RADIOWORLD

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Fall show sampler

Here's what's ahead on the regional calendar.

You are my density

A tip for wiring high-density terminal blocks

AM stereo hangover

Some readers are still feeling the pain.

A voice to the planet

Shortwave station WBCQ is firmly, fiercely uncensored. Allan Weiner wouldn't have it any other way.

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A new wavelength

Jeremy Preece strikes out on his own

Paul McLane
Editor in Chief

Radio's roster of contract and consulting engineers has a new entry. Jeremy Preece has launched his own company, called Wavelength Technical Solutions, offering station maintenance and engineering services on the West Coast as well as project services across the country.

As reported by our contributor Nick Langan, Jeremy made the move after 23 years at Educational Media Foundation.

Jeremy, shown below, is an SBE Certified Professional Broadcast Engineer with a Digital Radio Specialist endorsement and has been involved in scores of station builds, moves and upgrades. He also holds amateur radio, FAA Part 107 commercial drone pilot and private pilot licenses.

Leaving EMF was not an easy decision for him, Nick wrote on the Radio World website. Through its K-Love and Air1 Media Networks, Preece has helped nourish remarkable growth in its properties. Those networks are heard on more than 1,000 signals in all 50 states.

But the organization is moving its headquarters from California to Tennessee. "After much prayer and consideration, it was clear we needed to stay close to our family in California," Jeremy told Nick.

He said his time at EMF has given him an ample roadmap. "The team in place is top-notch and being surrounded by brilliant, yet very humble radio engineers was truly a gift." He said leadership was adamant about FCC compliance and that corners were never cut for its listening audience.

Jeremy remembers building an AM transmitter with a Radio Shack 200-In-One electronics kit with his father when he was a boy. He is enthusiastic about starting his own firm and sees opportunities, given how many experienced RF engineers are retiring.

The website of Wavelength Technical Solutions is *www.wavelengthtechnical.com*.

THIS ISSUE

Dick Burden Dies at 92

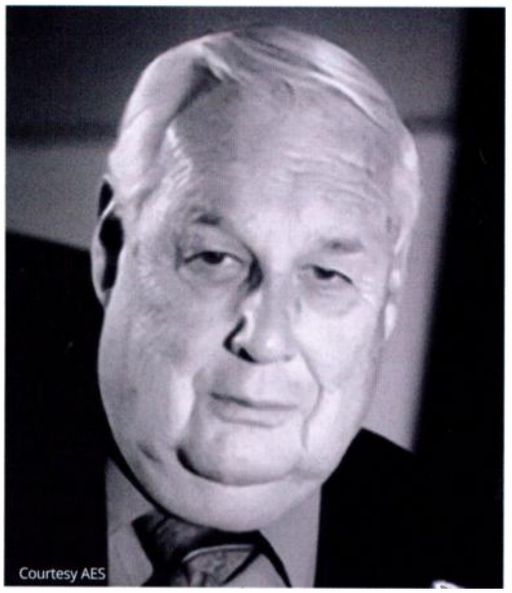
Legendary engineer Dick Burden died in June at age 92. His passing was reported by Los Angeles Chapter 47 of the Society of Broadcast Engineers.

Burden played an influential role in broadcast engineering in the mid to late 20th century, including FM stereo, TV/radio audio engineering and the creation of the Traveler's Information Service.

According to the website of his firm Burden Associates, he originated the concept of initiating a control carrier as a means of switching from FM mono to FM stereo when stereophonic programming was present and adding an indicator that became known as the stereo light.

He was called the father of the Traveler's Information Service for his work on the original TIS facility at the Los Angeles International Airport and the establishment of 530 and 1610 kHz as the original TIS operating frequencies.

In television he suggested a means to improve signal-to-noise performance to the proposed Stereophonic Television standard while maintaining authorized occupied bandwidth and de facto monophonic deviation, according to the website.


Courtesy AES

Burden became SBE member No. 450 in 1966 and was an original member of SBE Chapter 1 in Binghamton, N.Y., according to a 2005 profile in Broadcast Engineering.

He achieved the rank of Fellow in both the Society of Broadcast Engineers and the Audio Engineer Society, and he was a Life Member of the Society of Motion Picture and Television Engineers.

He was honored by the Audio Engineering Society in 1998 on its Golden Anniversary as one of 25 internationally known audio engineers who had made significant contributions to the art and science of audio during the preceding 50 years. The Society of Broadcast Engineers honored him in 2005 with its Lifetime Achievement Award for what was then already 55 years of service.

shortwave: It's an old medium that doesn't know borders, and Google and the NSA don't have control over it."

This last point explains the economic viability of WBCQ, which has managed to pay its bills since 1998 and is still doing so despite the advent of the web and streaming media.

"Believe it or not, there's always an interest among political people, and religious people especially, to reach a shortwave audience," said Weiner.

"And that's how we stay on the air. We lease transmitter time to anyone that wants to come, and we get the bulk of our funding from religious programmers, basically Christian programmers. We've been doing that for years and years now, and they're good clients."

This is where WBCQ's stance has aligned with its business model.

"Our clients come to WBCQ because of our stance on freedom of speech where we do not censor people on the air," Weiner said. "We don't tell them what they can program and what they can say and what they can play. We're very devoted to the First Amendment of the Constitution of the United States. It's very important to us, and a lot of our programmers come to us for that very reason — and that's how we make our bread and butter."

Cool antenna

In order to transmit over a range of frequencies worldwide, most shortwave stations rely solely on "farms" of extremely long wire antennas, laid out in horizontal and/or vertical patterns.

WBCQ uses such antennas, but it also has a rotatable antenna that can be turned towards whichever part of the world WBCQ is beaming signals to. It is, to put it plainly, very cool.

As described in a past Radio World facility story, it is an HP-RCA 4/4 antenna made by Ampegon

Right
The big antenna consists of low- and high-band array antennas, positioned back to back, each equipped with a reflector screen, allowing WBCQ to access all shortwave frequency bands between 6 MHz and 26 MHz.

Back in BLACK

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shows like "American Debauchery" with DJ Duane Bruce, "Marion's Attic" featuring historic audio recordings, "Le Show" with Harry Shearer, and Radio Newyork International, the name of which is an eponymous nod to Allan Weiner's ship-based radio station near New York City in the late 1980s.

There is one quality that these and all other WBCQ shortwave radio programs have in common: They are entirely uncensored by the Weiners. Whatever content the producers come up with is what makes it to air, no matter how controversial or potentially offensive some listeners may find it to be.

"We are dedicated to free speech radio," said Allan.

"It's not only freedom to speak, but freedom to listen because we believe in a constitutional republic, as we have here in the United States. A well-informed citizenry is the only way to ensure freedom. It is the ultimate check and balance against everything that's going on politically, socially, religiously and economically. If people are not allowed to express themselves over all media, both pro and con, both good and bad and ugly, we cannot be a real republic."

"Pay to play"

One of the great challenges to U.S. commercial shortwave radio has been the lack of meaningful audience measurements. Shortwave radio listeners are scattered around the world. This makes it economically impractical to compile audience ratings that can be used to sell advertising.

Because of this reality, WBCQ and other U.S. commercial shortwave stations such as WRMI Radio Miami International in Florida make their living by selling block airtime to third-party program producers. This is why most of the content on WBCQ is "pay to play." It's the only viable business model capable of keeping such stations afloat.

"Private shortwave stations generally lease out airtime to programmers who want to get their programs on the air," Weiner said.

"And it could be anything: It could be a political program, it could be musical, or it could be religious. Whatever the content may be, programmers come to us from all over to broadcast their programs on our shortwave transmitters to the world. That's why we all love

Above
The Weiners stand in front of Transmitter No. 2 in 2019.

> **If people are not allowed to express themselves over all media, both pro and con, both good and bad and ugly, we cannot be a real republic.**

Writer

James Careless

The author wrote recently about online network Old-Time Radio Antioch.

WBCQ: A one-of-a-kind shortwave radio station

A brokered programming business model has kept the station on the air for 26 years

Above
Allen and Angela Weiner in front of the 500 kW power amplifier.

There are all kinds of shortwave radio stations in the world, but WBCQ seems unique.

Located in Monticello, Maine, WBCQ is an up-to-500,000 watt shortwave powerhouse that covers the world via 7.490 MHz, 9.330 MHz, 5.130 MHz, 3.265 MHz, and 6.160 MHz — depending on the time of day, to maximize signal propagation by bouncing off the ionosphere.

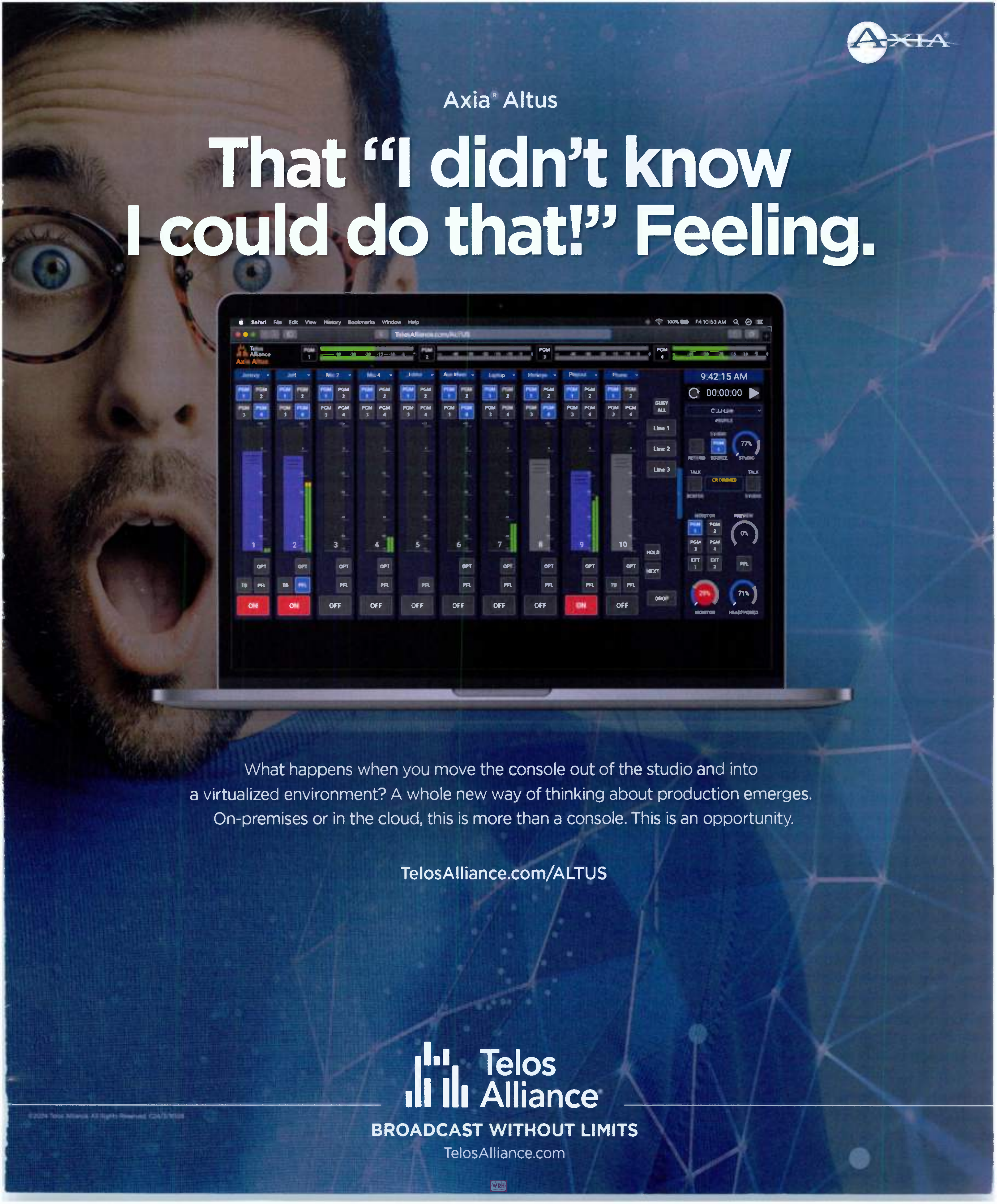
The same rural broadcasting center and antenna/transmitter site is also home to local stations WXME(AM) — carrying talk and rock music on 780 kHz with a translator on 98.3 MHz — and WBCQ(FM), airing classic country on 94.7.

"WBCQ is probably the only shortwave, AM and FM combination radio station in the United States," said Allan Weiner, a lifelong radio broadcaster/engineer who has owned and operated it with his wife Angela since 1998. "It's a ma-and-pa station. I'm Pa, and Ma is sitting next to me right now."

Dedicated to free speech

To put it mildly, the programs aired on WBCQ's shortwave broadcasts are eclectic.

Depending on when you tune into "WBCQ The Planet," you could hear evangelistic religious programs such as "The Overcomer Ministry" and "World's Last Chance," music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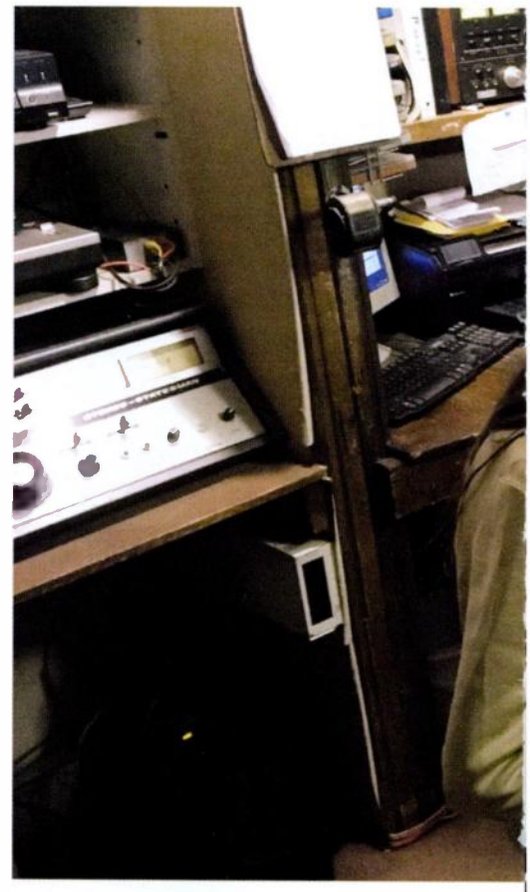


and installed in 2018 by Cestron International of Germany.

"The antenna consists of low- and high-band array antennas, positioned back to back, each equipped with a reflector screen, allowing WBCQ to access all shortwave frequency bands between 6 MHz and 26 MHz," the Radio World article states. "At 500 kW with an ERP of 20 MW, it is one of the most powerful shortwave stations in the USA."

Allan Weiner is thrilled to have such an amazing antenna in WBCQ's transmission portfolio.

"Just imagine the Brooklyn Bridge on a rotatable gear that can turn 360 degrees," he said. "It's a wonder of mechanical and electronic engineering, serving a relatively new Continental 500 kW transmitter that is mainly on 9.330 MHz. Of course, when you're putting out 500,000 watts, you really want to get as much efficiency as you can because the electric bills are just basically 'mileage to the Moon' kind of costs.

"It's a wonder of mechanical and electronic engineering, serving a relatively new Continental 500 kW transmitter that is mainly on 9.330 MHz."

Above left
Angela Weiner with part of the mechanism that rotates the antenna.

Above right
Angela Weiner in the studio with a representative from Radio 509 in the Netherlands.

"Then we have the classic side of WBCQ, which was built years earlier, that has older equipment," Weiner continued. "Some of it belongs in the Smithsonian, but it's very reliable and very repairable. This Collins/Gates/Harris transmitter farm uses much smaller log periodic antennas, curtain arrays and other antennas."

The same new/old mix of technology is found in this station's various on-air and production facilities.

"We maintain a lot of older equipment consoles, turntables and tape recorders. We even maintain cart machines, because when the big EMP pulse from Nuclear Armageddon comes, we'll be able to stay on the air.

"I'm saying this tongue-in-cheek. The truth is that a lot of our engineers are semi-retired, and they like to keep this equipment going. So we use it along with the latest consoles, and processing equipment and computer-operated networked mixers. WBCQ and its sister stations are the combination of the old and the new, the good, the bad and the ugly."

Looking ahead

Commercial shortwave broadcasting has kept the lights on for WBCQ for some 26 years. During the same period, nonprofit broadcasters such as the BBC World Service and the Voice of America have substantially reduced their shortwave broadcasts for economic and falling listenership reasons.

"Our business model's good," Weiner said. "We get inquiries every day for shortwave time, and we're working on bigger deals to lease more airtime on more transmitters every day. And one thing we've always known — and it's kind of a sad thing, but it's a true thing — is that whenever there's a disaster in the world, people always grab for that shortwave radio, just like they grab for an AM radio even today. So I see a good future for shortwave because it's easy to access, it's inexpensive and there's no dealing with Google or anybody else. You just get a receiver, pull out the antenna and start tuning."

Free Speech Radio

Read more about the station at www.wbcq.com.

Below
The Continental shortwave transmitter.

John Bisset
CPBE
The author is in his 34th year of writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.

Send your tips
Workbench submissions are encouraged and qualify for SBE recertification credit. Email *johnpbisset@gmail.com*.

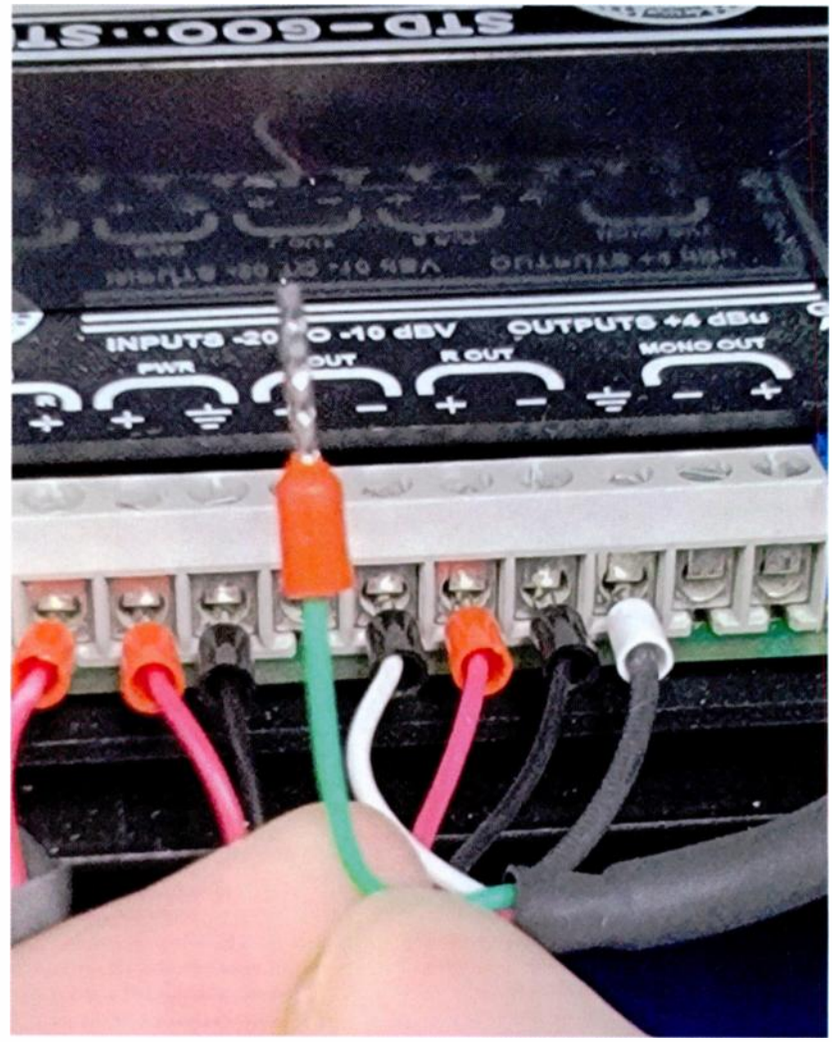
Terminal pins help wire RDL modules

And a 3-D printer helps Roy Becker manage those parts

Roy Becker, senior broadcast engineer at the Bible Broadcasting Network, offers a tip for engineers wiring high-density terminal blocks such as those used by Radio Design Labs (*www.rdlnet.com*).

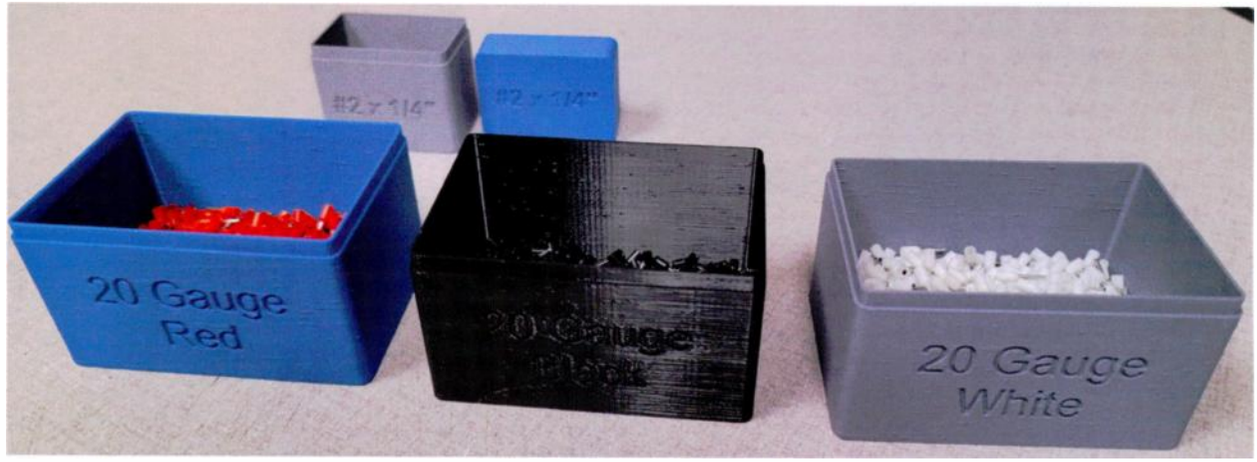
Sure, you can slip wires under the screw-down terminals, but Roy's technique using crimped terminal pins makes for quick and easy insertion. It also prevents any stray wire strand from shorting to an adjacent terminal, since strands are captured by the crimped terminal ferrule. (Search "wire ferrules" on Amazon for an assortment.)

Roy and his crew use a lot of these, so he also decided to "print" some plastic boxes to store them. The boxes shown were created by a 3-D printer. Roy even embossed each box with a label identifying its contents.



Inexpensive mic processor

Engineer Dan Slentz is always looking for good deals and found one in the Behringer UV1 Mic Processor. Dan compares it to the dbx 286s.



Top
Crimped terminal pins are helpful.

Right
These 3D-printed boxes hold terminal pins in an assortment of sizes.

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In addition to an XLR output, there is full USB I/O, so you can process a regular mic directly into a PC but then use the mic processor as your USB return to headphones or speakers.

This feature makes the UV1 suitable for people doing voice work into a computer. The dual USB/XLR output allows the mic processor to be used as a direct connection to an audio console, while simultaneously feeding a computer or laptop. Dan says "street price" is comparable to that of the 286s. Dan's only negative is the front-panel-mounted mic XLR input, probably designed for band or transport case use; it will require dressing of the cable in a broadcast setting.

Power line safety

NATE, the Communications Infrastructure Contractors Association, recently released an electrical safety video that's free to view. While it is intended to provide guidance to telecom industry technicians, the information is useful for anyone who works near overhead or downed power lines, breakers, batteries and related equipment. It is part of the association's #ClimberConnection series, which you can find at *www.youtube.com/hashtag/climberconnection*.

Smart bottle cap

As I travel to client sites and SBE meetings, I've found it economical to use Uber or Lyft rather than renting a car. In addition to meeting a lot of great drivers, I'm sometimes introduced to interesting entrepreneurs who supplement their startups by driving for ride share companies.

A recent trip was no exception. I met Matt Channon, who developed something called PillCall. Engineers will appreciate the clever idea.

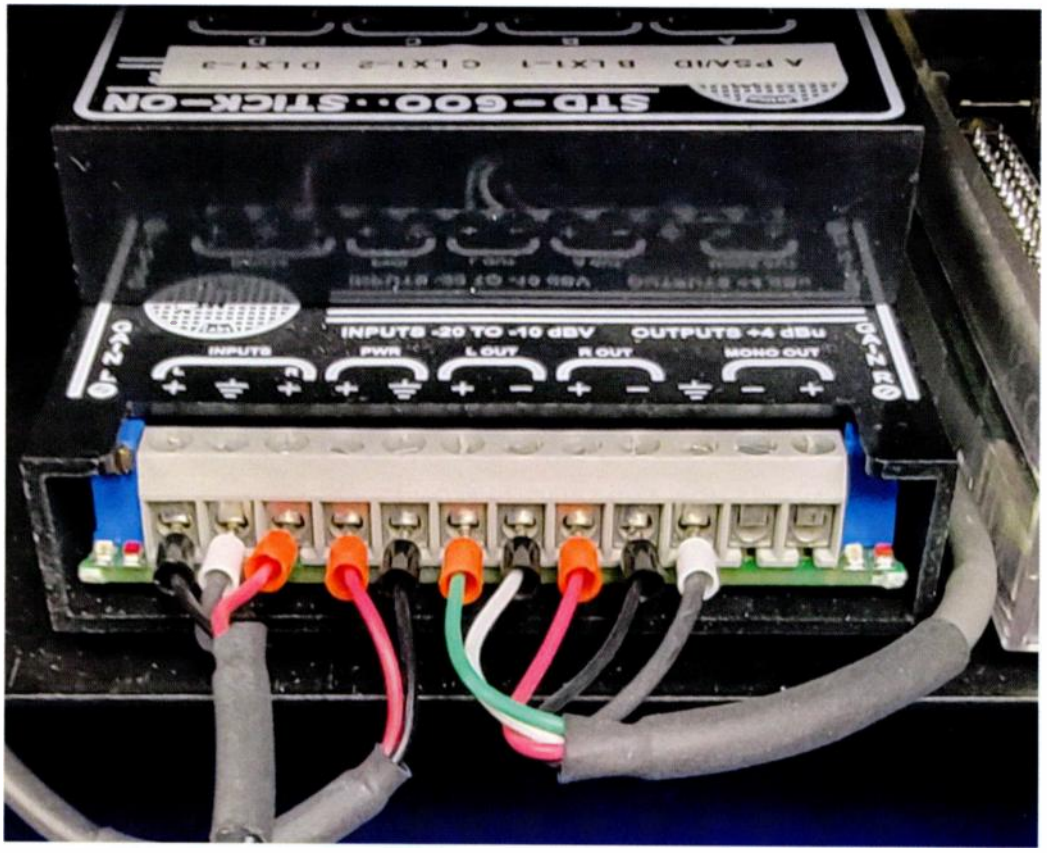
As we age, we may find ourselves needing to care for our parents' medications (or maybe our own). PillCall is a "smart" cap for pill bottles. It uses any WiFi network to text a reminder that it's time to take the pill in the container.

What a relief to know that your loved one hasn't forgotten to take taken their medication.

You can set the reminder frequency; and if the pill bottle is opened a second time — or before the next scheduled opening — you'll get another text. Messages can be sent to multiple numbers, too.

The PillCall cap comes in several sizes to accommodate various containers. Channon's website notes that there are smart bottles that use BlueTooth or NFC communication directly with smartphones. By contrast, PillCall uses WiFi without the need for a smartphone.

The last photo provides a look "under the hood" at the circuit board and battery. Find out more at *http://www.pillcall.com*.



Above
Here the terminal crimp pins are used on an RDL module.

Below
These bottle caps remind you to take your pills.

Below right
A look "under the hood" of the PillCall.

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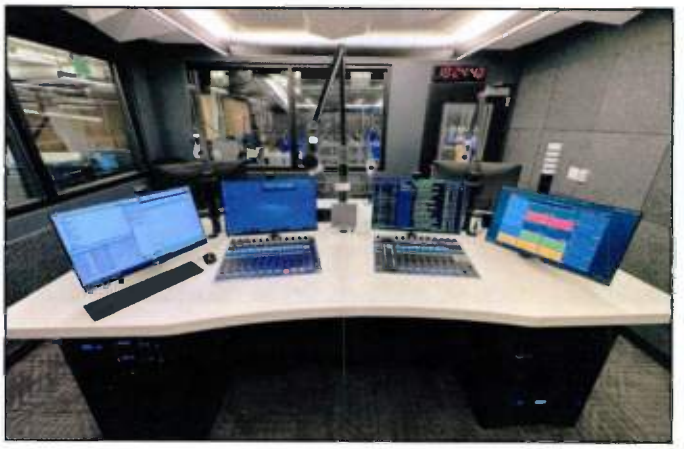
- **Remote-in Engineering:** The WheatNet IP studios are accessible remotely for regular maintenance and occasional troubleshooting by RadioDNA or other Lotus engineers.



Project Management by SCMS

Every single bit of this is first class. It's the best and most advanced studios we have in the company. —**Jason Houts**, Lotus DOE

System Integration by RadioDNA

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Photos provided by RadioDNA

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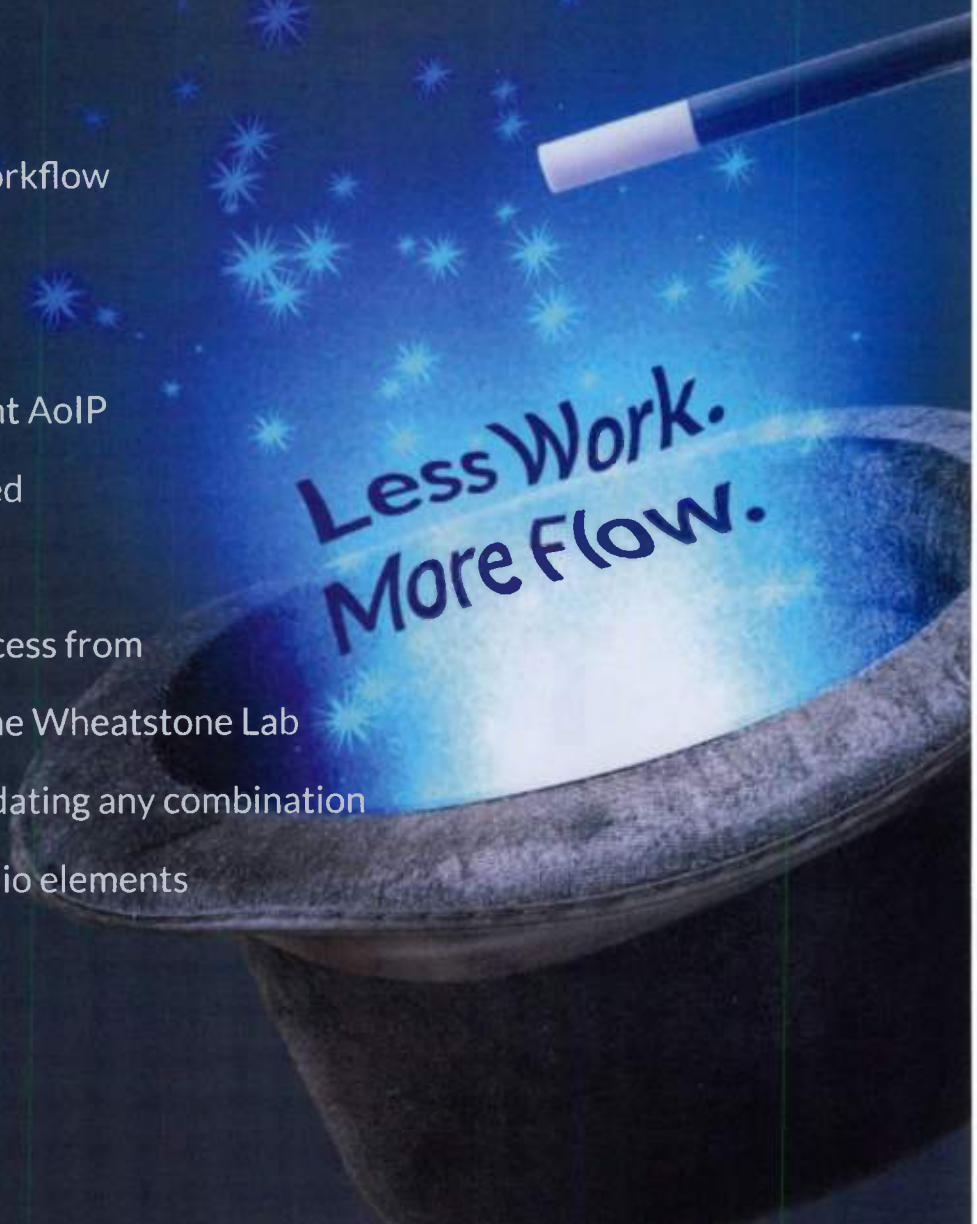

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Writer

Randy J. Stine

Fall show season actually starts in August

Here's a sampling of what's ahead on the regional calendar

They might lack some of the glitz and glamour of national shows, but state and regional broadcast conferences are a great way to learn and network without spending as much for travel and lodging.

The events often draw exhibitors and thought leaders from around the country and offer seminars that cover a variety of topics and technologies.

Like NAB's spring show, some smaller conferences have seen attendance lag since the pandemic. One event, the SBE Chapter 22 Broadcast & Technology Expo in Syracuse, N.Y., was planned for September but has been cancelled due to poor exhibitor participation. "Some vendors have cut back on regional shows because of budget concerns," said a person familiar with the circuit.

Here is a sample of this year's late summer and fall schedule of events. We'll preview IBC2024 and NAB Show New York in subsequent issues.

College student award winners, 2023

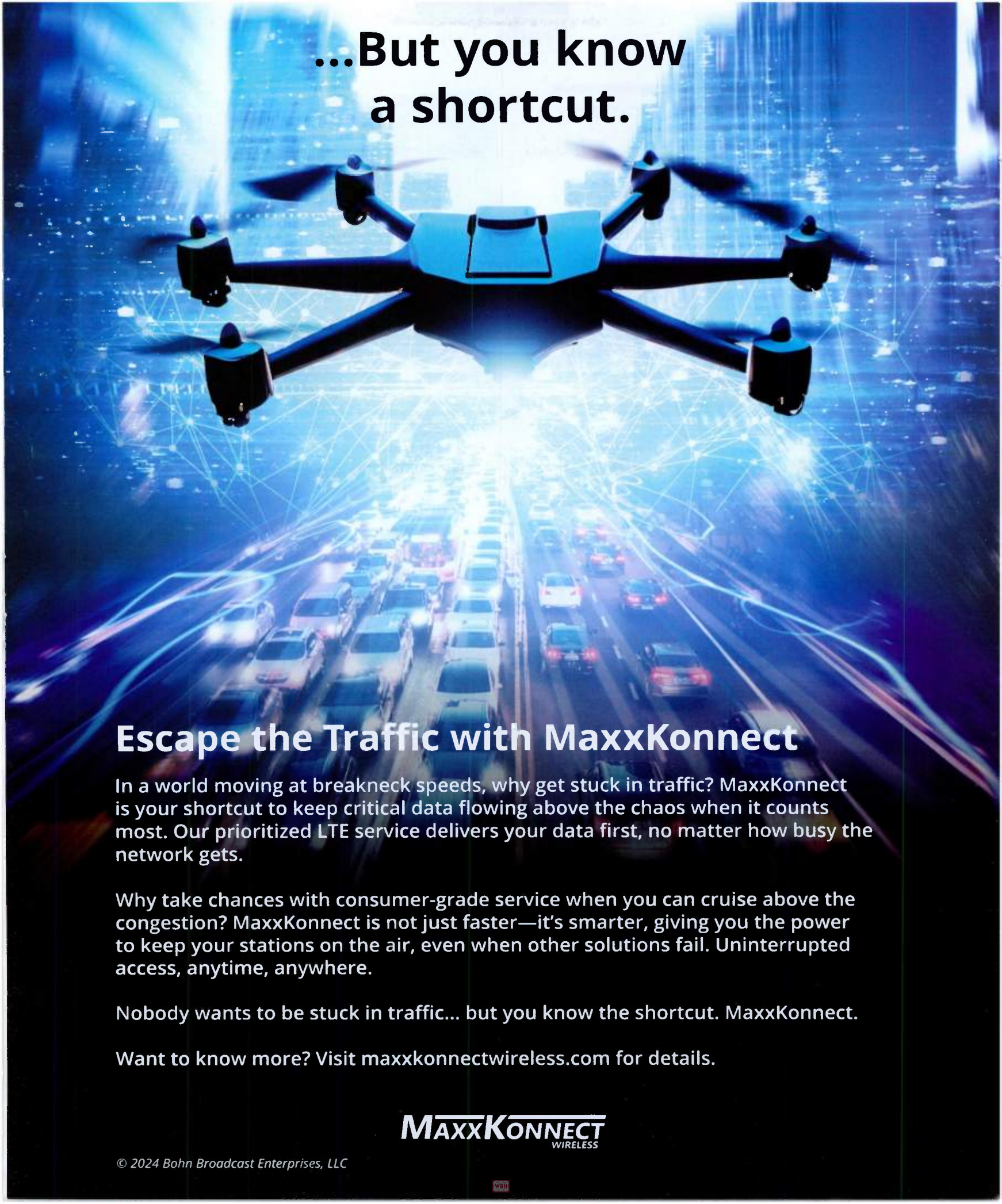
Nebraska Broadcasters Association 2024 Convention

When: Aug. 6–7

Where: Embassy Suites, Lincoln

How: *https://ne-ba.org/*

Highlights: The association is celebrating 90 years in 2024. Its event serves "owners, managers, engineers, salespeople, reporters, program directors and others" who want to "sharpen their skills, increase their knowledge and see the latest in technology and practices from industry experts and vendors." Signature events include a Hall of Fame Banquet, Keynote Luncheon and Pinnacle Awards banquet. The engineering portion is Aug. 7; organizers were finalizing that content at press time.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Texas Association of Broadcasters 69th Annual Convention & Trade Show

When: Aug. 7–8
Where: Kalahari Resorts & Conventions, Round Rock
How: *https://tabshow.org/*

Highlights: TAB is the largest state broadcast association and its annual show is a big one too. The event will be held in a new location this year, away from the expensive parking of downtown Austin. It promises 125 booths and a day and a half of training, much of it geared to engineers and technical staff. Sample session: "Continental Transmitter Maintenance" featuring Steve Hasskamp and Bob Stroup. A "hands-on" workshop will feature a complete 816r series transmitter in the classroom for hands-on training and course study. Each attendee will receive an 816r study guide. Also look for sessions on AI, RF fundamentals, virtualization, cybersecurity, revenue strategies and more. (The previously planned "Chief Operator for Radio" course won't be held.) Shown here in 2023 are Marifer Castillo and Anita Saenz-Carvalho of Entravision Communications.

Jeff Welton holds court at the 2023 clinic.

Midwest Regional Broadcasters Clinic

When: Sept. 10–11
Where: Madison Marriott West
How: *www.wi-broadcasters.org/events/broadcasters-clinic/*

Highlights: The Wisconsin and Minnesota Broadcasters Associations are now teaming up for this event. The Society of Broadcast Engineers also will hold its annual meeting and awards event. Sample clinic session: "Why Worry About Your Air Chain?" Mike Pappas from Orban Labs examines how equipment, formats and other conditions change. Other engineering topics include AI in radio; signal alignment for FM and HD SFN across wide-area IP networks; disaster planning for automation systems; physical security and access control at transmitter sites; and more. Approximately 30 exhibitors were listed as of the end of June.

Alabama Association of Broadcasters 2024 Annual Conference & Engineering Seminar

When: Aug. 8–9
Where: Ross Bridge Resort, Birmingham
How: *https://al-ba.com/wp2/*

Highlights: It's two days of sessions and entertainment in Birmingham. The ABA Engineering Services will host a special Engineering Seminar on Thursday Aug. 8. The seminar will include a detailed look at FM combiner systems featuring Sean Edwards of Shively Labs. This is timely with more stations sharing master antennas via custom combiners. Sessions also cover media law, media ethics, programming for diverse audiences and using AI in sales work. This being Alabama, there will also be a session featuring a 2024 football forecast.


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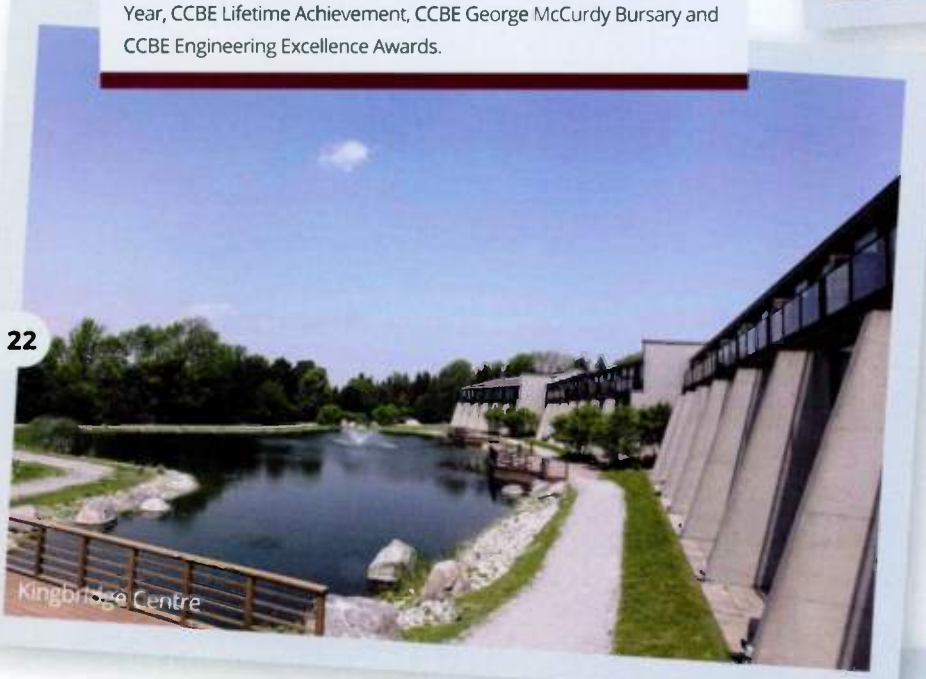
CCBE – Central Canada Broadcast Engineers, Technologists & Technicians

Career Development Conference
When: Aug. 22–24
Where: Kingbridge Centre, King City, Ontario
How: *https://ccbe.ca/2024-ccbe-conference/*
Highlights: This technical conference offers two days of sessions and papers, including discussions on 5G broadcasting and SMPTE 2110. Sample session: Andrew Scaglione from Radio.Cloud will host a Town Hall discussion on AI and cloud technology. Also, Frank Capsidas of XGen Networks will talk about 5G broadcasting and Eric Shen from Corus Entertainment will present on SMPTE 2110 in the real world. CCBE is also accepting applications for its awards program, including the Bob Norton Ambassador of the Year, CCBE Lifetime Achievement, CCBE George McCurdy Bursary and CCBE Engineering Excellence Awards.


Kingbridge Centre


Christine Merritt of the Ohio Association of Broadcasters speaks while Dave Arland listens at the 2023 conference.

Midwest Broadcast & Multimedia Technology Conference

When: Oct. 2–3
Where: Greater Columbus Convention Center, Ohio
How: *https://mbmtc.oab.org/*
Highlights: This conference is a joint production of associations in Ohio, Indiana, Kentucky, Michigan and now Pennsylvania too. It features a day of panel and breakout discussions, plus a bit more: "While the main part of the conference will be on Thursday, this year we are adding some programming Wednesday afternoon before a Welcome Reception that evening, for people who are coming in the day before," said Andy Hartzell, one of the show's organizers. Approximately 60 exhibitors were signed on as of late June.

Western Association of Broadcast Engineers WABE Media & Entertainment Conference

When: Sept. 23–25
Where: JW Marriott, ICE District, Edmonton, Alberta
How: *https://wabe.ca/*
Highlights: Organizers of the 74th annual conference promise insights into technologies driving radio, television, media IT and live production, including advances in AoIP and the future of AI. One session will discuss the Coalition for Content Provenance and Authenticity (C2PA) and the importance of content authenticity and provenance. Exhibits are open to the public and free to enter.

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Writer

Tom Vernon

The author has written features in Radio World on topics across the spectrum of radio for 40 years.

Above
Larry Cervon, front right, joined Gates Radio in 1947 as a sales representative. By 1957 when this photo of senior management was taken, he had become sales manager of the company. Front, from left: A. S. Petzold, Parker Gates, George Dively and Cervon. Rear: Norbert "Nibs" L. Jochem, Roger M. Veach, unidentified, L.I. McEwen and John Bowers.

At Gates and BE, Larry Cervon led with zeal and innovation

His vision and leadership led to development of high-tech broadcast equipment

One in a series of occasional profiles about radio technology innovators of the past.

The history of our industry has been highlighted by leaders who have glimpsed into the future of broadcasting technology, then taken bold steps to move their companies and the industry ahead. One such figure active in the late 20th century was Larry Cervon, best remembered for his work at Gates Radio and later as president of Broadcast Electronics.

Lawrence John Cervon was born in January 1922 in Lozisca, on the island of Brac off of the coast of Croatia. His family emigrated to the United States in 1928, settling in New York City. Larry graduated from Stuyvesant High School in Manhattan and later he received a bachelor of science degree from the College of the City of New York.

When he enlisted in the U.S. Navy during World War II, his education in electronics began in earnest. After passing a comprehensive aptitude test, Cervon was enrolled in the Navy's Electronics Training Program or ETP, probably the most comprehensive technical education offered by the armed services. Courses in the 10-month program covered topics from basic electronics to radar. After graduating, Cervon served on board the USS Amphitrite, an Achelous-class repair ship, for the duration of the war. This training and his military service left Cervon well qualified to become a leader in the booming post-war electronics industry.

Big shoes to fill

Following his discharge, Cervon launched his career with brief tenure in New York for RCA International as a

broadcast equipment sales trainee. He left after a year to join the broadcast equipment division of Westinghouse Electric, where he worked as a product specialist.

It turned out to be a fortuitous move, for it was there that he met Parker Gates, son of Gates Radio founders Henry C. and Cora B. Gates. That connection led to his employment for the company in 1947 as a sales representative. In 1952, he was promoted to sales manager for Gates Radio. He and his wife Louise made the move to company headquarters in Quincy, Ill.

In 1967, Parker Gates retired and Cervon replaced him as head of the Gates Radio Division of Harris Intertype Corp., which had purchased the company in 1957. At this time, the Gates product line consisted largely of AM and FM transmitters and audio gear. That was about to change.

Cervon set out to expand the company's offerings into TV products and shortwave transmitters. In a stroke of fortune, General Electric was looking to sell its Syracuse, N.Y.-based broadcast products division at the time. Gates purchased it, and the move saved time and expenses it would have taken to develop a TV product line from scratch. GE's radio and audio product lines were discontinued.

Once the TV line was established, Cervon set out to differentiate its TV transmitters from those of its biggest competitor, RCA. For that, he hired engineer Hans Bott away from RCA. Bott developed an innovative low-level IF modulation system for TV, Gates patented it, and they began to close the transmitter gap with RCA.

Gates grew to become the second largest manufacturer of TV transmitters. The company received the largest contract in its history for 36 UHF TV and several FM transmitters from the Yugoslav Radio and Television Network.

Building the team

Cervon wanted Gates to become a major player in international broadcasting. Gates had begun to manufacture shortwave transmitters earlier, but it was a small part of the business. The key players in the

> **"In 1967, Parker Gates retired and Cervon replaced him as head of the Gates Radio Division of Harris Intertype Corp."**

international transmitter market included RCA, Continental Electronics, Telefunken and ABB/Brown Boveri.

Cervon felt that a complete rethink of AM transmitter technology was in order. That meant finding the right people to lead the project.

According to Geoff Mendenhall, former VP of engineering at Gates/Harris and VP of engineering at Broadcast Electronics, "Larry recruited Hilmer Swanson from Collins Radio. He allocated Swanson ample research funding to develop a more efficient, high-power medium-wave AM transmitter."

Swanson developed Pulse Duration Modulation or PDM, a system that delivered higher efficiency and better audio fidelity in a smaller size than existing transmitter designs. Gates created a product line of PDM AM transmitters from 5 kW to 100 kW, and PDM shortwave transmitters up to 100 kW. The first PDM transmitter Harris sold was a 100,000 kW medium-wave model for Voice of America, which was delivered to Thailand.

> **"BE needed to find a new location with larger facilities and access to a workforce skilled in advanced electronics manufacturing. Cervon turned back to Quincy, Ill."**

While at Harris, Swanson later developed progressive series modulation (PSM), polyphase PDM and digital amplitude (DX) modulation. He also designed a medium-wave, solid-state transmitter for the Voice of America and several other international customers that delivered 2 million watts; it remains one of the most powerful solid-state AM broadcast transmitters ever built.

High-power radio and TV transmitters have demanding cooling requirements. Under Cervon's leadership, Gates made improvements in that area as well.

"Larry also hired Arnie Speilbauer, who developed improved liquid-cooling systems, as well as the all-new vapor phase cooling design," said Mendenhall.

All of these technical advances left a knowledge gap among many engineers at customer sites. To meet that need, Cervon created a training center at Quincy.

"Classroom instruction lasted one to two weeks, and included hands-on experience with equipment undergoing final testing," Mendenhall said. This later lead to a partnership with the local community college to offer an associate's degree in broadcast engineering technology.

The next chapter

Cervon left Gates in 1974 to become vice president and general manager of the MA Communications Equipment Division of Microwave Associates, but he left MA in 1976 and became president of Broadcast Electronics.

BE was owned at the time by Filmways Inc. and had expanded its product line to include consoles and other audio products, but the bulk of its sales was in cartridge tape machines. It was operating out of cramped facilities in Silver Springs, Md.

As he had done at Gates, Cervon saw opportunities to expand. But in order to grow and augment the product lines, BE also needed to find a new location with larger facilities and access to a workforce skilled in advanced electronics manufacturing.

Under pressure because of the pending expiration of the lease in Silver Springs, Cervon turned back to Quincy, Ill., leasing a commercial building on North 24th Street. In another stroke of luck, Motorola recently had closed a plant in Quincy, leaving many skilled workers unemployed. BE was able to recruit from that pool.

One of Cervon's first tasks at BE was to expand from audio products into FM transmitters. Early on, he lured Mendenhall away from Harris.

"The commitment to research and development was a big part of the decision," Mendenhall recalls. "At that time, Harris invested around 10 percent of the operating income in R&D, while BE invested about 12 to 15 percent." Mendenhall soon became vice president of engineering.

"The innovative, folded half-wave, cavity design for FM transmitters was well under way when I arrived, but BE was also committed to designing its own exciter, rather than private-labelling someone else's product," he said. "I expanded on the MS-15 FM exciter that I helped design for Harris to create a new FM exciter for BE called the FX-30. Later, a second-generation exciter, the BE FX-50 was developed at BE."

BE became part of Orion Pictures, which had purchased Filmways, but in the early 1980s Cervon partnered with venture capital firm Narragansett Capital Corp. to purchase BE and operate it as a privately held company.

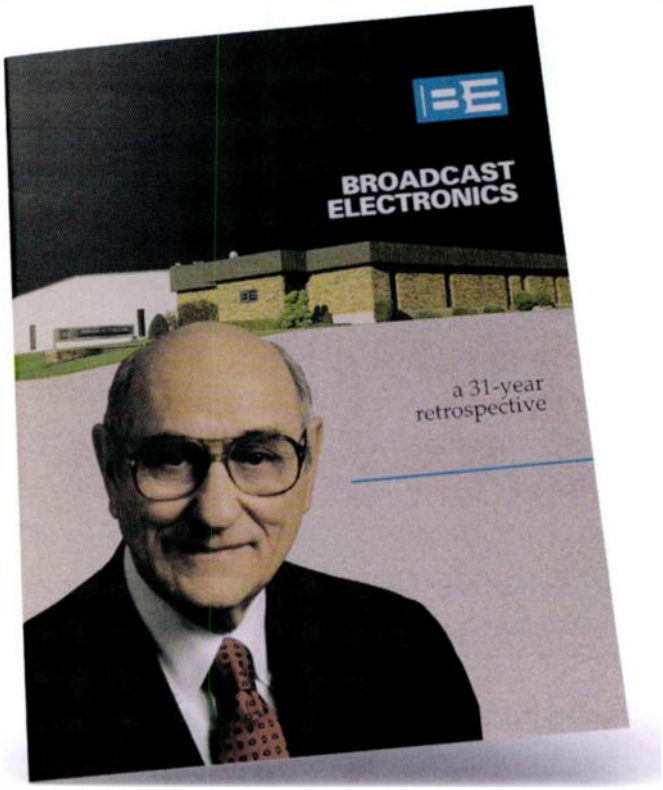
With its FM transmitter line well established, creating an AM product line was the next logical step. Cervon had tried to purchase the Collins Radio broadcast transmitter business for its AM assets but lost out to Continental Electronics.

"We ended up building our own line of AM transmitters from 1 kW to 10 kW, using innovative, Class E amplification." Mendenhall said. BE also introduced a C-Quam AM stereo generator and modulation monitor, later private labeled for Motorola.

Cervon ended his relationship with BE in 1990.

"When Larry partnered with Narragansett Venture Capital to buy BE from Orion Pictures, he had a good working relationship with them, and BE developed in the way he envisioned it," Mendenhall said.

"Later, when Narraganset sold the company to Cirrus Corp., they proved more difficult to work with. Larry grew increasingly frustrated because he could no longer run the company the way he wanted, so he sold his interest in BE to Cirrus in 1990 and retired."



Above
The cover of a promotional brochure for Broadcast Electronics in 1990.

His many years of leadership and service were recognized in 1991 by the National Association of Broadcasters, which honored Cervon with an achievement award "in grateful recognition and appreciation for 45 years of vision and leadership, in the development of high-technology broadcasting equipment."

Cervon had a passion for international broadcasting, as well as an encyclopedic knowledge of the major players, their facilities and programming. He frequently lectured on this topic in the United States and abroad. He was also a contributor to the book "The History of International Broadcasting," authored by James Wood.

Cervon passed away in July 2008 at his summer home, in Laurel, N.Y. He suffered from pulmonary fibrosis. He was 86.

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BROADCAST EQUIPMENT EXCHANGE

AM stereo suffered from infighting

In a recent letter, Paul Shinn called for a petition to make AM stereo the standard.

Every one of us in support of AM stereo also needs to petition each other to get it together. Makers and marketers have some things to figure out. So do AM stereo's fans.

I've wanted to hear music in stereo on AM since I was a teen and learned it was possible. But I never saw receivers in stores. They were catalog items or special orders that a consumer couldn't try first. How glorious it was when I occasionally got to drive cars equipped with factory model AM stereo radios in the 1990s and 2000s. My search for after-market receivers for my own cars was in vain.

In the 2010s, I learned how proponents of each system had bashed the others, about the litigation and licensing squabbles. I thought things were looking up in the 2020s when I joined an AM stereo social media group that was rich with technical information and history.

Then one day, I read a Radio World article about whether some FM stations would have an advantage going mono. I feel that stereo going out of vogue in any mode is something we ought to be concerned about; yet when I tried to alert the group, the founder scolded me and told me to never post anything there again. How despairing to want something for so long and to think I found like-minded people, only to be told to go away.

I would support Mr. Shinn's call. But the incompetence, egos and infighting that have held AM stereo back for more than four decades must end. Or do we like where all that has gotten us?

Rick Wiegmann Koshko

Look to digital instead

When I was at RKO General's KFRC in San Francisco, we had some experience with AM stereo. KFRC worked with the Kahn-Hazeltine system and put it on the air.

At the time Sony had released a portable radio, model SRFA100, that would receive and decode all the AM stereo systems; I still own one. However, when switched to stereo, the radio opened up its bandwidth considerably. This led to the problem that haunts the band to this day: man-made electrical noise.

New electrical products being introduced added to the problem. Listening to a music station broadcasting in any of the AM stereo modes sounded quite good; the trouble arose when a device nearby emitted a signal that invaded the radio. Any repetitive "blast" of noise made it hard to enjoy the program.

Today noisy products abound. Narrowing AM's bandwidth has helped but at the cost of fidelity. Narrow-banding has made almost all AM stations drop music programming.

Digital tends to be immune to these events. Television has benefited; its reception is much better than in the analog days. It's time to use modern technology for all radio broadcasting. For example, the success in countries with Digital Radio Mondiale shows how it could benefit the band here. I think we must look to digital standards as better solutions. Sadly, reviving any of the old AM stereo systems will not provide the cure we need.

Paul T. Black, CPBE
Pleasant Hill Calif.

qingwa/Getty Images

How to submit

Radio World welcomes comment on all relevant topics. Email *radioworld@futurenet.com* with "Letter to the Editor" in the subject field.

Who needs AM stereo anyway?

I was working at Motorola in the 1970s and knew some of the guys working on the C-Quam system.

I learned that a stereo receiver requires better quality so even for mono music, a stereo receiver will sound better, assuming that full bandwidth is transmitted. I don't know how well this works in the presence of interference.

A significant hindrance was that the FCC at first said the market should decide among four systems, which confused broadcasters and manufacturers.

But what I never understood even then was, "Who needs AM stereo?" All major Chicago AM stations even then were news, sports or talk radio. The only music station I knew that was using stereo in Chicago was WAIT, and the music was nostalgic, in mono. Where is the motivation to buy an AM stereo radio or to transmit stereo?

Kenneth Lundgren

Bring in the OIB

I read with interest Ken Deutsch's comments in the June 5 issue about why radio is so hard to listen to. I agree with all his observations and I would like to add one more.

The reason a lot of AM stations sound like bad phone lines is because nobody with an operating impedance bridge has been anywhere close to the tower in decades. If you own or engineer an AM station, the investment in a consulting engineer with an impedance bridge could be the best thing you can do for the sound of your station.

Get the RF path tuned correctly and an AM station can start to sound fairly decent. You'll be surprised by how much your coverage area improves, also!

Brian Walker
Director of Business Development
BSW

Proof, please!

I enjoy reading your publications and usually walk away with something I didn't know. But I'm curious as to where the proofreaders are these days.

An online article about HD Radio capture included the sentence "The Buffalo incident was transient, lasting only while the station licensed to that market, WDXC(FM), had to switch off its HD MP1 transmissions due to an equipment problem."

Having spent a number of years in Buffalo radio, we are well aware that 99.5 in Buffalo is WDCX, not WDXC.

Another article dealt with Family Radio and quoted David Shantz: "I find the HD coverage very close to the analog range. I'm very happy with the coverage. If you are in the fridge area, the Inovonics Justin 808 keeps the alignment in sync ..."

I've been through the Sacramento area and the lowest average temperature is 54. It hasn't snowed measurably in the area since 1976, leading me to believe that Mr. Shantz probably said "fringe" area.

I appreciate the hard work your team puts in and kindly suggest a bit more attention to detail.

Dave Mason

Correction

In the article "College FM Licenses Matter" in the June 19 issue, we misspelled the last name of student Jason Eusebio.

More wart talk

I agree with Bill Ruck in his letter to the editor in the May 22 issue, about wall warts and using some sort of linear power supply.

For my radio setup, which uses nearly a dozen different styles of external audio filters and DSP units, I use an Astron 30-amp supply to power pole distribution blocks.

With each filter device, the only thing useful from those wall warts is the coaxial power connector on the end of them. I chop the cable, replacing the wall wart with a power pole connector to plug into the power "brick" to the Astron — attractive and orderly. Each connector can have some sort of identifying label or color code to identify what it is powering.

I guess the only risk of this approach are D.C. ground loops, although I have been lucky thus far.

Ron Fitch
WQ6X

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