for arrays of up to 12 towers. Some of the more challenging projects involved the design of multiplexing filters facilities to allow up to four stations to broadcast from a single tower or set of towers." Passion aside, though, all the engineers at CTJC shift among the realms of FM, AM and TV as the work load demands. "We have a great staff that is very versatile."

BETTERING AM

Over the years, Jones has seen remarkable changes in the technology used to design AM directional arrays.

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Broadcast
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JONES

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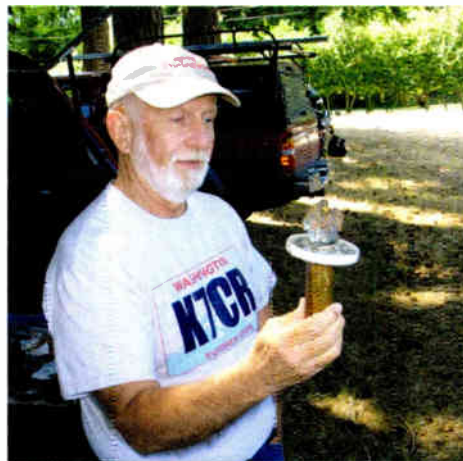
“When I was in high school, it was extremely labor-intensive, using mechanical calculators and trigonometric tables. Today, we use programs like V-Soft AM Pro for most of our designs and the NEC-4 and MiniNEC programs combined with a circuit synthesis/analysis program called SPICE for our phasor and multiplex filter designs along with several proprietary computer programs.”

Looking over his career, Jones doesn't identify one particular moment as the highlight. “The thing that I am proudest of is providing our clients with the highest quality technical product day in and day out for over 39 years. It's very difficult to be that consistent over such a long period of time.”

He has enjoyed serving on the board of directors for the Association of Federal Communications Consulting Engineers for eight years. Jones also has great memories of a special Air Force project involving the initial design and deployment of a 10-station nodal network called GWEN (Ground Wave Emergency Network). The military communications system operated in the 150–175 kHz LF band. “Two of the GWEN transmitters were located at existing AM sites, and I designed the diplexers to combine the LF and MF signals.”

As Jones reflects on some of the challenges and opportunities facing broadcasters, AM improvement comes to mind.

“I believe there are opportuni-



ties for the FCC to adopt more of the proposals that remain pending in the AM Revitalization Rulemaking Proceedings. Many of the proposed rule changes are not controversial, and could be separated from those that have generated some controversy in order to achieve some additional and much-needed improvement, particularly in the area of overcoming manmade noise. I think a concerted effort in this area would make a lot of sense.”

He looks forward to spending more time with his three children and six grandchildren, hiking and fishing.

But he has no immediate plans to retire. “I want to keep going as long as I can. I love this business, and the appreciation of clients for a job well done is very rewarding. I also think the quality of the broadcast engineering community is outstanding and it is a privilege to work with these men and women every day.”

FREINWALD SALUTED FOR SERVICE

Also being honored this month by NAB is Clay Freinwald of Freinwald Technical Services, recipient of the 2018 Service to Broadcast Engineering Achievement Award.

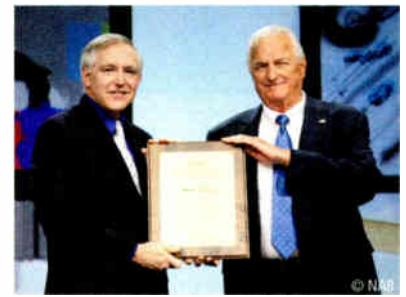
According to the announcement, Freinwald began his broadcast engineering career in 1961 and has held various technical positions at numerous stations and station groups, including Tacoma News Tribune, Viacom and Entercom. He is a Fellow in the Society of Broadcast Engineers and a founding member of the Broadcast Warning Working Group, helping broadcasters and others understand and implement EAS technology. Freinwald has served as chairman of the Washington State EAS Committee for over 20 years and chaired the SBE EAS Committee for a decade.

Radio World honored him with its Excellence in Engineering Award in 2007.

HONOR ROLL

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

- | | | | |
|------|---------------------|------|-----------------------------------|
| 1959 | John T. Wilner | 1989 | William Connolly |
| 1960 | T.A.M. Craven | 1990 | Hilmer Swanson |
| 1961 | Raymond F. Guy | 1991 | George Marti |
| 1962 | Ralph N. Harmon | 1992 | Edward Edison & Robert L. Hammett |
| 1963 | Dr. George R. Town | 1993 | Robert M. Silliman |
| 1964 | John H. DeWitt Jr. | 1994 | Charles T. Morgan |
| 1965 | Edward W. Allen Jr. | 1995 | Robert Orban |
| 1966 | Carl J. Meyers | 1996 | Ogden Prestholdt |
| 1967 | Robert M. Morris | 1997 | George Jacobs |
| 1968 | Howard A. Chinn | 1998 | John Battison |
| 1969 | Jarrett L. Hathaway | 1999 | Geoffrey Mendenhall |
| 1970 | Philip Whitney | 2000 | Michael Dorrrough |
| 1971 | Benjamin Wolfe | 2001 | Arno Meyer |
| 1972 | John M. Sherman | 2002 | Paul Schafer |
| 1973 | A. James Ebel | 2003 | John W. Reiser |
| 1974 | Joseph B. Epperson | 2004 | E. Glynn Walden |
| 1975 | John D. Silva | 2005 | Milford Smith |
| 1976 | Dr. Frank G. Kear | 2006 | Benjamin Dawson & Ronald Rackley |
| 1977 | Daniel H. Smith | 2007 | Louis A. King |
| 1978 | John A. Moseley | 2008 | Thomas B. Silliman |
| 1979 | Robert W. Flanders | 2009 | Jack Sellmeyer |
| 1980 | James D. Parker | 2010 | Steve Church |
| 1981 | Wallace E. Johnson | 2011 | L. Robert du Treil |
| 1982 | Julius Barnathan | 2012 | Paul Brenner |
| 1983 | Joseph Flaherty | 2013 | Frank Foti |
| 1984 | Otis S. Freeman | 2014 | Jeff Littlejohn |
| 1985 | Carl E. Smith | 2015 | Thomas F. King |
| 1986 | Dr. George Brown | 2016 | Andy Laird |
| 1987 | Renville H. McMann | 2017 | John Kean |
| 1988 | Jules Cohen | 2018 | Tom Jones |



The engineering award presentation is an annual show highlight. Bob DuTreil Sr., right, accepted from Lynn Claudy in 2011.



Mike Dorrrough accepts in 2000.

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BLOCKCHAIN

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HOW DOES IT WORK?

Imagine having a ledger book and inputting all relevant data about a purchase. Instead of sliding that ledger onto your bookshelf, you make it public and give a tiny piece of it to hundreds of others. The ledger can be seen as a data, but it is secure due to its advanced encryption. Blockchain is that distributed ledger, and it is not housed on one server. No one person or one server contains it. It is fundamentally decentralized.

Let's say you want to buy a new track from your favorite band. You'd buy the digital file online using your Visa card. Visa would store that transaction, and the place you are purchasing the music from would store it. It would then be housed in two locations. On a blockchain, the transactional information doesn't live in only two locations, it lives in hundreds, thousands, or even millions of places — living on the peer-to-peer computers running the blockchain encryption.

A blockchain system replaces human guesswork and vulnerability of digital transactions with algorithms and advanced cryptography. It's harder to hack. It's a whole new way of thinking and a new method for securing digital information.

To recap: Blockchain creates a permanent record of digital transactions; it stays secure because the data is verified and encrypted. Blockchain operates on a decentralized peer-to-peer network, and its model is scalable. The blockchain's digital ledger can be viewed and distributed, but it cannot be altered.

SECURE AND TRACEABLE

In a time when even SSL-protected environments are breached, blockchain's transparent, decentralized approach to cybersecurity is increasingly attractive, according to Mike Walker, research director at global intelligence firm Gartner Research. Walker views blockchain as a "potentially transformative digital platform."

Walker, also an author of Gartner's "Hype Cycle for Emerging Technologies 2017," explained that blockchain's traceability is another element of its growing appeal. "The Honduran government will use blockchain to secure land titles," he said. Other use cases for the digital ledger include blockchain-enabled voting machines, online music payments, asset transfer, and cloud storage. Samsung SDS blockchain technology will work to bring more transparency to the city of Seoul. From to charity giving to insurance markets, any industry using

(continued on page 10)

Will Blockchain Find a Place in Radio?

Acknowledging the hype, some see potential fruitful disruption for media businesses

BY PAUL McLANE

Ask radio broadcast executives whether blockchain will affect their industry and they might reply: "Say what, now?"

Even among technologists who in the past have anticipated and debated the impact of developments like metadata, drones and programmatic, the concept of blockchain technology is unfamiliar, known from buzzy headlines about cryptocurrency and the financial sector.

Yet blockchain in some circles is being discussed as a candidate for any application that relies on digital value transactions. Some business sectors are starting to embrace it; could broadcast follow?

NO ROADMAP YET

Radio World asked radio observers in engineering, sales and IT. Few had considered the question through a lens of media enterprise management.

"If we take transaction records as being the strong point of blockchain, then the application to the broadcast business might be in the realm of traffic and business transactions," one public media engineer speculated. Or it could be used in measurement and metrics, particularly for streaming or podcasting, including content distributed in a peer-to-peer fashion.

Another source, a veteran of the sales side of the industry, said, "I'm having a hard time pinpointing future effects for media, specifically radio. That's not to say there won't be any, but rather, the technology is still so new, it's hard to see a roadmap for it."

The general idea of distributed processing and multi-point verification, he said, could be put in play for securing media transactions, especially incremental digital transactions and ad delivery verification; whether that would have benefits is unclear. (He noted the related concept of hashgraph as another example to monitor.)

"Maybe someone else has some ideas," a manufacturer of media asset management systems said, "but in general the complexity and sequential nature may not be very useful in our applications." An IT-savvy engineer speculated that it could be used for a future method of paying for a song title or other content you want to purchase.

"I'm guessing you can place a radio order online somewhere using https: e-commerce methods," another longtime engineer said. "Most of what we do is instantaneous, going out on the air and gone forever. Maybe intellectual property rights lend themselves to blockchain. ASCAP and BMI might find their services no longer needed."

A Washington veteran familiar with IT technology seemed intrigued but cited technical concerns with blockchain involving scaling and reconciliation delays.

"As for an application to radio," he said, "it would have to be a case where you would want to share an immutable audit log of transactions with a large num-

ber of people — and who didn't want to do this centrally because you were concerned that the central provider might change the log without people knowing."

He added: "The challenge is there is a lot of hype, candidly, about the blockchain at the moment."

PAYMENTS AND RIGHTS

But discussions about the uses of blockchain may only be starting.

A company called Theta is pushing the idea of using the concept in streaming media. Separately, venture capitalist Sunny Dhillon wrote on Forbes about possible effects in entertainment, arguing that in media consumption, blockchain can solve problems involving micropayments and digital rights management. He noted that Spotify recently acquired a digital rights management startup with a blockchain component to create a media library in which a user can identify "author and story" behind a piece of content.

Of more immediate interest to broadcasters is a paper being presented at the spring NAB Show.

Stephan Schneider, CEO of Reelway GmbH, will talk in Las Vegas about "Securing Media Transactions Using Blockchain Technology." His company operates an online video production platform, an arena where usage rights are essential.

"Creative people want to get and clear usage rights easily and without bureaucratic overhead," Schneider said. "We think that the blockchain has the capability to provide a solution to these issues."

He acknowledges that he has had little interaction yet with media companies about this topic; but he considers blockchain a fundamental technology with a disruptive potential.

"It will impact broadcasters as well as media companies like other IT technology did in the past, e.g. video compression technology such as MPEG in the '90s or virtual reality technology now," he said.

"Since blockchain includes the money side, I would expect an impact on payments for digital goods and media. The other advantages of the blockchain such as its distributed nature [and] robustness against manipulations will be relevant for all applications that require a secure, omnipresent and tamper-proof record."

Asked how long it might be before the technology has practical application within broadcast media management, Schneider replied, "Turnaround periods in IT usually is about two to three years. However practical implementations are always lagging behind. I would expect, that — after the hype about the cryptocurrencies has settled down and they have evolved towards a reliable payment option — you will be able to pay for media in B2B scenarios in one or two years."

Watch a video on this topic and find other resources at www.radioworld.com/tech-and-gear/need-to-know-blockchain.

NEED TO KNOW MORE?

Have a burning question about blockchain — or maybe request for a topic you'd like to see us tackle? Email us at needtoknow@nbmedia.com and we'll put our top minds on it!

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

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BLOCKCHAIN

(continued from page 8)

all-digital assets is poised for disruption by blockchain.

WHO'S ON BOARD?

The technology was created to support the cryptocurrency Bitcoin, and its peer-to-peer model is best suited for similarly digital-only ecosystems.

"First-order applications for blockchain are purely digital," explained pro-

chain's adoption will take more time. Sectors such as education and healthcare are increasingly interested in blockchain — deploying pilots and experiments — but the evolution will be slower.

Established heavyweights and startups alike are exploring ways to leverage this technology to solve problems. Dell EMC Global CTO John Roese said that blockchain has "forced us to rethink how we deal with sharing technology and how we develop database architectures." Google, IBM, Cisco, Bosch, and

SOURCES AND MORE INFO

Catalini, Christian and Gans, Joshua S., "Some Simple Economics of the Blockchain" (September 21, 2017). **Rotman School of Management Working Paper No. 2874598; MIT Sloan Research Paper No. 5191-16.** Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2874598

Coindesk

<https://www.coindesk.com/ahead-bitcoin-halving-51-attack-risks-reappear>

The Gartner Hype Cycle for Emerging Technologies, 2017

<http://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017>

Practical Blockchain: A Gartner Trend Insight Report

<https://www.gartner.com/technology/research/blockchain>

Tractica: Three Myths about Blockchain

<https://www.tractica.com/artificial-intelligence/three-myths-about-blockchain>

Understand the fundamentals of IBM Blockchain

<https://www.ibm.com/blockchain/what-is-blockchain.html>

A blockchain system replaces human guesswork and vulnerability of digital transactions with algorithms and advanced cryptography. It's harder to hack. It's a whole new way of thinking and a new method for securing digital information.

fessor Christian Catalini, founder of the MIT Cryptoeconomics Lab at the MIT Sloan School of Management. The reason we see it at scale in the financial sector, supporting online banking and accounting, is because "blockchain is good at digital verification," he said.

WILL ALL INDUSTRIES BENEFIT?

Beyond the financial sector, blockchain is a candidate for any application that relies on digital value transactions. New sectors embracing blockchain are supply chain management and logistics, "file storage, data storage, bandwidth, and even electricity grids," according to Catalini. "File storage online is easy to meter and measure," he explained, and therefore an appropriate application for blockchain.

Gartner Research suggests that the "blockchain revolution promises to touch every industry," but the realities are nuanced. While we see this technology being embraced to support auditable voting, currency, software, and digital data transactions, the all-digital nature of these ecosystems is why blockchain is both feasible, scalable and makes economic sense. Where there is mix of physical data and digital data, however, requiring users to port information stored offline into an online system, block-

chain's adoption will take more time. Sectors such as education and healthcare are increasingly interested in blockchain — deploying pilots and experiments — but the evolution will be slower.

ONE CHAIN TO RULE THEM ALL?

Blockchain is available in open-source platforms and it offers quantifiable benefits for all-digital environments, but don't mistake it for the panacea, warned a 2017 report from Tractica, a market intelligence firm that focuses on human interaction with technology.

In that same report, Tractica analysts urged businesses to "avoid jumping on the blockchain bandwagon and instead

view blockchain as a series of technological modules and concepts to selectively choose, apply, and/or complement other emerging technology trends."

Blockchain also has limits beyond the digital-only prerequisite. A diversity of nodes will help defend against the so-called "51 percent" attacks that could compromise blockchain-supported data. A "51 percent attack," according to "Coindesk" author Frederick Reese, "would find a single entity introducing a version of the blockchain that it controls and is accepted as valid." But on one small college campus or in one building, is the required physical diversity of blockchain peers possible? What makes it an ideal platform to scale may also limit it for smaller use cases.

NEW PARADIGM

While blockchain is already disrupting the financial sector, perhaps its greatest promise is how it radically reimagines a digital information infrastructure. With its decentralized, broadly distributed model, the immutability of its transactions, and vetting of online identities, blockchain builds trust into the very architecture of its system.

Blockchain may not be the right fit for every industry, nor is it an immediate answer to the question of how to safeguard digital information, but its paradigm shift is already inspiring next-level innovation.

Margot Douaihy is a content director with NewBay Media.

IN CASE YOU MISSED IT

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

► Broadcasters Now Guaranteed Access to Disaster Areas

Legislation guarantees broadcast personnel access to their facilities in disaster areas.

► Support Across the Aisles for PIRATE Act

Bipartisan support is growing for legislation that looks to clamp down on illegal broadcasts.

► iHeart Lists Its Top Unsecured Creditors

Nielsen, SoundExchange and other familiar radio names are among those owed money.

► APRE Recognizes Wahl With Engineering Achievement Award

The Association of Public Radio Engineers honored Bruce Wahl, who was hired in 1971 as NPR's 18th employee. He is now senior solutions architect for NPR's distribution division and has had a variety of roles in and out of public radio.

► Clyburn: Delay 5G Infrastructure Vote

FCC commish cited concerns expressed by tribal nations, environmental protection advocates and local governments.

► Booster Waiver Helps LPFM Station Restore Signal

Directional antenna and booster allows KPIK to transmit and still meet interference requirements.

► GatesAir Names New Senior Director of Sales for the Americas

Mark Goins was promoted to the position, and Nick van-Haaster saw his regional responsibilities expand.

► TV Tech Pioneer Charles Rhodes Dies

Long-time contributor to RW's sister publication TV Technology passed away at 88.

► Incubator Program Has Its Supporters, Detractors

In November, the commission created a Notice of Proposed Rulemaking that proposed to create a broadcast incubator program that would promote ownership diversity.

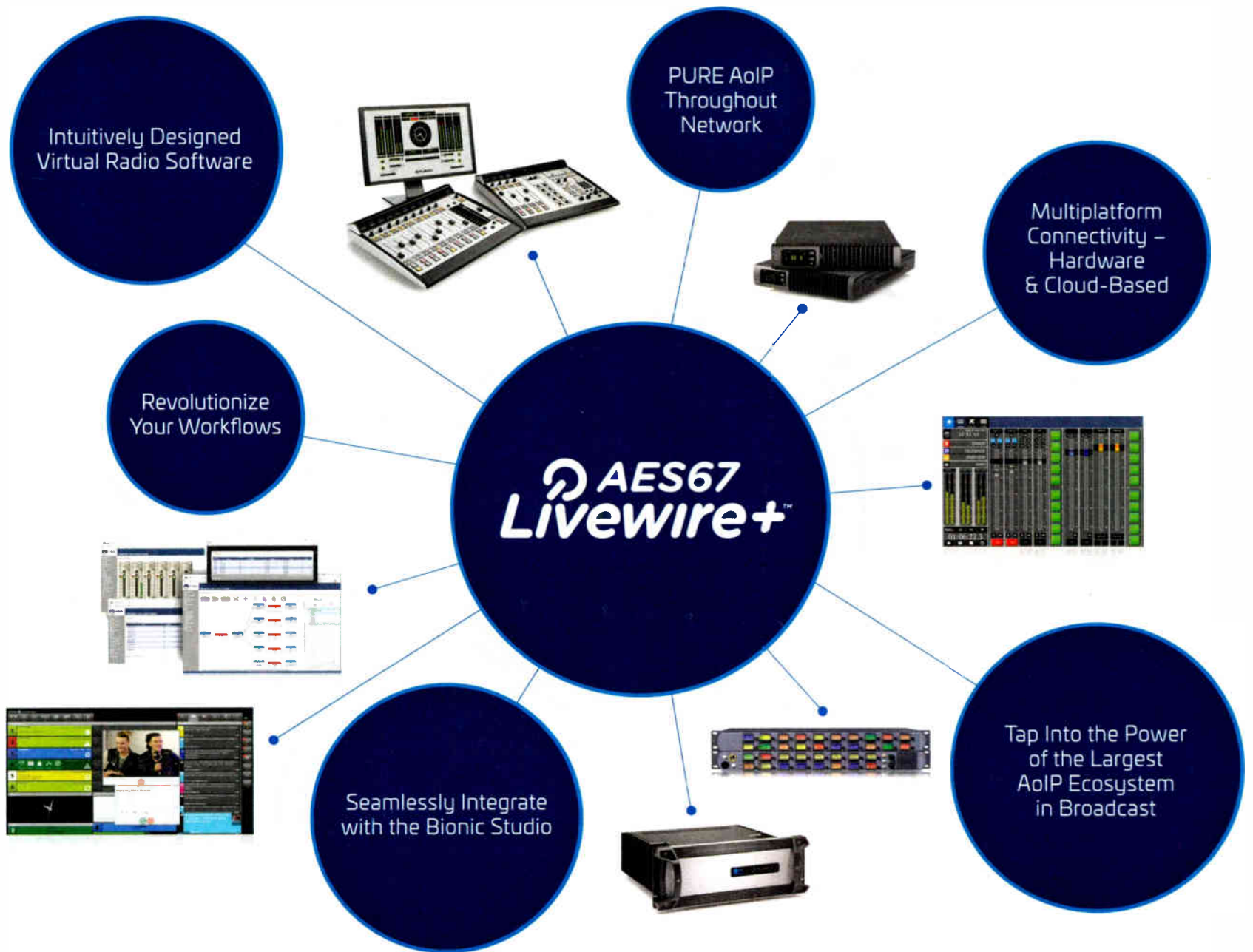


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While other AoIP broadcast protocols still rely on TDM-based systems to work—whether this concerns routing, mixing, distribution, or intercom—Axia operates purely in the AoIP domain, eliminating antiquated, expensive, cumbersome, and hard-to-maintain equipment.

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A Shocking Way to Identify a Breaker

And use a Tellabs repeat coil to create an inverted audio signal

WORKBENCH

by John Bisset

Email Workbench tips to johnbisset@gmail.com

Although it may look like an April Fool's picture, the "breaker identifier" found by an engineer and pictured in Fig. 1, will work!

However, an electrician friend of mine says big box stores actually sell a short line cord with a switch used to short the AC contacts and trip the breaker — which is inherently safe.



Fig. 1: Need to find a breaker?

You just never know what you'll find in that junk box.

Michael Dan Peavy is with WMDP(TV). He saw Dan Slentz'



Fig. 2: Buc Fitch added a banana plug to the Tellabs module...

descriptive article about the LyxPro adaptor. This is the adaptor that will work with a smartphone to permit connecting a professional broadcast microphone to the phone.

Dan wrote that he uses a Samsung Galaxy with the LyxPro, but says the adaptor works standard on most cell phones that use a four-conductor 3.5 mm plug. So if you're looking to use this adaptor and buying a phone, be sure to take the adaptor along to the cell phone store to ensure compatibility.



Fig. 3: ...and XLR jacks and a phase reversal switch to the other side.

In closing out his field maintenance business, longtime engineering consultant and Radio World colleague Mark Persons was clearing some of his workbench shelves. Fellow consultant and columnist Buc Fitch was the recipient of a redundant stereo Tellabs repeat coil.

In an attempt to replace the legendary Western Electric L-111(C), Tellabs thoughtfully made this accessory to slide into their active equalizing line amp cabinet/enclosure.

No sooner had it arrived on Buc's workbench than in the course of troubleshooting a stereo generator problem did he need an accurate way to create an inverted audio signal. The Tellabs repeat coil solves that.

One cannot avoid checking the L-R adjustment on a stereo generator whenever you troubleshoot or adjust them.

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The goal is to invert exactly a common audio signal and then either adjust or measure that component.

In the world of telco audio circuits used for STLs and remotes, transformers are used for isolation, impedance matching and such arcane activities as introducing sealing voltages. Early in the game, a measure of flatness was achieved by stepping the 600-ohm source down to as low as 47 ohms, and then, stepping back up at the other end. Over a few miles this arrangement could maintain near-flat response to about 5 kHz. Comparing the two transformers in the measurement area of interest (50 Hz to about 5 kHz) showed nearly unmeasurable phase shift, and ditto for the frequency response — flat!

Buc added a few features of his own, shown in Figs. 2 and 3. These included the banana post to bring in the 600 ohm signal from the audio generator. Buc also added XLR-3M connectors for the outputs. A DPDT switch was added to reverse the phase.

(continued on page 14)



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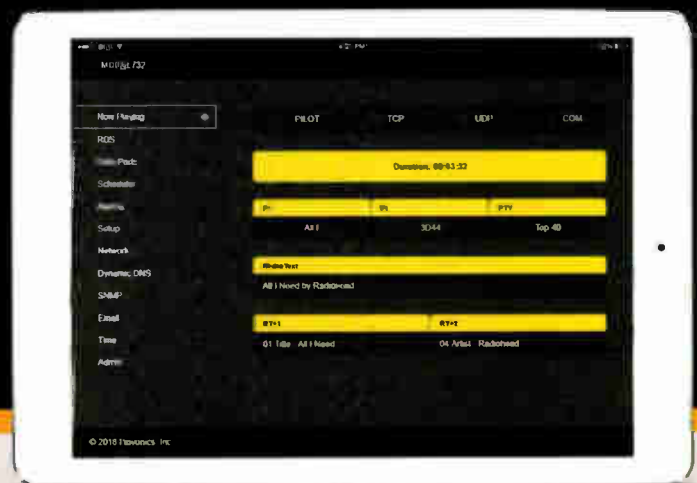
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WORKBENCH

(continued from page 12)

Buc adds that, not knowing what the future will bring, and as he has a box of just the Tellabs-brand amp cards, he arranged the XLRs and the switch so the transformer card can slide out and the amp card back in without any component conflict.

The neat thing for broadcast engineers is that there are possibly hundreds of these transformers and their enclosures screwed onto the back boards of telco punch downs in basements and

back rooms of both radio and TV stations nationwide — probably never to be used again by anyone. A good use of a redundant quality item, and everything but one XLR came out of the junk box.

Buc notes that the impedance switches are quite useful, as well. One can select 600 or 150 ohms on both “in” and “out” separately. This is useful so that you can match to 150 ohm mic inputs for balance adjust, phase check and frequency sweeps.

Take a look around your sites. Who knows what you might find?

Contribute to Workbench. You'll help

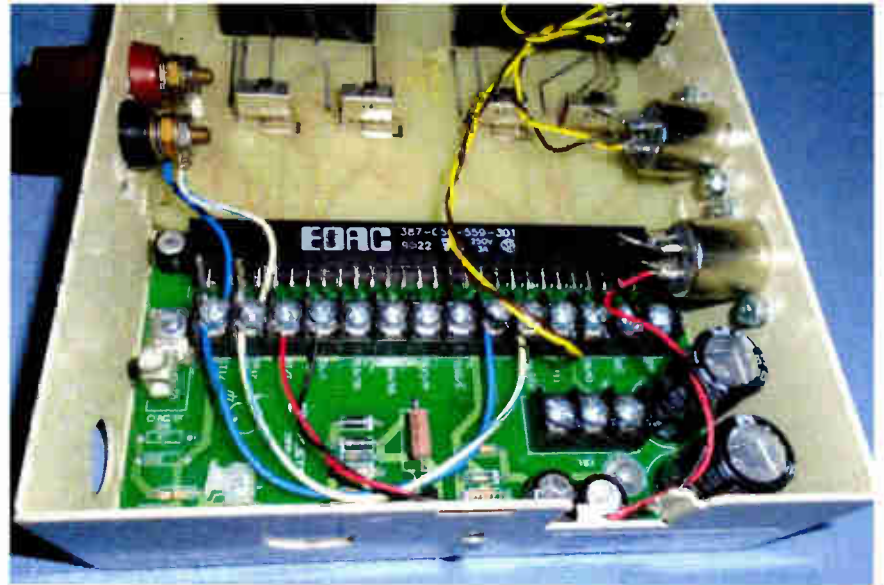
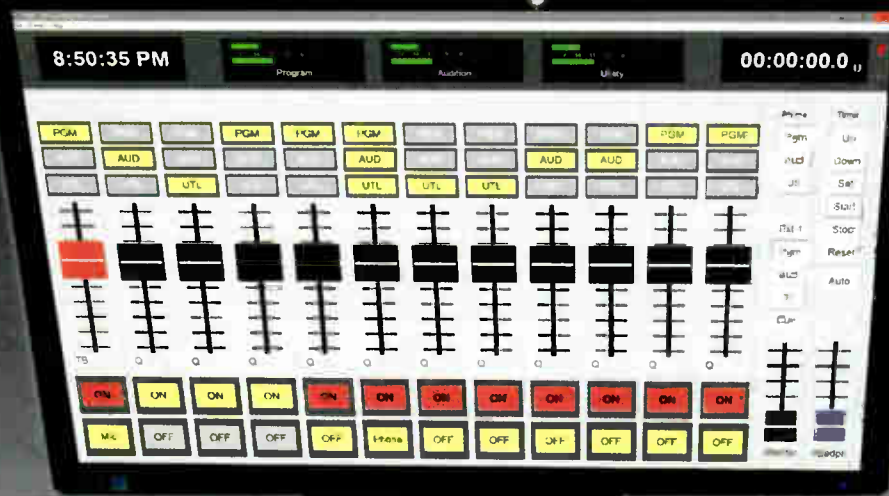


Fig. 4: An inside look at the transformer module, showing Buc's mods.

fellow engineers and qualify for SBE recertification credit. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com. Fax to (603) 472-4944.

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

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WHO'S BUYING WHAT

A look at recently announced sales of products and services. Email news to radioworld@nbmedia.com.

Veritone signed contracts with Beasley Media Group, Reach Media, the Tom Joyner Network, Townsquare Media and Results Radio to use the aiWARE platform as part of multimarket licensing agreements. An existing agreement with Hubbard Radio was also renewed. These agreements give the broadcasters a license to use the Veritone aiWARE platform at their stations to process, transform and review audio data with ad and content tracking, analytics, faster content extension and media management.

StreamGuys and Digigram have partnered to bring Digigram's blu Live audio contribution service to the United States and Canada as a joint offering running on StreamGuys' cloud infrastructure. blu Live is a cloud-based solution for real-time management of audio content contributions from journalists, voice talent and remote presenters. Digigram launched blu Live in Europe in 2017.

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Nautel Head of Engineering

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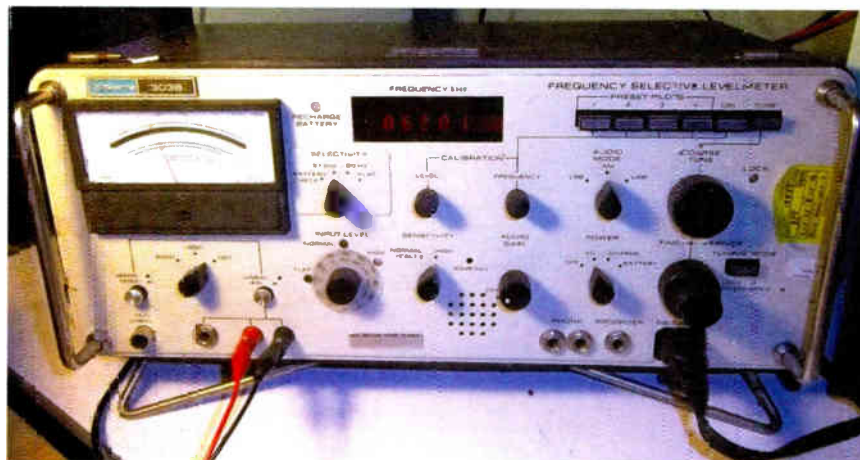
BY MARIO FILIPPI

Frequency selective levelmeters, also known as frequency selective voltmeters, are commercially-built receivers used in the power utility industry for maintenance and troubleshooting.

They have been on the scene for decades and were manufactured by venerable firms including Cushman, Lear Siegler, Rycom, Philco, EIP, Hewlett-Packard, Wandel & Golterman, Anritsu, etc.

With the passage of time and the evolution of new, upgraded models, these wonderful, vintage archetypes of electronic craftsmanship and design eventually get yanked from the field and transition to the world of the hereafter, *i.e.*, a secondary market for reincarnation by hobbyists and tinkerers at prices that are a fraction of their original cost.

In short, these units can be appropri-



The author's Sierra 303B, tuned to WSM, Nashville, Tenn.

ated from electronics resellers, classified ads and online auction sites to be repurposed as functional long-wave, medium-wave and shortwave receivers that can serve as tabletop radios or carried into the field for outdoor listening.

As with older radio equipment from several decades ago, classic frequency selective levelmeters possess all the

physical attributes of what can be called a "boat anchor," a term of endearment that describes a very large and heavy radio, basically one with ample avoirdupois to function as an actual boat anchor.

But as the old saw goes, beauty is in the eyes of the beholder; and some hobbyists purposely seek out the

old-school charm of these supersized and weighty rigs festooned with many knobs, switches, buttons, D'Arsonval signal level meters, a speaker and an assortment of connections for antennas and headphones.

The receiving range of levelmeters will depend on the make and model but most cover from about 10 kHz to a few MHz. More expensive versions range up to 30 MHz. Receive modes are Amplitude Modulation, Lower Sideband and Upper Sideband, which are the modes of primary interest to radio hobbyists.

SIERRA 303B

After a few months of beating the bushes via eBay auctions, placing ads in ham classifieds and checking inventory of electronics resellers, I purchased a Sierra 303B frequency selective levelmeter for a tad below \$60.

The Sierra 303B debuted circa 1974, covers a frequency range of 9 kHz–3.3 MHz, has AM/LSB/USB mode selection, a large (4 in. x 3 in.) signal meter that's internally calibratable, selectable input levels (handy for pulling in weak

(continued on page 18)

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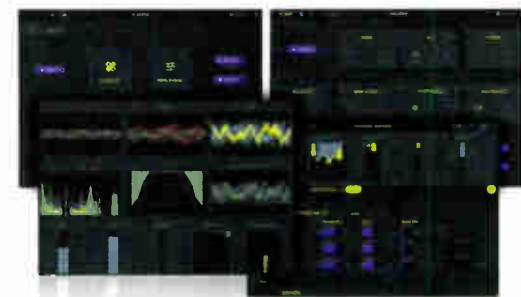
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LEVELMETER

(continued from page 16)

stations or to prevent signal overload), a frequency display to 0.1 kHz and coarse/fine tuning controls.

It's rather large, measuring 17 in. x 7 in. x 14 in. and tipping the scale at 30 pounds, which includes the 12 internal "D" rechargeable batteries.

That's another plus; the Sierra 303B has a built-in battery charger, much like other frequency selective levelmeters, allowing use in the field for those on the go. My particular unit still had ancient NiCad (Nickel-Cadmium) batteries from 1994 installed, which ultimately will be replaced.

The radio is solidly constructed and housed in a metal case with a latching front cover and handle. A tilt bail adds to the commanding presence it exudes on my shack desk and it proudly exhibits the usual visible wounds of war in the working world: nicks, dings, decades-expired calibration stickers and indelible amorphous stains for its 44 years on the job. However, after a few hours of inspection and cleaning of the internal variable pots (potentiometers) and contact switches, it worked excellently from the get-go.

DX'ERS DELIGHT

Now let's be clear that frequency selective levelmeters are not the same as general coverage communications receivers designed specifically for shortwave hobbyists.

Options such as selectivity width, AGC (automatic gain control), attenuation control, noise blanking, memories, etc., are not necessarily included; these

options will vary with the particular levelmeter.

In addition, frequency coverage may only extend to a few MHz as with the Sierra 303B, so if you are contemplating purchase of a frequency selective levelmeter, check the specifications ahead of time. Operating manuals for some models such as the 303B can be found on the Internet, so it behooves hams to perform some data mining ahead of time.

These units can be appropriated from electronics resellers, classified ads and online auction sites to be repurposed as functional long-, medium- and shortwave receivers.

The limited frequency range (9 kHz–3.3 MHz) of Sierra 303B was not a deal-breaker, as I was interested in a receiver capable of receiving longwave, AM broadcast, amateur radio and the tropical shortwave bands. There's plenty of radio action to listen to in this short space of a few megahertz.

With the exception of the AM broadcast band, this segment of the radio spectrum yields best results in the cold winter months during hours of darkness when the QRN (nature-made noise such as static crashes) is minimal.

The Sierra 303B has performed well on longwave (150–500 kHz) and pulls in distant ("DXing") aeronautical Non-Directional Beacons (NDBs) continuously transmitting their call signs in Morse code. NDBs as far away as Puerto Rico and Canada have been logged when band conditions were favorable. It's a solid performer on the AM broadcast band, with stations such as WSM (Nashville, Tenn.), WBBM (Chicago), KCJJ (Iowa City, Iowa) and CHTO (Toronto).

In short, the Sierra 303B is an AM broadcast band DXer's delight, provided the proper antenna is utilized. For radio hobbyists bound by indoor-only antennas, the Sierra 303B works superbly with a loop antenna like the Grundig AN-200.

Amateur radio operators note that this particular levelmeter includes the 160 meter (1.8–2.0 MHz) band where CW (Continuous Wave, a.k.a. Morse code) and LSB are commonly used and again the Sierra 303B, with its fine/vernier tuning knobs can easily tune in these types of communications.

For shortwave listeners the segment of the spectrum from 2.0–3.3 MHz includes time signal stations WWV (2.5 MHz) CHU Canada (3.33 MHz), and the 120 meter (2.3–2.495 MHz) and 90 meter (3.2–3.4 MHz) tropical shortwave bands.

If you are a utility ("ute") aficionado, then late night winter listening will bring in maritime weather reports, FAX (Facsimile), RTTY and aeronautical communications when in the vicinity of the Sierra's 2.0–3.3 MHz receiving coverage.

Mario Filippi is a freelance writer, radio amateur (N2HUN) and an avid shortwave, long-wave, VHF/UHF and satellite enthusiast.

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The Father of Beautiful Music Tells His Story

A look inside a new book by Marlin Taylor

BOOKREVIEW

BY KEN MILLS

You may not know Marlin Taylor's name, but you know his work.

Taylor is one of the radio industry's Greatest Generation, the men and women who built the stations and formats after World War II.

Taylor has been called "the Father of Beautiful Music" because of his groundbreaking work creating and marketing the format.

Taylor's new book, "Radio...My Love, My Passion," is not only his personal story, it is a behind the scenes account of the birth and proliferation of the radio format known as beautiful music, good music, easy listening music and even elevator music. Whatever you call it, Taylor is an architect who changed the face of radio programming. He brought enjoyment to millions of listeners worldwide.

"Radio...My Love, My Passion" was released in March and published by Mascot Books. Taylor's book is an essential addition to any radio fan's library and is a must-have for scholars.

HELP WANTED: FM PD

Taylor gets the story started by talking about his childhood in suburban Philadelphia. We learn about his first job in radio, followed by his stint in the U.S. Army. Taylor invented his first

radio format while he was stationed in Thule, Greenland.

In early 1961, Taylor was in his final months of duty at Fort Meade, Md., near the nation's capital. He was about to get married and needed to find work.

In a career-changing moment, Taylor describes seeing a listing in Broadcasting magazine for a new FM station that was being granted for Bethesda, Md., and applied to be its program director. The station was the legendary WHFS — the call letters stood for "Washington's High-Fidelity Station."

The FCC had recently authorized FM stereo transmissions. Taylor's job was to find stereo recordings in classical music and other genres that showcased the stereo effect. WHFS signed on in November 1961.

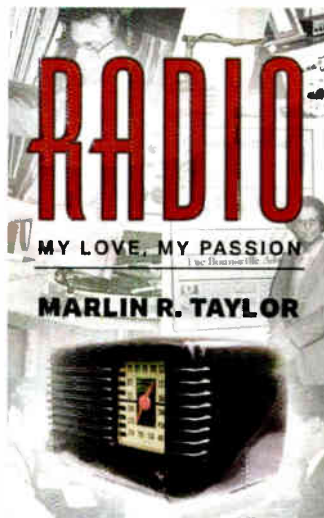
In "Radio...My Love, My Passion," Taylor describes how he built the music library. He was in constant contact with record labels such as Columbia, London and RCA Victor. He urged them to release more stereo LPs.

In February 1963, Taylor became aware of a new FM station being planned for Philadelphia, his hometown. David Kurtz owned the FCC construction per-

mit for what became WDVR. Kurtz hired Taylor as station manager and to program the station.

WDVR was being built on a shoestring budget. Readers will learn how Taylor met Jerry Lee, who was hired to be the sales manager for WDVR. The station signed on May 13, 1963. The entire operation occupied four rooms.

In the book, Taylor talks about the elements and criteria for the beautiful music format. He intuitively knew the importance



Taylor talks about the elements and criteria for the beautiful music format. He intuitively knew the importance of making a good first impression.

of making a good first impression. He built beautiful music the way an architect might plan a structure — every part of the format had to be impeccable. Taylor put these skills to good use in coming years.

Programmers will love reading about the "science" of beautiful music. Taylor's format was based on instrumental versions of popular songs. He tells about constructing quarter-hour sets of music, often arranging songs by mood and tempo.

BECOMING LIVE AND LOCAL

The assassination of President John F. Kennedy on Nov. 22, 1963, caused a major change in the presentation of beautiful music.

Up to that point, every voice heard on WDVR was prerecorded. When the shots rang out in Dallas, WDVR was caught with no way to report the story easily. From that point on, Taylor insisted on having live, local announcers whenever possible. This human touch became another signature of his format.

Then readers are taken on Taylor's rise to the top of the business. In 1966, he was hired by T. Mitchell Hastings to program The Concert Network: WBCN in Boston and WHCN in Hartford,

Conn. There are several priceless anecdotes about the eccentric owner.

Taylor tells of building WJIB in Boston. Then he moved to WRFM in New York. On WRFM the beautiful music format struck gold. By the fall of 1970, according to the Arbitron ratings, WRFM was the number two station in the nation's largest market. Taylor was on a roll.

WRFM's owner Bonneville International Corporation loved Taylor's beautiful music format. They decided to syndicate it nationwide. Beautiful music went international when stations in Canada and Australia signed on.

But Taylor's good fortune changed in the late 1980s. Changes in lifestyle and music meant changes in priorities for radio ad buyers.

They wanted to reach younger demographics. Beautiful music stations began switching to adult contemporary and soft rock formats. These changes became a wave, and the market for beautiful music vanished quickly.

Taylor left the company in 1988, and Bonneville sold the programming syndication division in 1993.

Taylor describes being out of work, a new experience for him. One night he prayed, "God, please grant me the opportunity to have one more grand gig in this industry that I love before I am too old and feeble physically and mentally to handle the challenge."

The clouds began to part in the fall of 1998, when Taylor met Lee Abrams, the head of new satellite radio broadcaster XM Radio. XM was still in its pre-launch phase. Taylor pitched an easy listening format to Abrams.

In November 2000, Taylor got a call from Dave Logan, Abrams' lieutenant at XM. Logan wanted to offer him a job programming a 1940s Big Band channel. This wasn't Taylor's first choice, but he took the job anyway.

Soon Taylor felt reborn, and his creative juices began to flow again. He built the Big Band channel based on his experience: "The Forties and More... On Track Number Four!" The channel became a hit for XM. Other format projects followed at XM and SiriusXM.

Taylor retired from the company in 2015.

"Radio...My Love, My Passion" is filled with radio history and anecdotes. You will recognize many of the people who played roles in Taylor's career.

He has done a wonderful job assembling the facts and touching on events that matter. When you finish reading "Radio...My Love, My Passion," you will feel like you know Taylor as a visionary who changed radio programming forever.

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Times Have Changed Since 1981

Raise your hand if you remember these goodies!

NAB SHOW MEMORIES

BY DAN SLENTZ

The year 1981 was a good one. Besides graduating from high school, it marked the end of my first year working part-time in commercial radio at WJER.

Back then, we used Schafer automation systems, reel to reels, carousel cart machines, cart decks and turntables. We had EBS alerts (*not* EAS). The only com-

petition for ears was other radio stations and a few Walkman portable cassette players. TV only had a relatively few satellite channels to compete with. And on pop radio, we were hearing Kim Carnes, Rick Springfield, Hall & Oates and others.

That year, 37 years ago, the NAB held its convention where it is this year, in Las Vegas. But the location may be one of the few things that remain about the same. This page features some of the pics from manufacturers promoting their "new" gear for NAB Show '81.

That year, there were about 450 exhibitors (compared to 1,700 this year);


and you had 32 "floor hours" to peruse the halls which included a much smaller South Hall, East Hall and North Hall (no "Central Hall" by name).

Vincent Wasilewski was president of the National Association of Broadcasters — and Bob Hope was the guest for the Wednesday luncheon.

(continued on page 26)

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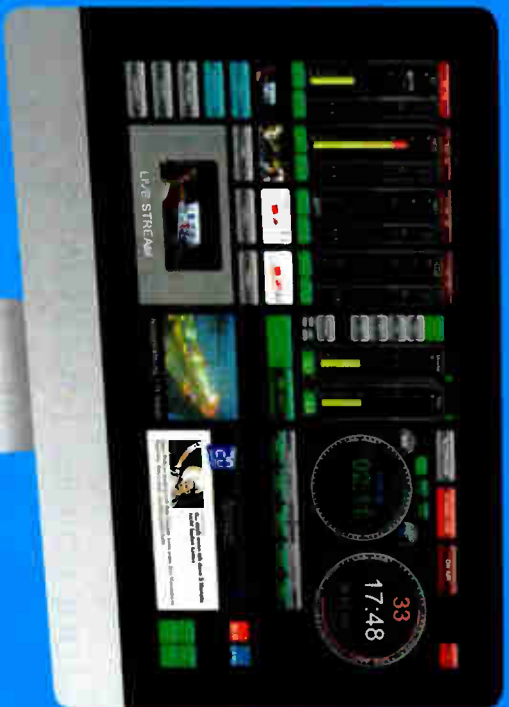
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No other console is this smart. Slim, trim, and sharp as the cutting edge. Engineered and built without compromise by German craftsmen. **Sprechen Sie deutsch?**



Welcome to your command cockpit. Graphical, intuitive, customizable: ruby's onscreen interface, powered by our VisTool GUI builder, is so much more than just meters and a clock. Multi-touch controls instantly give what's needed to control studio devices, tweak dynamics, adjust virtual faders, meter true loudness — even design your own custom screens. The possibilities are virtually limitless.



Who says small can't be mighty? ruby's mixing engine, Power Core, is equipped with redundant IP networking, dual-redundant power capability, and tons of built-in I/O — 384 stereo channels, standard — with room to add even more. There are dozens of DSP channels, and a built-in routing switcher, too. It's like 12 rack units of power, packed into only 1RU.

1981

(continued from page 22)

Questions broadcasters were asking themselves in 1981 included:

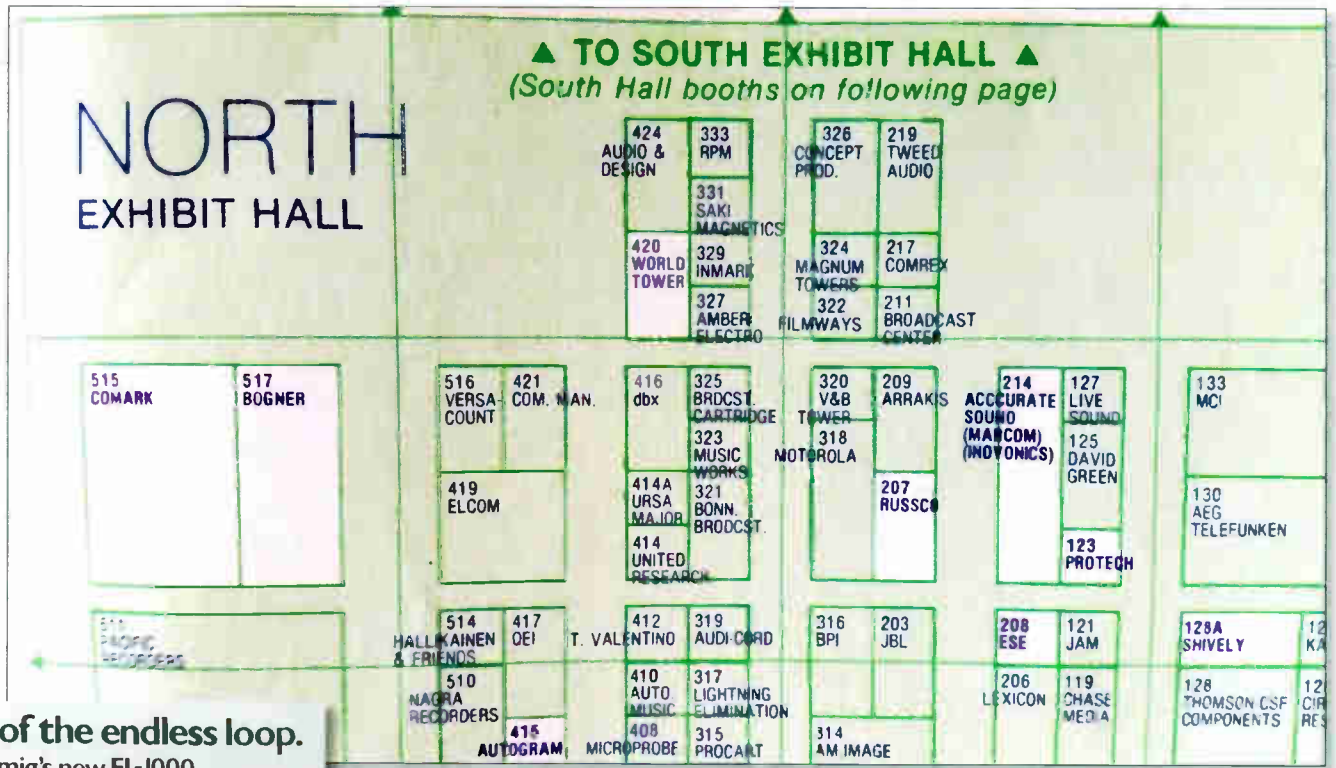
- What does radio need to do to compete in the market of the future?
- What will pay TV and growing cable abilities do to impact local TV?
- How will satellite distribution affect local news?
- How will new technology impact radio and TV stations?
- What will be the FCC and the government's positions on 9 kHz, AM stereo, DBS, and low-power television?

We know some of the answers but are asking all sorts of new questions, with new terms like IP, internet and streaming now in the mix.

As we reflect back on these past decades, it's amazing to consider the changes in radio, ownership and the NAB Show itself.

The North Hall was pretty much *all* radio back then. Manufacturers included Harris, Comark, Broadcast Electronics, as well as Pacific Recorders, Russeo, Micro-Trak and Capital Magnetics (see sidebar for more familiar radio names in '81).

As our industry continues its evolution, gear will change, as will competition and even future group owners.



The end of the endless loop.
Eumig's new FL-1000 makes cassettes the broadcast medium.



PARTIAL LIST OF NORTH HALL EXHIBITORS FROM 1981

- | | | |
|---------------------------|---------------------------|---------------------|
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| AEG Telefunken | Harris Corporation | Potomac Instruments |
| Allied Tower | IGM Communications | ProCart |
| Ampro/Scully | International Tapetronics | QEI |
| Arrakis | (ITC) | Ramko Research |
| Audiotronics | Lexicon | Russeo |
| Autogram | Logitek | Shively |
| Belar | LPB | Sintronic |
| Bogner | Marti | Studer Revox |
| Capitol Magnetic Products | McCurdy Radio | TFT |
| CCA | MCI | UMC Electronics |
| Century 21 | McMartin | US Tape |
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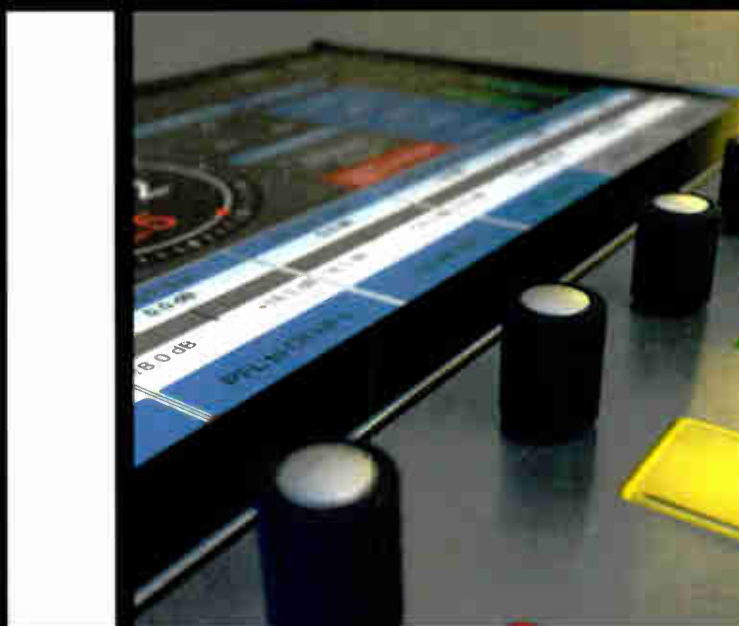
TYPE FOR RADIO

SCALABLE

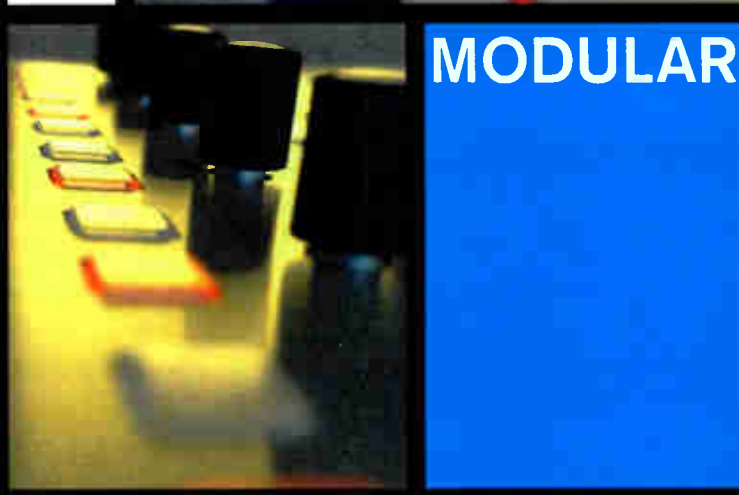
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USERREPORT

BY COURTNEY FRENCH
Owner
WATV(AM/FM)

BIRMINGHAM, ALA. — WATV(AM) 900 has been an important part of the Birmingham market for nearly five decades, serving the African-American community since 1976, when it changed formats from talk to R&B music. Led by Joe Lackey at that time, WATV became the No. 1 station in Birmingham almost overnight.

In the years since, WATV's format has shifted. In the late 1980s it was a forerunner to the format we now call urban adult contemporary, and in the 1990s it shifted to urban oldies. But no matter the music played, we remained loyal to our listener base and stayed focused on serving the African-American community.

PIONEER

On the technical side, WATV has been a pioneer. The station was an early adopter of AM stereo, and management at that time heavily promoted the improved listening experience that came with the system. On-air processing has always been important and the best processing gear for the time was used.

But as the 21st century dawned, WATV found itself with the same problems that many other AM stations are facing. AM stereo radios were no longer being produced, and man-made noise made listening to AM 900 a

struggle for many.

Fortunately, help arrived in the form of a change in the FCC rules that allowed AM stations to simulcast on FM translators. As the new owner and

constructed our new WheatNet-IP studios. He recommended the Wheatstone FM-55 audio processor.

Just before the launch of WATV's new translator in February, Mike Erickson from Wheatstone visited us with a new FM-55. The goal was simple: Have dial presence but refrain from the over-the-top-processing typically heard

added a little more bottom to the bass and added in a bit more stereo enhancement — which was a sort of renaissance for us, having broadcast in mono for so long after the AM stereo movement died out some years ago.

DEPTH

We noticed right off that there was an increased depth and clarity of bass without it affecting mid and high-frequency material. Furthermore, our music library runs the gamut, and we noticed that the audio processor did a good job of evening out tonal balance across the board. We later learned that the FM-55 uses a five-band AGC technology — or iAGC — coupled to a five-band limiter and stereo generator, which gives real-time program density control for a consistent, spectrally-balanced sound regardless of density variations in incoming source material.

By the time launch day rolled around, we had already locked down the sound. We turned on the switch to V 94.9 and immediately, staff and friends commented on the "incredible" bass and how clean the signal was, even in areas where reception should have been a challenge. The FM-55 costs a third of some of the high-performing processors we considered, and more than one staff member has pulled me aside to comment they couldn't believe that a budget processor had this kind of horsepower.

A big thank you to Josh Bohn, Mike Erickson, Chris Coleman and the entire team that helped us launch the new V94.9! I am excited about bringing our programming and new sound to a new audience as we continue the rich legacy of WATV for the next generation.

For information, contact Jay Tyler at Wheatstone in North Carolina at 1-252-638-7000 or visit www.wheatstone.com.



The GUI for the Wheatstone FM-55 allows for remote operation.

operator of WATV, I jumped on this opportunity, and we soon acquired a translator on 94.9 FM.

We installed brand-new studios (equipped with Wheatstone E-6 and IP-12 consoles) and were ready to launch our service on the FM dial, but one last piece of the puzzle was needed: good, clean, listenable audio.

We turned to Josh Bohn of Bohn Broadcast Services, who designed and

in competitive situations.

Setup was fairly straightforward; OLED screen menus walked us through it. Then, with our two sets of ears providing critical listening — Mike Erickson's and our Program Director Chris Coleman's — we started with a standard preset of settings that would get us close to our goal.

After some listening we then started dialing in our "signature" sound. We



NM-250 MKII - Newsroom Mixer

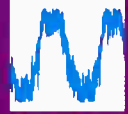
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Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased 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.



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Orban Optimod 8700i Elevates Acadiana

KRVS sings praises of audio quality and dynamic range

USERREPORT

BY **KARL FONTENOT**
Chief Engineer
KRVS(FM)

LAFAYETTE, LA. — KRVS is a 100 kW public FM station serving 12 parishes across southern Louisiana. The heart of Cajun and Creole country, this region is also known as Acadiana, and our programming reflects it with a mix of Cajun, Zydeco, blues, jazz, Swamp Pop, Swamp Rock and other distinctively-Louisiana musical styles.

I'm chief engineer here, but I'm seen as the "go-to" guy regionally for audio processing questions and setup, so I also help some commercial stations on occasion.

ALWAYS OPTIMOD

We were recently in the market for a new audio processor to replace our aging Orban Optimod 8500, which had been in service at KRVS since 2005. Ever since Orban came out with



the 8000A, I've been using their products; so selecting their latest flagship Optimod, the 8700i, was the logical step for me.

My focus has always been on audio quality and dynamic range rather than loudness, and when I looked at the 8700i's specs, I knew this was the right product for us.

Prior to actual installation at the station, I set up the processing off-site and let it "burn in" for a week, during which time I tweaked and set-up the unit. Since I have been familiar with Orban for many years, I know the sound I like and how to get it easily.

The 8700i comes with a number of presets for quickly establishing audio processing parameters, and I tested

many of the presets on the unit. For KRVS, I have settled on the "Gregg Open" preset. Before putting it on the air I tested it in my recording studio thoroughly on my Genelec 1032AM speakers.

FAVORITE SOUND

At this point my favorite sound is achieved by turning off the AGC and doing all my processing in the multiband section based on the "Gregg Open" preset. Previously, on my 8500 I used my own preset named "KRVS" based on the "Rock Smooth" preset. I tweaked the "Rock Smooth" in the advanced mode and delved into the multiband compressor attack and release parameters in the multiband settings. Another thing I like to do is decouple the FM and HD processing and set the HD parameters separately. I can achieve a smoother and fuller HD sound that way.

Once I decided we were ready for final installation, that process was quick and easy. I especially liked the audio pass-through feature that Orban offered. This kept off-air downtime to an absolute minimum when installing the unit.

I'm really pleased with the sound the 8700i is producing for us. We have a number of audio engineers who listen to KRVS; one caller stated he noticed the increased openness, clarity and sound staging. That caller happened to be Tony Daigle, a six-time Grammy-winning audio engineer who is an avid fan and listener of KRVS. With that kind of endorsement, I know we have the sound we need for our station.

For information, contact Mike Pappas at Orban in New Jersey at 1-856-719-9900 or visit www.orban.com.

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TECHUPDATE

DEVA DB6400 OFFERS FLEXIBILITY

DEVA Broadcast says its DB6400 is a compact FM/HD Radio processor that includes many useful features. It incorporates an RDS/RBDS encoder, a backup audio player and HD Radio diversity delay, as well as SNMP management, BS-412 and a web interface.



DEVA says thanks to the DB6400's wideband AGC input control, a four-band EQ with DJ bass boost and a brilliance enhancer, the unit allows for flexible operation and varied sound potential. Dynamic control is achieved via four-band processing plus four-band limiting.

Key points in all dynamic stages are adjustable frequencies, fidelity control and sound impact, while the FM limiter offers advanced distortion control for optimal loudness. The model is also available in a more limited and economical version, the DB64-FM.

For information, contact DEVA Broadcast in Florida at 1-305-767-1207 or visit www.devabroadcast.com.

TECHUPDATE

THIMEO TOUTS PROCESSING TOOLS

Netherlands-based Thimeo Audio Technology highlights its Thimeo Stereo Tool audio processor and Thimeo WatchCat file-based processing utility.

The company says the Stereo Tool can be used for almost anything — the software can process FM, AM and all digital formats, both live and file-based, and can run as a plug-in in many playout programs. Stereo Tool can generate any type of sound, from open and dynamic to dense and squashed, without causing distortion or listener fatigue.

When used for FM, Stereo Tool, which includes a stereo and RDS encoder, is designed to generate a signal that's "extremely loud, dynamic and clean," while simultaneously improving reception in fringe and multipath areas, the company says. In addition to its audio processing functions, Stereo Tool can repair potential issues, such as digital clipping, lossy compressor artifacts and disturbing tones. For low bitrate streams, the cleaned-up audio reduces low bitrate artifacts, allowing for improved sound at the same bitrate, or the same quality at a lower bitrate.



Thimeo Audio Technology also offers Thimeo WatchCat, a file-based processing utility. WatchCat can convert, process and normalize files to RMS, LKFS, or peak level.

Thimeo WatchCat can "watch" folders and process anything that's placed in them automatically, or files can be dropped onto it. Custom scripting is available to perform actions for all files, and for example to process video files.

Free trial versions of Thimeo Stereo Tool and Thimeo WatchCat are available at www.stereotool.com.

For information, contact Thimeo Audio Technology in the Netherlands at mail@thimeo.com or visit www.stereotool.com.

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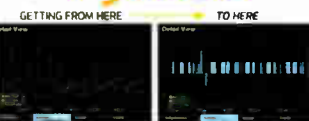


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KWCO Gets Clean, Loud, Efficient

Omnia.9 shines in several applications for this Oklahoma-based radio engineer

USERREPORT

BY PATRICK ROBERTS
Contract Engineer
KXCO(FM)/KGFF(FM)

OKLAHOMA CITY, OKLA. — The first Omnia Audio Omnia.9 audio processor that we purchased was for KWCO(FM) Chickasha, a station owned by my friend Matt Mollman. We needed a processor that could do HD Radio, HD2 and analog processing, all in one unit.

When we did our research, the Omnia.9 just made sense. It does all of these tasks in one easy-to-use, beautiful-looking unit, and as a bonus it was affordable in the budget that we were working with. Our primary HD Radio

channel and analog broadcast was one of the first classic hits stations in the U.S., and has become one of the longest-running stations in the format.

NO ADJUSTMENTS

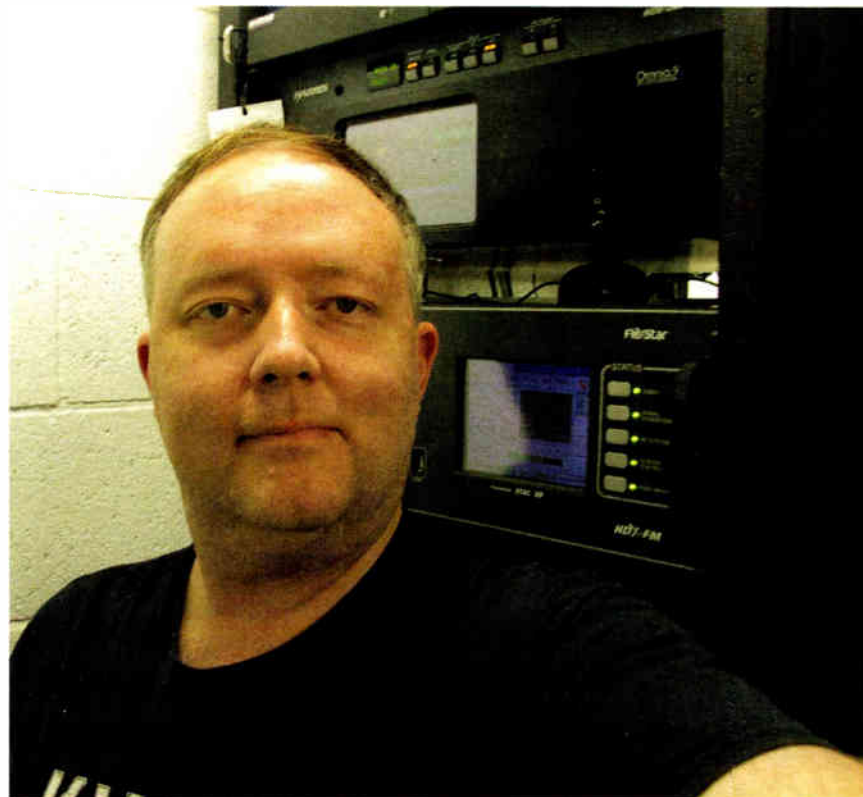
Known locally as "KOOL 105.5 FM," KWCO had an opportunity several years ago to pull an over-height translator into the market for a secondary station. That station, "106.1 The Ranch," rides on the HD2 in conjunction with the 106.1 MHz translator frequency. The translator is fed from the studio via a separate STL and the older processor we already had. I use the Omnia.9 to do the analog delay for HD Radio. It doesn't drift the processor's built-in delay, and I've never had to adjust it. The Omnia.9 lives at the 105.5 tower, fed with a GatesAir Intraplex HD

Link STL into the .9. A short BNC goes right into a GatesAir exciter then into a GatesAir Flexiva FAX5 transmitter. Linear audio all the way!

What I love most about the Omnia.9 is how great it sounds, especially against our competitors running older processors. There are few who can dispute that there's a marked difference.

transmitter that we have there.

I also bought an Omnia.9 for another contract station I take care of, KGFF(FM), in Shawnee, Okla., for their new 100.9 MHz translator, also running classic hits. I have to say, Mike and the gang at KGFF were very, very happy with its sound. KGFF, unlike KWCO, runs via satellite programming most of the day, which is, of course, bit-reduced audio. The Omnia.9 seems to mask that bit-reduction very nicely while stay-



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The .9's automatic stereo feature was a perfect solution to cut down on unnecessary hiss on cheaper radios.

I loved the Omnia.9 so much that, when money was available, I retired an older processor from another maker for a .9 at my full-time job at KGOU(FM)/106.3. We are an NPR public radio station that primarily runs talk and also has music on the weekends and at night. The .9's automatic stereo feature was a perfect solution to cut down on unnecessary hiss on cheaper radios by keeping the stereo pilot going all the time, when the material is really mono. That Omnia.9 lives at the tower, running composite audio right over to the Harris

ing loud and, importantly, clean. After 70-some years, KGFF finally got to be on FM, a real godsend for a commercial classic hits music station that focuses on their community. They put money in all the right places to do it right, and the .9 is at the heart of that. Utilizing CPN-owned fiber from the studio to a CPN-owned water tower, we STL that signal over a digital GatesAir HD Link STL to the transmitter site, then right into the .9. It's all linear audio from the studio to the tower.

I plan on purchasing another Omnia.9 for KROU(FM)/105.7 Spencer/Oklahoma City, when funds become available. I think it will make a marked improvement, even over our classic old Orban 8100A/XT2, especially being able to automatically turn off the stereo signal when it's not needed. The Omnia.9 has been such an amazing tool to use, it offers a ton of flexibility and maintains its ability to be loud, all while keeping a clean sound.

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

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LeBrecht Was a Radio Pioneer, Trailblazer and Husband

He passed away at age 80; Thelma LeBrecht shares memories of their careers

COMMENTARY

BY THELMA LEBRECHT

The broadcasting world may have lost a pioneer and trailblazer; I lost not only my husband but the person most responsible for any success in my own career.

Don LeBrecht passed away at age 80, after nearly 40 years in the industry. We'd moved to Lakewood Ranch, Fla., to retire after I'd spent more than 35 years in broadcast news.

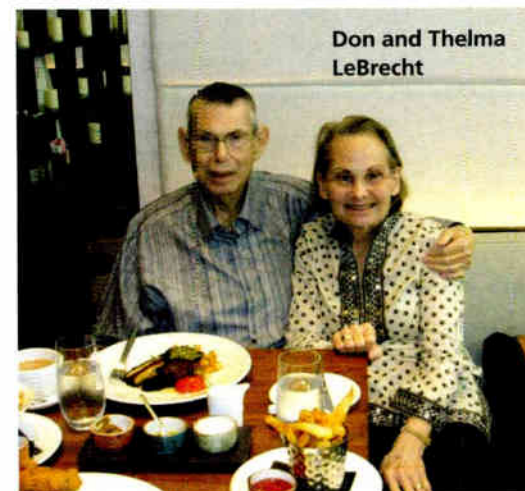
He had spent 17 years as head of the Broadcast Industry Council in Washington, where he worked with the National Association of Broadcasters on various public service campaigns, including literacy, alcohol and drug abuse, and AIDS awareness. Prior to that, he held management positions at major radio stations in New York, Toronto, Philadelphia and Washington, as well as with Triangle Broadcasting, Jefferson-Pilot Broadcasting and Capital Cities Communications.

The last 23 years of my career, I was with the Associated Press Broadcast

News Center, where I covered everything from hurricanes to wars and every presidential campaign from 1984 to 2004. You'd also hear my signoffs on Capitol Hill, the Pentagon, the White House and State Department. As an AP senior correspondent, I also covered such things as the sniper shootings in the D.C. area and the Timothy McVeigh trials in Denver.

Washington, remembered when Don was running WBT(FM) in the "early" days of FM broadcasting. Cookerly added, "Most of us in the company had no idea what FM would become, but Don did. His work in Washington was extremely important."

While at WBTV, I produced several radio and television documentaries that later won some professional awards and honors. Later, I worked at KYW Newsradio in



Don and Thelma LeBrecht

It was Don's years at the Broadcast Council that he remembered with the most pleasure, believing that he might have provided some public service.

PUBLIC SERVICE

We'd met in Charlotte, N.C., 50 years ago while he was head of WBT(FM) and I was just an eager-beaver out of college at WBTV. Thomas Cookerly, who later became the general manager of WBTV, called Don "a real pioneer in the FM world."

Cookerly, who later became president of Allbritton Communication's Division in

Philadelphia and the ABC Radio Network in New York, before working at the AP Broadcast News Center in Washington. I'd also served as chair of the Congressional Radio and Television Correspondents Association.

It was Don's years as at the Broadcast Council that he remembered with the most pleasure, believing that he might have provided some public service.

James Duffy, who was president of ABC Television Network for 15 years and worked with Don on literacy projects, called him "a genuine contributor to the growth of broadcasting."

Since Don retired earlier than me, he always used to boast that he provided me with "logistical support." Whenever I was traveling, he would call every morning to make certain I was awake. He would pick me up whenever I worked late at the Pentagon or on Capitol Hill, bringing a warm hamburger. He'd also drive me to some local assignments, such as the D.C. sniper shootings, to make certain I could concentrate on reporting. When I was overseas in Jordan in the buildup to the first Gulf War, he'd enlist someone at the NAB to wait in his office while he went to the restroom to make certain he didn't miss my call.

Don's former NAB colleague Rory Davies called him "the consummate broadcaster. No cause too little, no journey too far to travel if it helped promote the public good. His is a wonderful legacy of community service."

I remember him as a loving, considerate and generous man known for his thoughtfulness and ability to tell stories that would bring smiles of joy to practically everyone he met.

He was taken ill while we were celebrating my birthday. He was rushed to the hospital but died shortly afterwards. We didn't manage to make it to our 50th wedding anniversary, but we were able to celebrate the anniversary of our first date on New Year's Eve.

READER'S FORUM

JEFF WHITE

Just a great article about WRMI with Jeff White, penned by James Careless ("Shortwave Station Bends But Doesn't Break," RW Oct. 11, 2017).

I happen to know and have met with Jeff White in his Miami studios several moons ago. In fact, I was planning on renting time/space on WRMI, but it just never worked out at the time. He's really a stand-up guy.

This was a great article, which I plan to archive and pass along to friends who also know Jeff.

Larry Cohen
Utica, N.Y.

PIRATE RADIO

Responding to "Congress May Consider More Stringent Pirate Radio Fines," RW online:

I think you should ask the pirate radio stations why they went on the air. Could it be that the FCC is controlled by big

money and big business? Deregulation of broadcasting and especially radio and television ownership rules has created a monopoly in many markets in this country. Because of unfair and unreasonable regulations, only the very wealthy or elite can afford to own and operate a licensed radio or television station.

Maybe it's because the radio and television stations don't care about providing news and information for the local community in which they are supposed to serve. The Federal Communications Commission claims they are all for more localism, yet they continue to renew radio licenses of stations that have absolutely no local identity.

They told me that they won't do anything unless someone challenges the renewal of a radio or TV station. How would the average person know that?

I believe there are a few pirate owners that feel they could make a little money. The low-power FM service was set up primarily for failure; the FCC said that they must be noncommercial, but so many have failed because of monetary reasons.

What we need to do is put people in charge of the FCC who have some broadcasting background instead of political hacks. Heavy fines on pirate radio stations isn't the answer. Dr. Phil would say that there are two sides to every pancake, and you need to show more than just one side.

Rod Douglas





Talkback: Readers Have Their Say

The following comments were posted to radioworld.com in response to stories that appeared on the website or in print.

MOBILE JOURNALISM

"Seven Lessons Learned in a Year Teaching Mobile Journalism"
(Radio World online, Jan. 22, 2018)

"I showed this article to several of our radio/television/film teaching staff. They all agreed point five (good storytelling) should be point one.

"It doesn't matter what the production values are, if the story isn't good. Pretty drek is still drek."

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MUSIC TESTING

"Testing: One, Two, Three," (RW Dec. 6, 2017)

"When it comes to music testing – getting the right people in the sample is tantamount to success.

"Jhani Kaye's personal attention to the auditorium tests ensured he'd have his job for another ratings cycle. Corporate's reluctance to spend money is a pure shame but programmers have to be smart and know their audience. The country's second largest market has a radio station with a "heavy rotation" format that's served them well, since I was part of the process in 2014.

"We took input from staff and then put together a rotation with 'just the hits'—the listeners' favorite songs. My PD came up with a brilliant decision to establish a number of songs to run every 3 1/2 to 5 1/2 hours...surrounded by a select number of other 'power' songs.

"We even had our research company questioning the strategy as the numbers climbed month after month, until we were #1 in the Spring 2014 survey. That status remained until new management came in and adjusted (slowed down) the rotation – but not by much. It did have a negative affect on the station.

"The bottom line is this: In-N-Out/McDonald's/KFC are successful because they know what their customers want – and give it to them every time they visit.

"Radio's no different. Give 'em what they want – and do it consistently – and they'll respond positively. Having a market veteran (our morning host) and an assistant PD/music director (me) who had a "feel" for what the market and listeners wanted helped. We could even get away with our 14-minute spotload and win."



Jhani Kaye

PIRATE RADIO

"Minority Broadcast Groups Press FCC on Ideas,"
(Radio World online Feb. 20)

"Yet another organization chimes in that the FCC can't control pirate radio with the current strategy. As long as unlicensed operation is a federal misdemeanor, the DOJ will never act to seriously help FCC shut down pirates."

"The FCC needs authority to act like a real law enforcement organization and seize pirate radio stations equipment as evidence of a felonious act. Congress could change the Communications Act in just one sentence to authorize this."



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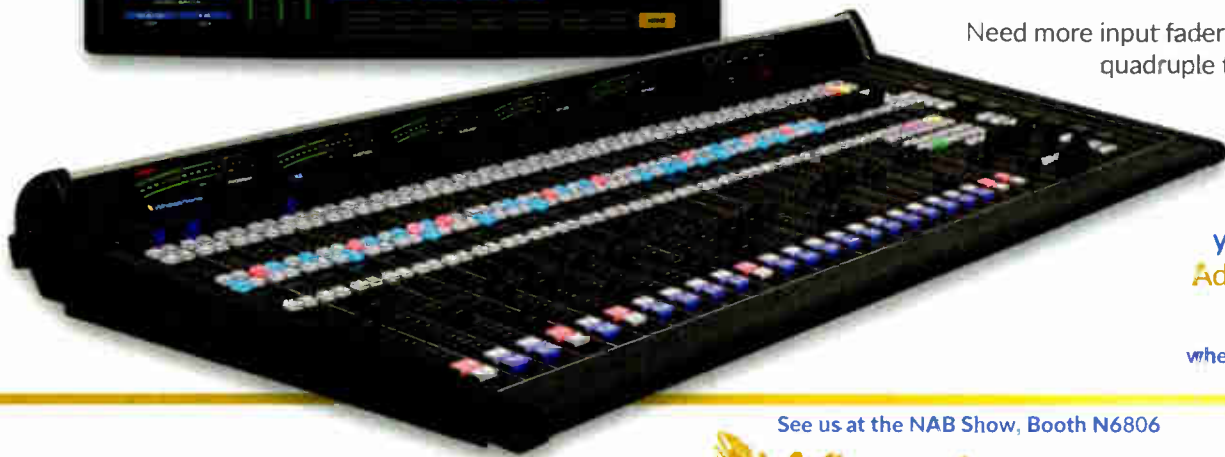
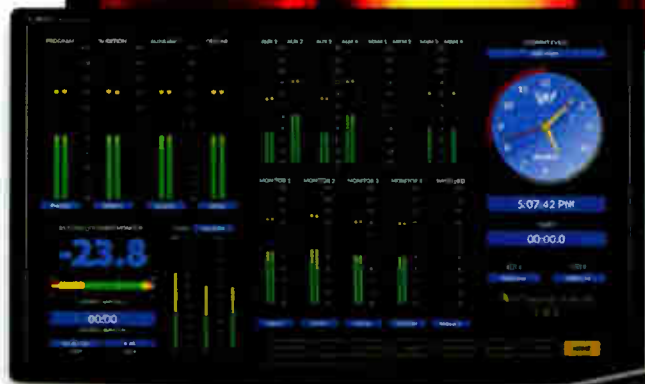
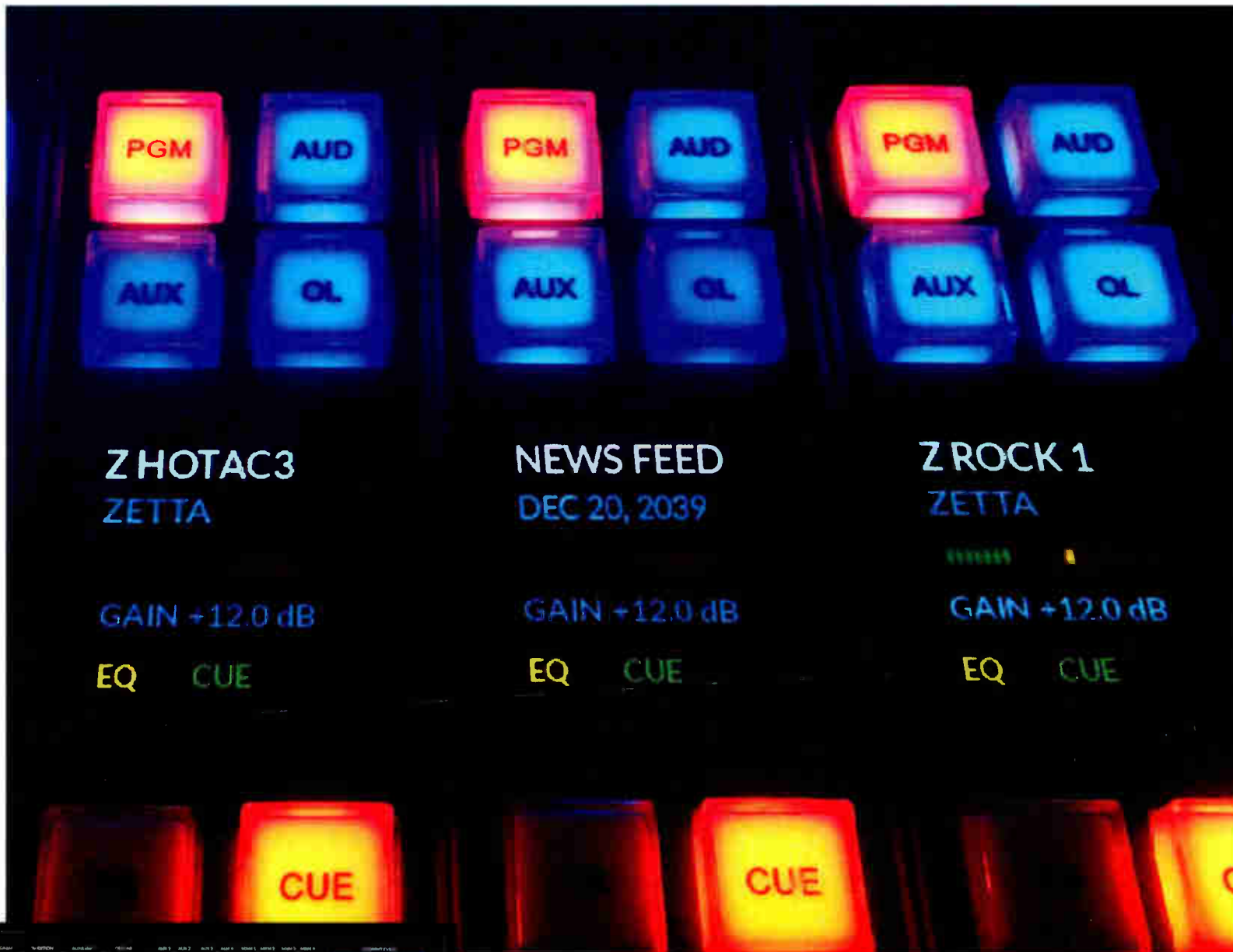


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