



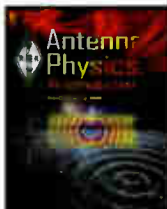
# RADIO WORLD

SEPTEMBER 13, 2017 | The News Source for Radio Managers and Engineers | \$5.00 | RADIOWORLD.COM

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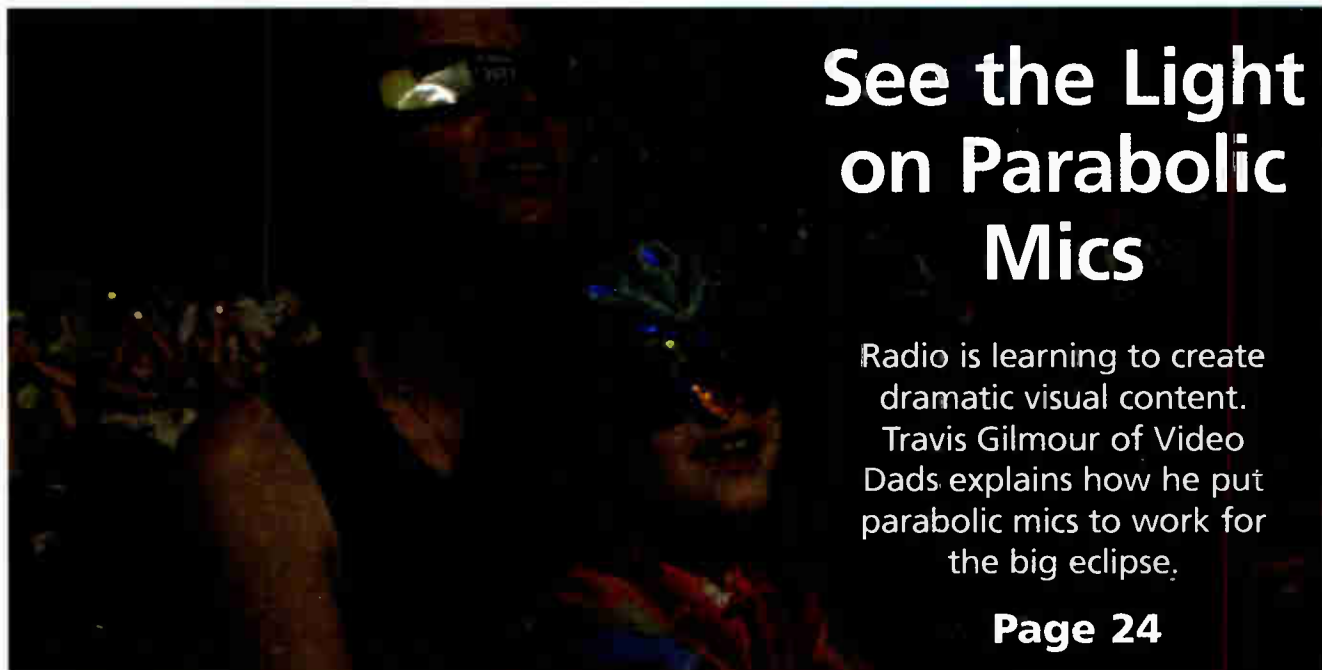
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Radio is learning to create dramatic visual content. Travis Gilmour of Video Dads explains how he put parabolic mics to work for the big eclipse.

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## Radio Ranger Rides Into Sunset

SBE honors Minnesota's Steve Brown, who retires after a career of 40+ years

BY TOM VERNON

The Society of Broadcast Engineers named Steve Brown — aka the Radio

Ranger — as the 2017 Robert W. Flanders SBE Engineer of the Year.

The award is presented to a member who has excelled while furthering the mission of the society. A member for his entire 40-year career, Brown served on the SBE National Board of Directors during the 1980s. He is also a former Chapter 17 chairman and has held CBRE and CBNT certifications. He has recently retired or, as SBE put it in its announcement, hung up his test leads.

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Steve Brown plans on spending much of his retirement with one of his favorite pastimes, hiking the trails of Minnesota and Wisconsin.

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# Saving New Sounds: an Argument for Preserving Podcasts

Many feeds have already disappeared, and many more will if we don't make preservation a priority

## ► PRESERVATION

BY JEREMY WADE MORRIS

*Radio World supports efforts to save our radio and audio heritage, including the work of the Radio Preservation Task Force (http://radiopreservation.org), a project of the Library of Congress.*

*Here is one in a series of guest commentaries about the topic.*

*Jeremy Morris is an assistant professor in the Department of Communication Arts at the University of Wisconsin-Madison.*

In January 2014, Adam Curry sent a quick tweet out to his 40,000-plus followers with a modest request: "Looking for a full archive of 'Daily Source Code' mp3s." Not just your average media user looking for bootlegged files, Adam Curry was one of podcasting's first breakout stars in the early 2000s. He was trying to track down one of the first widely popular podcasts, the "Daily Source Code." But his request was certainly odd: after all Curry was actually the host and producer of the "Daily Source Code," which ran from 2004 to 2013 (over 860 episodes!).

As Curry lamented on his website: "For a number of [stupid and careless] reasons, I am not in possession of most of these." [sic]

For those familiar with radio history, this story is probably less surprising. Much of radio's history has been lost to vagaries of time, be it through the willful ignorance of companies looking to "preserve" only that which could be "monetized," or the unintentional negligence of hosts, producers and engineers without the foresight, budgets or means to realize that the radio they were making and broadcasting would shape culture for decades to come — culture that media historians, scholars and hobbyists would later want to analyze, research, teach and reference.

### SHOCKINGLY VULNERABLE

You'd think that a format as ubiquitous, available and digitally compressed as podcasts wouldn't face the same kind of risks as old radio tape reels or transcription discs. Most podcasts are freely available online and they take up relatively few megabytes, which makes it easy to store a lot of them. Podcasting

is just over 10 years old and while there are a lot of them — iTunes lists over 300,000 unique podcasts and close to 8 million individual episodes in over 100 languages — it's not as vast and unmanageable as radio's much longer and more ephemeral history.

The Radio Preservation Task Force, for example, is working hard to try and preserve what remains of radio's past, but estimates that close to 75 percent of historical radio recordings in the U.S. has already been lost, destroyed or is otherwise inaudible.



Jeremy Wade Morris

Similarly, the explosion in amateur and expert cultural production that podcasts represent is shockingly vulnerable: podcast feeds frequently end abruptly, cease to be maintained, or become housed in proprietary and closed database systems, like the iTunes store, which are difficult to search through with any depth or rigor.

The issue of copyright looms large and, as the popularity of podcasts grows, the increasing professionalization and commercialization of the medium also threatens to streamline podcast production, limiting some of its potentially democratic diversity and general accessibility (think paywalls and exclusive content).

There are also countless cases, like Adam Curry's, where independent podcasters simply don't realize that just by virtue of the fact they are taking part in a format's infancy, they are also making history. What today's podcasters are producing will have value in the future, if not for its content, for what it tells us about

radio and audio's longer history, about who has the right to communicate and by what means. If we're not making efforts to preserve podcasts now, we'll likely find ourselves in the same sonic conundrum many radio historians find themselves in: writing, researching and thinking about a past they can't fully hear.

### NO COMPREHENSIVE STRATEGY

How do podcasts differ, sonically and aesthetically, from radio? What new voices and perspectives do podcasts make audible and which ones do they silence? In what ways are the traditional conventions of the broadcasting industry shaping this new outlet? How are producers and consumers reimagining

the very idea of broadcasting in light of the advent of podcasts?

Each new podcast offers its own answer to these important questions: but without a comprehensive archive and database to help search and research, we're barely able to begin answering them.

The Internet Archive — as with so much other historical digital (and pre-digital) media — has a substantial audio database, part of which is devoted to podcasts. The folks at Audiosear.ch are also making a dent in making podcasts more analyzable thanks to their highly useful interactive transcripts. Various libraries are also beginning to bolster their digital audio collections.

PodDb provides a rich database of metadata about podcasts hosts, producers and other production credits. Also, I'm engaged with a small but devoted team in an effort to build a site we're calling PodcastRE (short for

(continued on page 5)



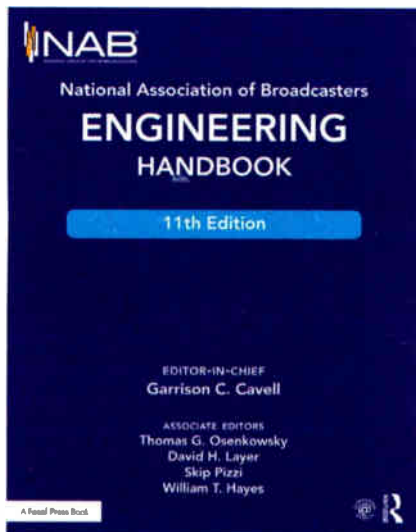
# From AoIP to Elsie the Cow

Radio books run the gamut from tech talk to history and personalities

We'll be moving the Radio World offices to a different floor of our building here in northern Virginia in a matter of weeks. Looking around my office in preparation, I realize not only that I need to get packin' but that I haven't shared interesting book titles with you lately.

"National Association of Broadcasters Engineering Handbook, 11th Edition" — Whomp! This is satisfying when it lands on your desk.

Editor in Chief Gary Cavell and his associate editors — David Layer, Skip Pizzi, Bill Hayes and the late Tom Osenkowsky — get top billing for a "completely revised, substantially updated" edition of an industry classic. Kudos

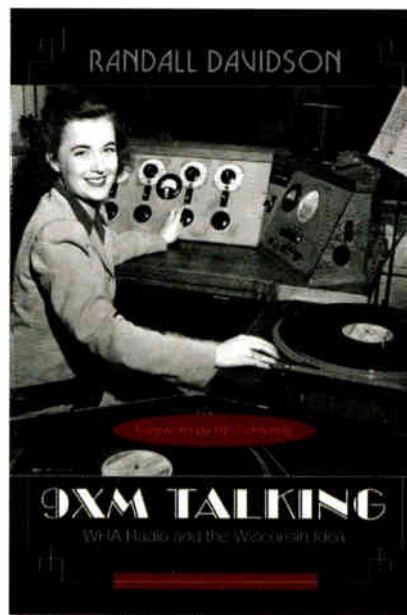


also are due to its 102 (!) contributors — radio and TV tech experts all — and another two dozen people whose earlier writing is incorporated.

A decade has passed since the previous edition of the handbook. As NAB EVP/CTO Sam Matheny notes in the foreword, our industry has seen tremendous and accelerating change, with increased connectivity through IP technologies and the move by broadcasters toward becoming multiplatform digital distributors.

Radio World and NewBay have no role in this project but I'm a big fan of it and proud that you will find many familiar names among the bylines, including some of our editors, authors, contributors and interview subjects.

Buy it at [www.nabstore.com](http://www.nabstore.com) for \$220, less a discount for NAB members. This hardcover book, all 2,000-plus pages of



**Dickens would have said** affectionately that there is "nothing of high mark" in some of the smaller works. But they are works of passion by radio professionals who want to remember and to be remembered.

it, is like a college course in broadcast engineering. We'll tell you more about the contents in coming weeks.

"9XM Talking: WHA Radio and the Wisconsin Idea" — Randall Davidson explores the underappreciated history of educational radio in a book published in 2006 and now reissued to mark the centennial year of Wisconsin Public Radio, including a new foreword by pubradio icon Bill Siemerling.

Carefully researched and thoroughly footnoted, it starts with the broadcasts of experimental station 9XM at the University of Wisconsin and explores the creation of WHA, WLBL and the Wisconsin Public Radio Network, and how those influenced modern public radio. A substantive history work for any radio or public broadcasting buff.

You can purchase it for \$24.95 at [uwpress.wisc.edu/books/3835](http://uwpress.wisc.edu/books/3835), and also watch a 50-minute video by WPR with the author there.

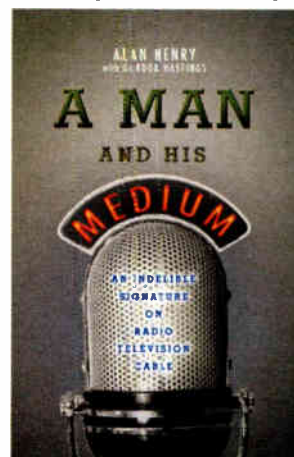
"Columbus Radio" — The "Images of America" series from Arcadia Publishing includes numerous photo books about the history of radio as it was experienced in individual communities



around the country.

Here, Mike Adams — once a top-40 DJ on station WCOL — remembers how two professors and a preacher "invented" Columbus radio, starting with science experiments in classrooms and a minister's desire to extend his audience. Stations prominent in the book include WEAO, WOSU, WMAN, WCOL, WBNS and more; the photos take us up to the 1970s. Look for one of Elsie the Cow being interviewed.

You may recognize Mike's name from other contexts. He is professor emeritus of radio, TV and film at San Jose State University and created two documentaries about broadcasting for



"A Man and His Medium: An Indelible Signature on Radio, Television, Cable" — Alan Henry's book is one such. Written with friend Gordon Hastings, it provides anecdotes from throughout Henry's life and radio/TV career, most notably his seminal role in creating "confrontational" talk radio and the all-news format in the 1960s.

Hastings has written, "Alan Henry took high risks to help create programming that is today universal across all media. Over the decades these formats have launched thousands of individual careers in radio, television, cable television and the Internet."

The subject of creating angry talk and all-news, and the subsequent impact of those ideas, certainly deserves a much deeper telling than Henry and Hastings give it. You can read their book in an hour

(continued on page 6)

FROM THE  
**EDITOR**

Paul McLane



PBS; he's also board chair of the California Historical Radio Society.

Part of the great fun for a Radio World reader is to scrutinize the photos not only to spot memorable air talent but to identify classic gear visible in them and to chuckle over the early remote vehicles, old radio newspaper advertisements and funky DJ haircuts.

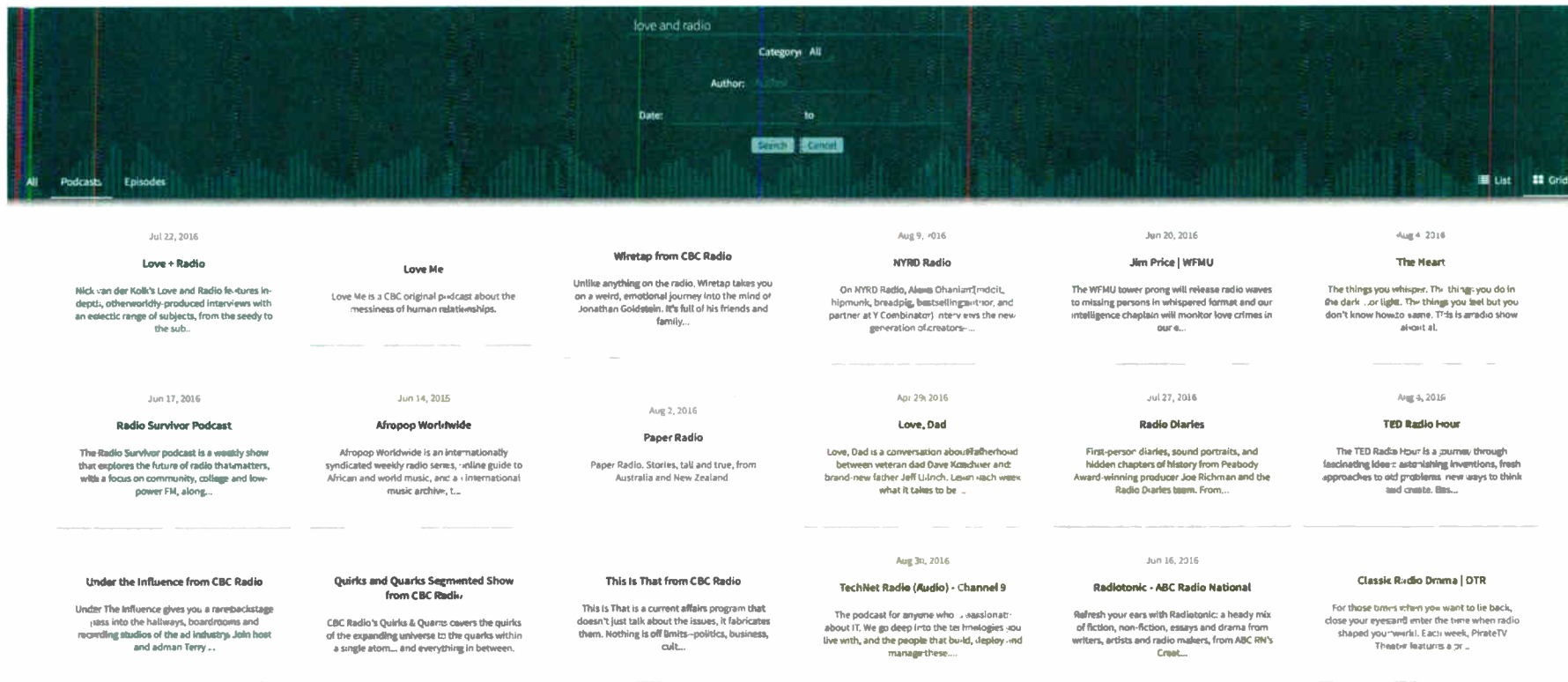
Sold in bookstores and online, it retails for \$21.99.

## INDY, SELF-PUBLISHED, SPECIALTY

Longtime readers know I often receive books that are personal accounts written by people who have a lifelong connection to the medium. These may come from a small publisher or be self-published. They are rarely presumptuous, sometimes not well edited and certainly not voluminous; an entire book might contain fewer words than a chapter or two of the NAB Engineering Handbook. Dickens would have said affectionately that there is "nothing of high mark" in them.

But they are works of passion by radio professionals who want to remember and to be remembered. The authors enjoyed their careers and want to share some of their favorite memories with others. Opening one of these small personal biographies is like sitting on a porch of an autumn evening and talking with a fellow radio junkie about his or her memorable career.





The author is a co-creator of PodcastRE, a searchable, researchable database of podcasts to preserve podcasting's history (<http://podcastre.org/>). This is a screen of results for "love and radio."

## PODCASTS

(continued from page 3)

Podcast Research) to preserve podcasts and make them more researchable for audio scholars and enthusiasts ([podcastre.org](http://podcastre.org)). But beyond that, there exists no real hub that allows for both the archiving and the analysis of this emerging form of audio culture.

If shows like "Serial," "Welcome to Night Vale," "2 Dope Queens" and others have prompted critics to proclaim we're in a golden age of audio, you'd

think we'd have a more comprehensive strategy for saving these new sounds than optimistically assuming podcast producers are keeping proper backup copies of their shows, and that those copies will last five, 10, 50 years into the future.

Shortly after his tweet for help, Curry posted an update on his website. It turns out that a "super friend of the show" had a copy of the entire "Daily Source Code" archive and was uploading it and making it available to fans through Bit Torrent Sync. As with much of what we have left of radio's golden age, fans and enthusiasts were helping rebuild

the missing archive. As a result, one of podcasting's first big shows wasn't lost to time.

The same can't be said for many

other feeds that have already disappeared and the many more that might if we don't make preserving podcasts a priority.

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# Radio Technology Offers New Opportunities

New domains beckon radio broadcasters to keep moving the technology bar

## COMMENTARY

BY MICHAEL McEWEN

*The author is director general of the North American Broadcasters Association.*

While there is a lot of talk in television about next-generation TV (and to be fair, the talk is very real and not a lot of hype), radio is also undergoing its own next-generation activity that will make radio more accessible on multiple platforms and provide more benefits to the listener, the advertiser and the broadcaster than ever before. Here are just a few examples:

### DOTRADIO

For everyone in the radio community, now is an important time to explore an online opportunity that is specific to radio. There is a new, radiocentric, internet domain to replace the standard dot com: it is dotRadio. This domain is being managed by the European Broadcasting Union, which put together a radio advisory group in January for this task. The North American Broadcasters Association, along with many other broadcasting associations, was one of the groups that endorsed the EBU's management of this project back in 2012. The advisory group is chaired by Simon Spanswick, who is managing director of the Association of International Broadcasters.

The dotRadio domain is a Community Top Level Domain validated by ICANN, the Internet Corporation for Assigned Names and Numbers. What this means is that applicants who truly belong to the radio community get priority, instead of the addresses simply going to the highest bidder. This will help control cybersquatting.

The launch period started Aug. 23 and runs until Oct. 31. During the launch, multiple groups can apply for the same domain and the dotRadio team will determine what group is the most

appropriate. DotRadio will be for over-the-air and internet broadcasters, radio professionals and amateurs, along with vendors to the broadcast community. Take note that after Oct. 31 there will be short break, and then general availability will start on Nov. 15. At that point, the domains will be assigned on a first-come first-served basis (as long as the applicant is found to be a part of the radio community). So time is definitely of the essence. To find out more, go to the main dotRadio website, [www.nic.radio](http://www.nic.radio).

### FM CHIPS IN SMARTPHONES

NABA continues its work with the National Association of Broadcasters on research into FM chips in smartphones. We've been looking at quarterly smartphone sales in Canada, Mexico and the U.S., whether those phones have FM chips, and furthermore if those chips are then enabled to function as a radio receiver. Using the radio receiver instead of streaming radio saves battery life and data.

The research work started in the fourth quarter of 2015 and runs to the latest numbers for the first quarter of 2017. Some conclusions can be made — the data shows that the vast majority of smartphones across North America contain an FM chip (there is a small percentage of phones with no FM chip, but it is doubtful that those numbers will increase). In Canada and the U.S., of those top-selling smartphones that have FM chips that aren't activated to receive radio, 100 percent of those are iPhones. Smartphones with FM chips activated are plentiful in all three countries, especially in Mexico. Our most recent findings and a new summary across the whole collection period will be up on our revamped website, [www.nabanet.com](http://www.nabanet.com), mid-September.

In Mexico, the broadcast regulator has seen the public service value of enabling the FM chip in smartphones and has directed the mobile industry to enable them. This is not likely to happen in the U.S. or Canada but, nonetheless, we are encouraged by the positive response from regulators in both countries to the public service benefits of chip-enabled smartphones. As Radio World readers will recall, earlier this year the International Telecommunication Union amended its Task Force on Emergency Broadcasting report to encourage chip-enabled smartphones as an important



public service in emergency situations.

So we aren't at the end of the road on this issue yet, but we're getting there.

### APPS

NextRadio powered by TagStation LLC (whose parent company, Emmis Communications, is a member of NABA) is an app that lets smartphone owners use the enabled FM chip to listen to live local radio with enhanced content (e.g., search for stations by genre, see album artwork, interact with DJs, check out LiveGuide for what is currently playing on air, etc.). As of August, the NextRadio app is available for iPhone in the U.S. These users would need to stream radio (versus being able to receive over-the-air signals) but will be able to take full advantage of NextRadio's features.

NextRadio had a great August because they also announced a deal with manufacturer LG Electronics. LG will enable the FM chips in their smart-



Michael McEwen

phones for North America and LATAM and the NextRadio app will come pre-loaded on select models.

### NEXT STEPS

Over the last couple of years, NABA's Radio Committee has concentrated on working groups that focused on the FM chip, and a voluntary North American standard for HD Radio (with a paper published last February and shared with the three North American administrations). While this work will continue, we will turn to integrating these efforts with the car dashboard and will include hybrid radio, streaming services and apps. We call it Next-Generation Radio.

*Comment on this or any story. Write to [radioworld@nbmedia.com](mailto:radioworld@nbmedia.com).*

## BOOKS

(continued from page 4)

or two and it will leave you wanting more about those topics. But for anyone interested in the world of Joe Pyne, John Kluge, Metromedia, Jim Lightfoot, Don McGannon, Westinghouse and "all-news-all-the-time," it's enjoyable. Available on Amazon for \$11.95 in paperback or \$3.99 via Kindle.

*"American Radio Then & Now: Stories of Local Radio from the Golden Age" — Filmmaker, musician and entrepreneur Robin Miller laments that radio has changed from its days of being "a government-protected bastion of localism." This book — based on his personal listening experiences, his work as a DJ and his interviews with numerous broadcasters — is a rumination and informal history of our medium for people who can't get enough of radio that made us lean forward: names of yore like The Shadow,*



Kate Smith and Bing Crosby, but also Garrison Keillor and Steve Darnall. The book, published in 2015, is available via free Kindle app for \$9.99.

I have more books along these lines to tell you about in an upcoming issue.





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# COMREX

## BROWN

(continued from page 1)

### USER PERSPECTIVE

Brown's earliest experiences with electronics involved getting his amateur radio license. He began his career in broadcasting in 1964, when he visited a local station and was fascinated by the big tubes in the 1 kW transmitter. He soon began work at the station as a disc jockey.

"It was a good experience," he said, "because I saw the equipment from the perspective of the end user, and gained an understanding of how and why things had to work reliably and efficiently."

Brown served in the Air Force from 1968 to 1972, working in media relations. After departing the service, he was employed as a contract engineer in the Des Moines, Iowa, area. Then in 1977 he was hired as chief engineer of WWTC in the Twin Cities; two years later, Brown signed on as CE of WLTE(FM) in Minneapolis, where he stayed until 2004.

During his time at WLTE, Brown supervised two studio moves, and did some innovative projects with Basic Stamps, small microcontrollers with a specialized BASIC interpreter built into the ROM.

"Early ISDN equipment was not

always user-friendly," he recalls. "Ours was used both for remote broadcasts and production, necessitating some codec reconfiguration and audio switching. I set up the Basic Stamp to configure the ISDN for remotes, with a mix-minus from the audio console, or another configuration for production, with output from the production room. The audio was switched with a routing switcher. Everything could be changed by pressing one button."

Another Basic Stamp created by Brown utilized sample-and-hold amplifiers to simplify remote metering of phase angle and amplitude measurements from a three-tower directional array.

"The original system utilized six channels on the remote control, it was confusing, and there were numerous operator errors. The Basic Stamp enabled everything to be monitored on one channel of the remote control."

### RUNNING INTERFERENCE

In 1986, WLTE replaced its antenna, located on one of the twin towers at the Telefarm site in Shoreview. Brown was one of the first engineers to use a helicopter to make field strength measurements of an FM signal. His first set of measurements documented the signal strength of the old antenna, the second demonstrated the improvements

in performance once the new antenna was installed.

The explosive growth of FM broadcasting in the 1970s led Twin Cities stations to seek higher ground for their FM's in order to gain greater coverage.

Since there were no mountains nearby, early efforts focused on skyscrapers and antenna farms. The first attempt

an off-air emergency, things can usually wait a couple days."

One of Brown's biggest clients was Minnesota Public Radio which, at the time, was building out its HD Radio facilities. All told, he built more than 20 HD stations. He considers it one of the most rewarding parts of his career.

'It was a challenge to harmoniously

**I don't have all the answers, but I know somebody who does. Success in this business depends to a large degree on knowing how to get the right information.**

was with five stations atop the 52-story IDS building. It seemed like a good idea at the time, but when the stations signed on, the result was massive interference problems for several other stations, including WCCO(FM), where Brown worked. To make things even more interesting, a strike by the local IBEW took place around the same time, meaning Brown and the other engineers had to sit it out for a while.

Along with Dan Reider, George Werl and Mike Gorniak, Brown took numerous field strength measurements to determine why the new site was causing interference. The stations atop the IDS building took turns switching off their carriers to try and determine what combination of signals was causing the interference. It all came down to "receiver-induced third-order intermodulation effects."

As a result of this study and the ongoing interference, stations on the IDS building were ordered by the FCC to operate at 50 percent power until the problem was resolved.

"That half-power command stayed in effect until the Shoreview FM Group master antenna project lit up in August of 1992, over a decade later," Brown said.

That master antenna project involved nine FM's pooling resources to relocate on the Fox TV tower in nearby Shoreview. Brown was one of the primary engineers involved in writing specifications for the facility. This time, everything worked like a charm.

### DIGITAL SATISFACTION

In the fall of 2004, Brown moved away from full-time employment and started freelancing. Right away, he noticed that things work a bit differently when you are your own boss.

"You need to get used to creating your own schedule. It's OK to tell people you can't work today or you're not available at a certain time. Unless it's

merge old and new technologies. Usually the process involved moving existing and new equipment into new transmitter buildings. This entailed an understanding both of HD Radio technology and building construction."

The list of Brown's accomplishments also includes involvement in the construction of a seven-tower directional array in Omaha, Neb., and another directional west of the Twin Cities. He worked for Classical South Florida, moving and renovating transmitter sites. Brown, with Mike Hendrickson, also discovered a design defect in RCA 10 kW FM transmitters that caused high levels of RF, which interfered with other equipment at a transmitter site.

During this past year, Brown decided to retire from broadcast engineering, leaving plenty of time for other pursuits. On the top of the list is backpacking and camping, particularly on the trails in Minnesota and Wisconsin. Part of that experience is volunteering to maintain the trails so that other hikers won't get lost.

Brown also volunteers his time at a local historic farm, where he plays the part of Old MacDonald, giving tours and explaining 19th century farming and farm life to small children.

Reflecting on his long career in broadcasting, Brown said, "I don't have all the answers, but I know somebody who does. Success in this business depends to a large degree on knowing how to get the right information. When you network with other people to get the answers, you also learn about a lot of other things along the way."

*SBE's awards will be presented during its National Awards Dinner on Oct. 26 at the SBE National Meeting in Denver. The meeting will be held in conjunction with the Rocky Mountain Audio/Video Expo.*

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By Paul McLane | August 28, 2017

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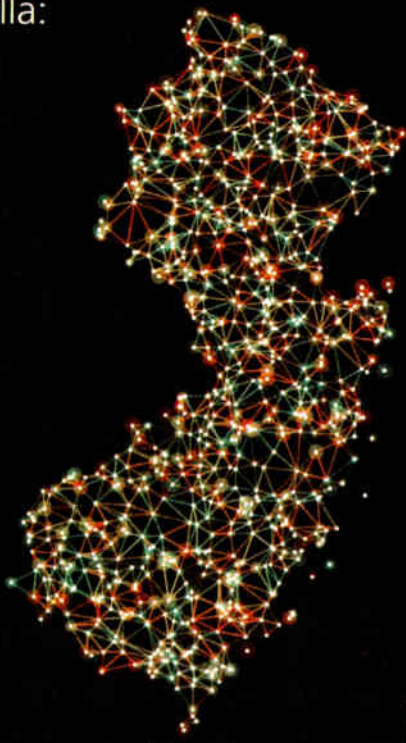
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# N.J. Broadcasters Seek EAS Changes

NJBA's Rotella:  
"The SECCs  
have been  
ignored for  
years"



An abstract image  
of the state of  
New Jersey.

Stockphoto/FrankRampsoort

BY RANDY J. STINE

The New Jersey Broadcasters Association would like to see State Emergency Communications Committees around the country wield more power and ensure broadcaster input in the development of EAS state plans.

Paul Rotella, president and CEO of NJBA, told Radio World that he asked the Federal Communications Commission to clarify the role of SECCs in preparing and maintaining each state's EAS plan.

"The SECCs have been ignored for years. I don't believe New Jersey is the only state with this problem. Our SECC has no teeth and basically been abandoned," Rotella said.

"I think their demise started when the FCC and FEMA [Federal Emergency Management Administration] began sharing some EAS duties. Then the FCC thought FEMA was doing certain things and vice-versa. Therefore, I think local and state officials now look at SECC

like it has been delegitimized."

In addition, Rotella says law enforcement "could be overreaching a bit" when it comes to its involvement in New Jersey's SECC.

"This isn't a slam on law enforcement. They are trying very hard, but they are not broadcasters. They need funding, more staff and tech training. They also need our help and expertise to make sure EAS works correctly."

Rotella's association, along with the New Jersey State Police, went so far as to ask that state's Attorney General's Office to review FCC rules and regulations regarding the scope and authority of the New Jersey SECC and its state chairperson.

"The AG's office concluded several years ago that while the FCC has established a SECC in every state, there does not seem to be any clearly defined authority or direction. From that point on and after the subsequent retirement of the state's communication officer, the New Jersey State Police have taken more and more control of EAS," Rotella said. "At one point they even rewrote the state EAS plan and were ready to disseminate it in good faith, but without obtaining approval from the SECC, NJBA or FCC."

He believes the FCC understands his group's concern with the SECC structure and "could put out a notice or rulemaking or something" to reinforce or possibly recreate the SECC.

Separately, in a recent letter to New Jersey Gov. Chris Christie and New Jersey State Police, Rotella pushed the need for better technology for public warning in the state.

"The NJBA supports the acquisition and implementation of a statewide voice

Rotella points to a system such as AlertFM, which delivers emergency messages using data subcarriers of existing local FM radio stations, providing overlapping and redundant signal coverage. The broadcast messages thus are free to the public.

"Parenthetically, I think it is time for the state to look at investing in a new FM-based alert system to supple-

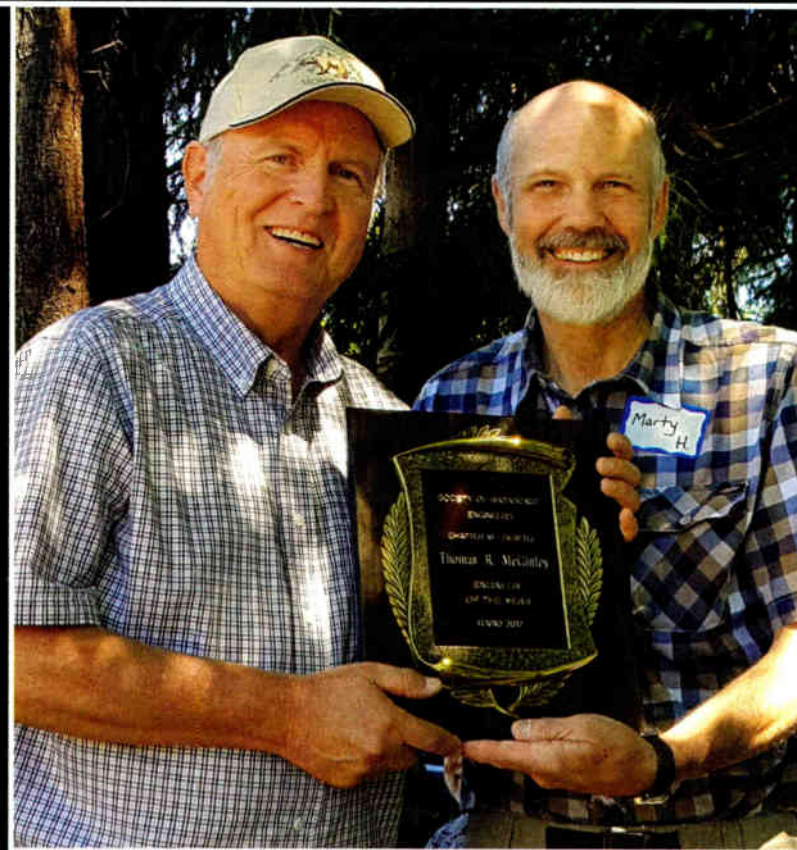
**I don't believe New Jersey is the only state with this problem.**

— Paul Rotella

and text-based emergency notification system featuring FM radio-based notification and EAS text and audio for the state of New Jersey," he wrote, describing its stance in an association newsletter.

ment what we have. We should take advantage of the FM infrastructure that is already in place in New Jersey and elsewhere. It works well in other parts of the country," Rotella said.

## WAY TO GO, TOM!



Radio World is plenty proud of our technical adviser Tom McGinley, who has contributed so much to this publication over the years (and never fails to bring a smile to everyone he works with).

Tom, now working with Townsquare Media after a long tenure with CBS Radio, recently was named Engineer of the Year by SBE Seattle Chapter 16 for his dedication and long-term leadership involvement in the chapter and its committees, including a recent notable expansion of the scholarship program.

He's shown with chapter board member Marty Hadfield at the chapter's annual picnic on Vashon Island at the historic KIRO 710 kHz, 50 kW transmission facility. Thanks to Arthur Willetts of Chapter 16 for the pic.

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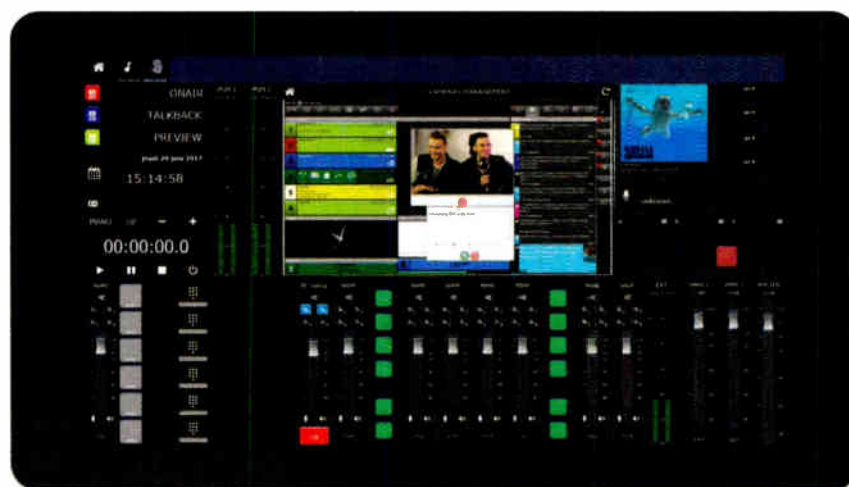


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# Banish Tarnish With the PrepPen

And check out this unique microphone isolation solution

## WORKBENCH

by John Bisset

Email Workbench tips to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com)

**A**buquerque engineer Lew Wallach writes about the PrepPen, a shirt-pocket-sized surface cleaner that uses glass fibers to remove surface corrosion and oxidation without removing the base material.

The PrepPen was designed for auto body shops needing to spot-sand a vehicle or for chipped paint repairs, but the PrepPen is also perfect for cleaning component leads or wire before soldering. The glass fibers break off into a fine dust when it is used, but in the process, the fibers remove oxidation.

To use it, put the item to be cleaned on a paper towel or a sheet of paper. When finished, wipe the surface with a paper towel and wash your hands.

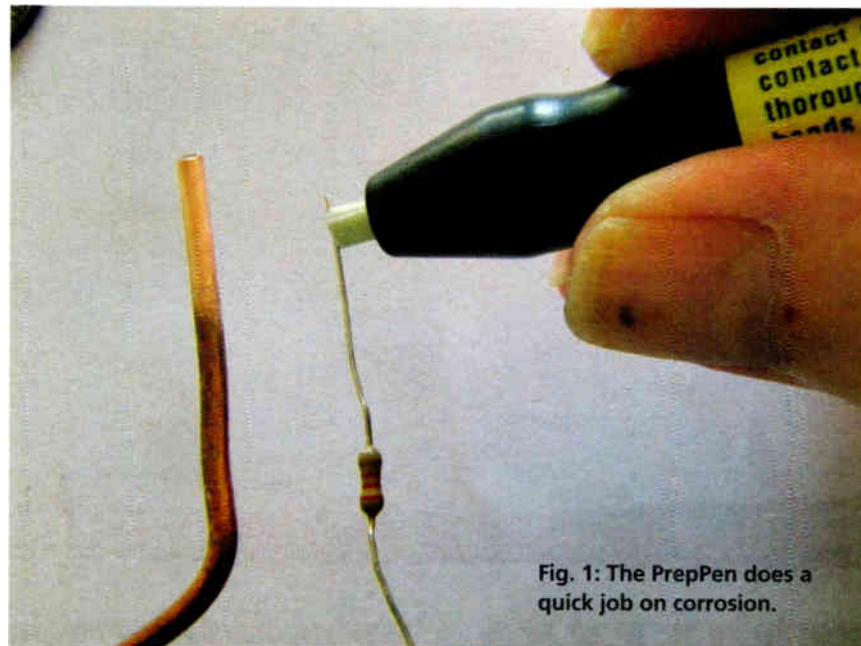


Fig. 1: The PrepPen does a quick job on corrosion.

Fig. 2: Tarnish on this coin disappears after using the PrepPen.



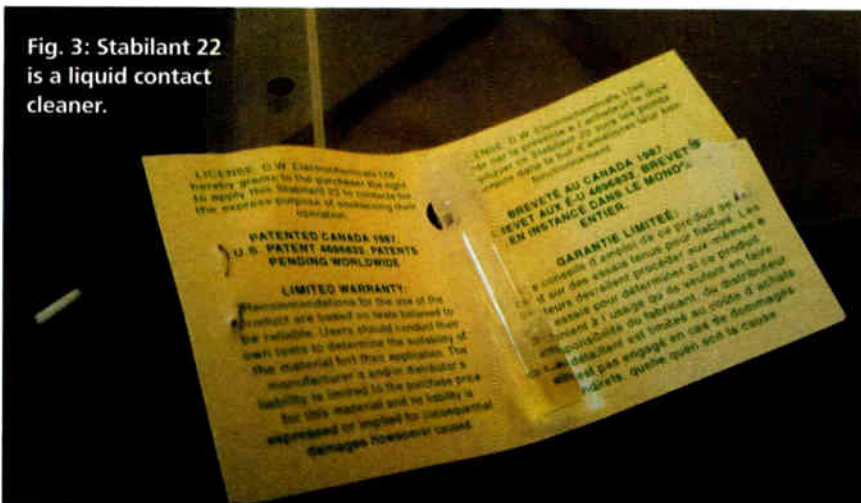
Fig. 1 shows Lew using the PrepPen on a 1/8 W resistor and a piece of copper wire. Fig. 2 shows how the PrepPen removed tarnish from a coin.

Lew could not find them at chain car part stores, although auto body shops use them. He finally ordered them online from [www.handsontools.com](http://www.handsontools.com). Enter

"PMC3437" in the keyword search.

The PrepPen is manufactured by Pro Motorcar. At under \$5 it won't break the budget, and Lew suggests ordering refills, as the PrepPen will probably get a lot of use. He keeps one on the bench, one in the toolkit and one in the home shop. They also make a great giveaway

Fig. 3: Stabilant 22 is a liquid contact cleaner.



Recorder. This chemical contact cleaner is available through distributor Broadcasters General Store ([www.bgs.cc](http://www.bgs.cc)).

Stabilant 22 is an electric contact enhancer that meets both EPA and the Canadian WHMIS environmental regulations. A photo of the sample, complete with an application brush, is seen in Fig. 3.

**I**ndianapolis WISH(TV) Channel 8 engineer Tom Weber put together a pocket-sized LNB voltage meter in a miniature plastic box. Adding a female F connector, LNB voltage can be quickly verified.

Tom's finished instrument is pocket-sized and shown in Fig. 4.

**W**e've all heard of building an emergency studio in a closet.

With that in mind, the acoustical treatment folks at Auralex Acoustics ([www.auralex.com](http://www.auralex.com)) came up with a novel product.

Senior Sales Engineer John Lynch

(continued on page 14)

for friends.

A few years ago, Lew was working for NASA. He attended a high-reliability hand soldering course. And 80 hours later, Lew knew how to solder! In the course, they used the pencil-type typing erasers for soldering prep — remember them?

**I**f you search the web for information on Cramolin, an amazing contact cleaner and restorative sold in the 1970s and '80s, you'll find the product is no longer available in the U.S. Urban legend has it that the product did not meet EPA regulations and was discontinued.

Caig Laboratories ([www.caig.com](http://www.caig.com)) replaced the product with DeoxIT, readily available stateside.

Alternatively, I recently received a sample of Stabilant 22 from American



Fig. 4: Tom Weber's LNB voltage measuring device.



Fig. 5: Auralex Acoustics MudGuard v2 provides microphone isolation.



THERE'S A NEW MEMBER TO THE AARON FAMILY



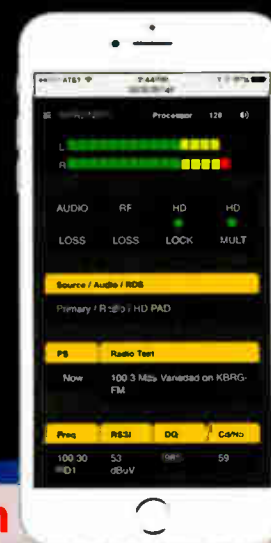
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# “Antenna Physics” Illuminates Fundamentals in 160 Pages

It's a bargain for broadcasters who want to learn more about RF dark arts

## BOOKREVIEW

BY JAMES E. O'NEAL

There is a common element to every radio system, be it transmission or reception, and that is the antenna. But even though it is an essential system component, historically it's been the least understood, especially on the transmitting end of things. Designs sometimes seem to have bordered on luck and black magic: “Get as much wire up as high as you can and tune for maximum current!”

I once took a course on antenna theory; the instructor, a college engineering professor, remarked that many antenna designs originated from persons such as him, who then left the explanation as to how they worked to grad students for thesis projects.

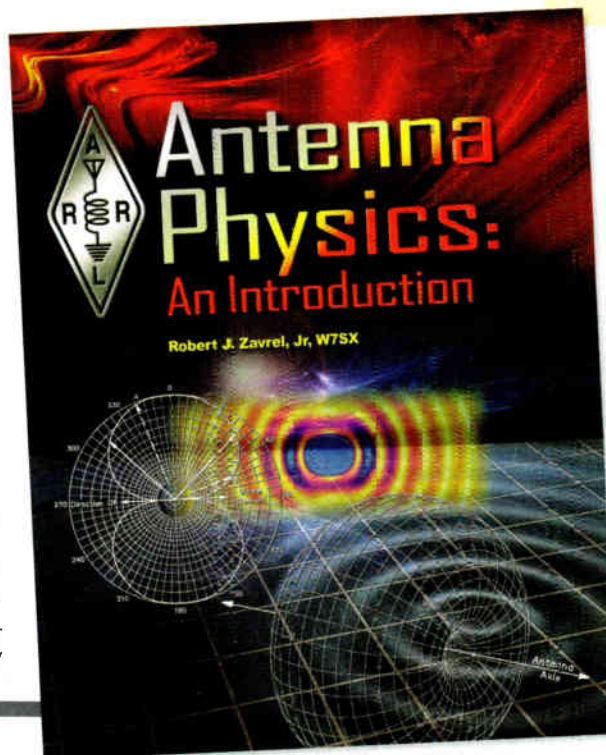
ning to experience what will likely become an acute shortage of persons with RF knowledge and training (including antenna theory). There are fewer and fewer “senior operators” out there to share knowledge and answer questions in this area.

Where does one go to gain insight in this “darkest” area of radio?

### ANTENNA BASICS FOR HAMS

An excellent bit of illumination recently appeared in the form of a 160-page book by a radio amateur who's also an RF engineer, Robert J. Zavrel Jr., W7SX.

While the book may have been targeted to “hams” and was published by the world's largest amateur radio association, it really



**Zavrel is aware that his readers may not all be on the same footing in terms of mathematical preparedness.**

Back in the good old days, when the FCC was still issuing the coveted First Class Radio Telephone licenses, the exam question set (at least as I recall after a half century or so) only included one or two antenna theory-related questions that dealt with voltage and current distribution across a dipole element.

Truthfully, most of what little I know about antenna theory was not taught in the classroom but rather gleaned from digging through obscure and generally unavailable tomes or picking the brains of various consultants and operators more learned in such matters.

However, I don't need to remind anyone in our industry that we are begin-

belongs on the bookshelf of anyone in the broadcast engineering profession who cares to learn more about what happens to the RF current once it leaves the transmitter.

Driving this home is a chapter devoted to vertical radiators, an antenna design certainly well-known to the amateur radio community, but not deployed in large numbers by amateurs operating in HF spectrum due to height restrictions and the requirement for a fair amount of horizontal real estate in order to deploy the accompanying ground radials. Author Zavrel takes a deep dive into vertical theory, examining such items as the influence of soil conductivity on performance, electrically short verticals, multielement verticals (directional arrays), and more.

“Yagi-Uda” and cubical quad antennas get their own chapter, as do transmission lines, and there's a “catch-all” chapter which includes loops, helicals, parabolic and corner reflectors and even traveling wave (Beverage) antennas.

To illustrate the timeliness of the book, there's even mention of MIMO (multiple-input/multiple-output) system

technology, which is arousing considerable interest due to the desire to pack more and more information transmission capability into the ever-decreasing amount of RF spectrum available.

In addition to treatment of such specialized designs, “Antenna Physics” provides a good grounding in basic antenna and transmission theory fundamentals such as antenna gain, radiation resistance, path losses, free space impedance, and much more. (Early on, the author includes a well-written section on Maxwell's equations, fundamental in explaining the whole concept of radiation of energy across free space.)

Certain parts of Zavrel's book may seem a bit intimidating if your math

**“Antenna Physics: An Introduction”**  
by Robert J. Zavrel Jr.  
Published by the American Radio  
Relay League  
ISBN: 978-1-62595-049-9  
Price: \$29.95

skills are slightly rusty. However, this is more than made up for by the inclusion of numerous pictures, tables and graphs, which help to explain this perhaps most mystifying area of radio.

Zavrel is aware that his readers may not all be on the same footing in terms of mathematical preparedness, as one of the appendices is titled “You Already Know Calculus,” in which he explains the power of this branch of math and the fact that it's not really that difficult to grasp, even if you haven't had a formal classroom immersion.

The book does not necessarily have to be read in a strictly linear fashion. I found myself reaching a certain point, putting it down for a while and then returning to explore a different topic.

Yes, there are other textbooks that provide contemporary information on antennas and antenna systems, but they typically have one thing in common: a big price tag. At \$29.95, Zavrel's “Antenna Physics: An Introduction” is a bargain, in terms of the cost versus the amount of knowledge offered. The book is available from the ARRL online bookstore and via Amazon, which offers an eBook edition for \$9.99.

Regardless of the preferred format, if you're interested about what happens to the RF going out the far end of your transmission line, you should have a copy.

*James O'Neal is a contributor to Radio World and former technology editor of TV Technology.*

## WORKBENCH

(continued from page 12)

of distributor Broadcast Supply Worldwide ([www.bswusa.com](http://www.bswusa.com)) demonstrates the MudGuard v2 in Fig. 5. It's a unique microphone isolation solution. The proprietary convex design diverts internal shell reflections, offering improved microphone performance. Flat or concave shields focus energy toward the microphone.

John says this MudGuard v2 is ideal for podcasting studios.

Planning a studio overhaul? John

recommends “Acoustics 101: Practical Guidelines for Constructing Accurate Acoustical Spaces.” Open or download this 52-page PDF by clicking on the “Acoustics 101” link in the top banner ribbon of the Auralex website.

*Your tips to Workbench will help fellow engineers and qualify for SBE recertification credit. Send your ideas to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com). Fax to (603) 472-4944.*

*Author John Bisset handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.*

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# EAS, WEA Both Have Their Place

Both platforms need to be nourished

## COMMENTARY

BY WARREN SHULZ

*Responding to Kevin Curran's commentary titled "EAS Is Still Relevant as WEA Works Out Kinks" in the Aug. 2 issue of Radio World:*

Kevin, referring alert recipients to local media outlets is a hard sell. If they can even access a local source, most stations likely will not be carrying information about the alert but airing routine programming. It all depends upon when one listens, and to which station.

I was at the Lake County Fair last week when an Amber Alert was sent to cellphones. All necessary information was provided. But the location involved was several counties away. If I'd tuned to local terrestrial stations, I doubt I would have received useful information about this alert.

ing long-form alert information. Critical Primary Entry Point and Local Primary stations are part of a defined monitoring network that links the wireless terrestrial broadcasters for ad hoc emergency traffic dissemination. This is a strength — and it is the inverse of the cellular network, which will fail soon after power outages.

But many terrestrial radio stations today are "storefronts," with no humans present. Many at times are simply automated PCs playing the hits. Many stations in the continental United States have chosen or been forced to cut costs to the operational skeleton. As a result they are not offering live delivery and at best may offer satellite-delivered newscasts. They meet minimum compliance requirements with an automated EAS device. And the only alert requirements, by regulation, are a weekly test, monthly test and standby for an EAN. Everything else is voluntary.

A press release from FEMA reports that the planned September CONUS EAS test will use the same process as the previous one. So yes, the NPT (National Periodic Test) code test will work well using CAP via internet. This is a cellular alert to which the station's equipment responds via IP connection. It is an IP test, not an EAS test of the

performs the RMT via that plan.

The only CONUS EAN end-to-end test was in 2011 and it did not turn out well due to an audio issue. For a system that has been in place in one form or another for over 62 years, an end-to-end EAN test is overdue.

Many threats face the continental United States. Power grid attacks, EMP events and earthquakes are a few of the obvious wide-scale "system" failures that would warrant a CONUS alert. It's for this reason I felt the EAS initial short-

**Can we hope the Washington bureaucrats will see through the fog of alerts and warnings, and come to a similar conclusion about a rewrite of Part 11?**

Your article defined several barriers to EAS alerts to the public. You pointed out that time shifting on DVRs is a common problem; that internet TV offers no EAS, so cable cutters will not see an alert; that Bluetooth listening to a playlist is not serviced by the EAS, nor are Wi-Fi-connected automotive users.

You noted that the EAS over-delivers on affected areas, making messages ineffective; that TV stations are over-covering large areas, with the same result; and that alerting agencies other than the National Weather Service are not practiced in alert delivery, thus alerts can be incorrect or missing entirely.

### RESPECTIVE STRENGTHS

The strength of terrestrial EAS is in its wireless daisy chain for deliver-

Further, terrestrial media search results vary by time of day and formats available. In my county fair example, no one had a radio nearby. An exception would be smartphones with FM receivers enabled. But most users would search the web for follow-up information, not attempt a terrestrial search.

Morning radio is well manned, of course. In the Chicago market, 30 live morning shows are available on weekdays. Major markets have all-news formats if you know where to look. Often these are AM/FM simulcasts. When all else stops, terrestrial radio, in particular AM radio, will be on air as the last delivery system. Those cellphones will become paperweights as cell sites go dark and user's batteries expire.

The cellphone text alert is the front line of alert dissemination. It supersedes terrestrial broadcasting in that millions of smartphones are carried and monitored 24/7. Cellular alerting's strength is the ability to store an alert for review, which is not an option for terrestrial broadcasters. Expansion of text to 360 characters is a good step to making the user decide what to do; it would be even better if multiple languages could be selected by the user.

**OPINION**

## EAS Is Still Relevant as WEA Works Out Kinks

WEA alerts should direct citizens to tune into local stations

**COMMENTARY**  
BY KEVIN CURRAN

Whether it was UNCLE RAID, the Emergency Broadcast System or today's Emergency Alert System, broadcasters have been tasked with responsibility for mass notification for 63 years.

You can count me among those broadcasters who have wondered if the audience would be aware in the event of an actual emergency. A study I conducted and recently published in the peer-reviewed Journal of Emergency Management provided support for those skeptical of the effectiveness of the EAS. But it may also present a sobering reality to emergency managers, who might expect more from both media and cellular notification systems than they are likely to receive.

Today's EAS covers over the air TV and radio, satellite radio, DHS and

an Amber Alert. The "connected cars" rolling off assembly lines will only decrease the likelihood of drivers making an audio choice that could receive an EAS activation.

**INSTRUCTORS AND OFFICIAL INFORMATION**  
An assessment of warning systems for the Federal Emergency Management Agency determined six actions need to be taken for a warning to be effective:

1. Hearing it
2. Understanding its message
3. Believing the accuracy and credibility of the warning
4. Personalizing the warning
5. Confirming the warning is true and others are taking action
6. Taking their own action

An advantage of EAS is that viewers or listeners are not likely to doubt the accuracy or credibility. However, personalizing the warning may be a challenge.

**Broadcasters should be pushing for a procedure where a WEA message refers to local stations by frequency so users would know where to tune for official information.**

From wreck and the lack of an EAS alert that a trainee cloud was spreading through part of the city. Many reports blamed the absence of an alert on the untested operation of the local radio stations because police officials said they could not reach anyone in the studio. A post-event investigation found that officers were calling an EAS phone line that had been disconnected when the stations gave the dispatch center an EAS encoder. That encoder had never been installed.

**THE CELLULAR OPTION**  
In 2013, Warren Schulz, a veteran Chicago engineer and former Illinois EAS chair, suggested in Radio World, "EAS cannot be fixed and should be closed down. Rely on cellphone text alerts. If desired, reserve the EAS's radio daisy chain for long-form messages."

FEMA and the FCC sought to address some of these concerns with the Integrated Public Alert and Warning System. It includes the EAS and what is now called Wireless Emergency Alerts (formerly known as the Commercial Mobile Alert System and the Personal Localized Alerting Network).

Another challenge for EAS is the

This system of systems' approach has a goal of issuing an alert within 10 minutes that will reach 85 percent of a potentially affected population. WEA activations are supposed to override other cellular traffic with a 90-character message accompanied by a distinctive tone and vibration to all properly equipped and programmed cellphones in a designated area.

The NWS generates the most EAS activations, and has decades of experience with mass notifications that may not be the case with local emergency officials. Most broadcasters have heard the tale of the Minut, N.D.

This is a development welcomed by Megan Hoaglin at the Arizona Dept. of Emergency Management, who noted, "EAS does not depend on any one technology."

With cellphones in just about every one's pocket, it would seem that WEA could replace the other mass notification systems. An update to that old saying may go, "You can lead a person to information that could save their life, but you can't make them receive it."

Immediately after one of the first stream was full of users asking what had happened to their phones.

Again, later tweets explained how the settings could be adjusted to turn off two of the three alert categories (national alerts cannot be disabled).

A 2013 study of post-alert Twitter comments for FEMA's parent agency, the Department of Homeland Security, showed this user reaction was not unusual. The DHS consultants admit their anecdotal evidence points to a need for further study of message content, geo-targeting and both understanding and improving the response to the

Continued on page 32

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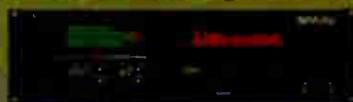
Los Angeles

Still audible signal  
with AirAura X3 processor



Extent of clear, strong signal  
with AirAura X3 processor

San Clemente



Map indicates the  
extended range from  
Wheatstone's processor  
with multipath control.

Oceanside

Escondido

Extent of clear, strong signal  
with non-Wheatstone processors



San Diego

KSDS Transmitter

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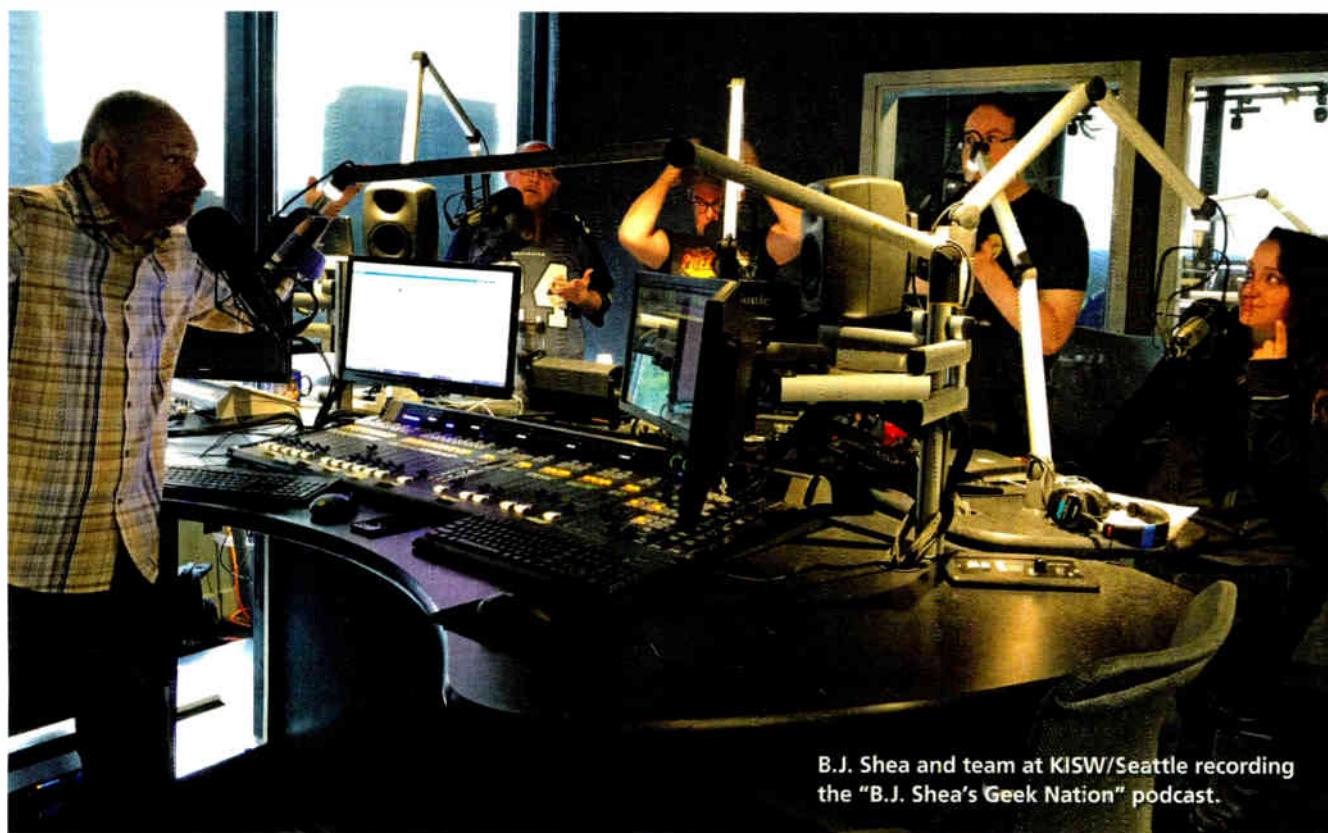
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World Radio History



# From Broadcasters to Podcasters

Maybe this is where the next generation of radio talent will emerge



B.J. Shea and team at KISW/Seattle recording the "B.J. Shea's Geek Nation" podcast.

## 21<sup>ST</sup> CENTURY PD

by Dave Beasing

With the announcement that Entercom is buying a 45-percent stake in podcaster DGital Media — the latest radio company to invest in digital on-demand audio — it's clear that our industry's leadership is well aware of the growth in podcasting.

Here, veteran programmer Dave Beasing joins the Radio World team with the column "21st Century PD," in which he will explore ways that local program directors and talent can prepare themselves for a digital future.

Let's begin by asking this question: After you first plugged a DVR into your living room TV, did you find yourself watching fewer live over-the-air pro-

grams? A lot fewer?

The advent of digital on-demand TV caused radical changes to viewing habits; so many predict that easy access to on-demand audio will change "radio" listening habits.

According to the latest Edison Research "Share of Ear" study, one in five minutes of audio consumed by Americans is on their smartphones, where podcasts have a standard built-in app. Smartspeakers like Amazon Echo and Google Home are best-selling new gadgets, and — with only a simple voice command for either — Alexa can just as easily play your favorite podcasts as stream live radio.

Digital entertainment systems in new car dashboards also put podcasts front and center. Many new car buyers are opting to use Apple CarPlay or Android Auto to, in a practical sense, replace their car's built-in features with the apps on their smartphones, including the podcast "button."

### TIME OF CONVENIENCE

Amplifi Media CEO Steve Goldstein believes there's a growing shift from live linear radio to on-demand.

"A good talk show or newscast or feature should be available at a time of convenience. Programmers need to ensure this content is available on all

platforms," says Goldstein.

But while simply time-shifting on-air content can help retain your audience, Goldstein sees a lot of radio content do poorly as podcasts.

"I'm pretty sure no one needs to hear 'Almost Impossible Trivia' on demand. People have to seek out and download a podcast, so the interest threshold is much higher than punching up a station," he says.

Goldstein suggests asking talent to offer a "deeper dive" into their most

## ABOUT DAVE BEASING



Dave Beasing's vision as program director of Entercom's KSWD(FM) in L.A. has helped lift the station from also-ran to classic rock leader. His results speak for themselves — in news/talk for Dick Ferguson's NewCity Communications, at Viacom's AC stations in the '90s, and as architect of the Modern AC format on LA's Star 98.7. As a senior consultant at Jacobs Media for 12 years, he provided counsel to hundreds of media brands.

Recently, Dave's 100.3 The Sound has cut through the clutter using an aggressive social media and video sharing strategy in one of the world's largest media markets, proving that new radio players can compete with heritage brands.

compelling content. For example, an interview with a superstar music artist could be longer on the podcast, or offered as a podcast separate from the archived on-air show.

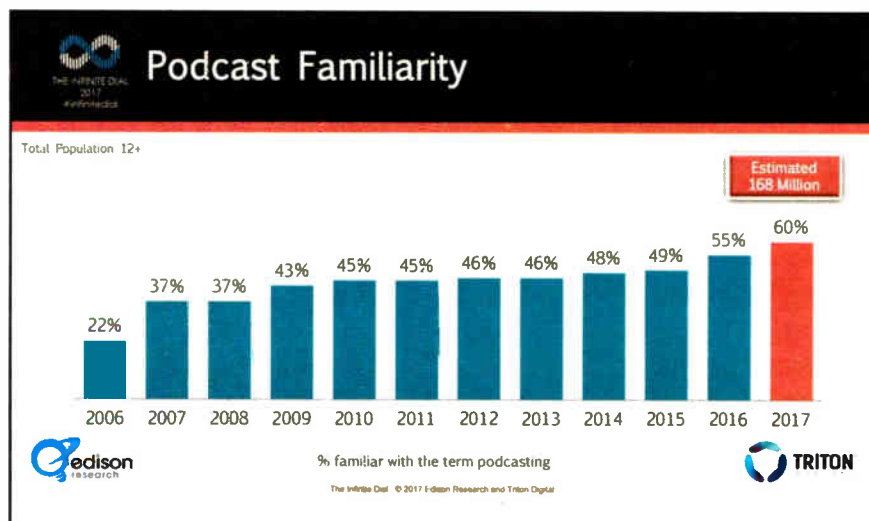
"Post what is most interesting and valuable to listeners," he says. "Sometimes content can exist on both platforms, but a lot of it lives better on one or the other."

### RIVER OR TRIBUTARY?

To explain the difference between on-air and on-demand content, Entercom Seattle VP/Programming Dave Richards uses a metaphor: "Radio is the mainstream river, and the podcasts are its tributaries."

(continued on page 20)

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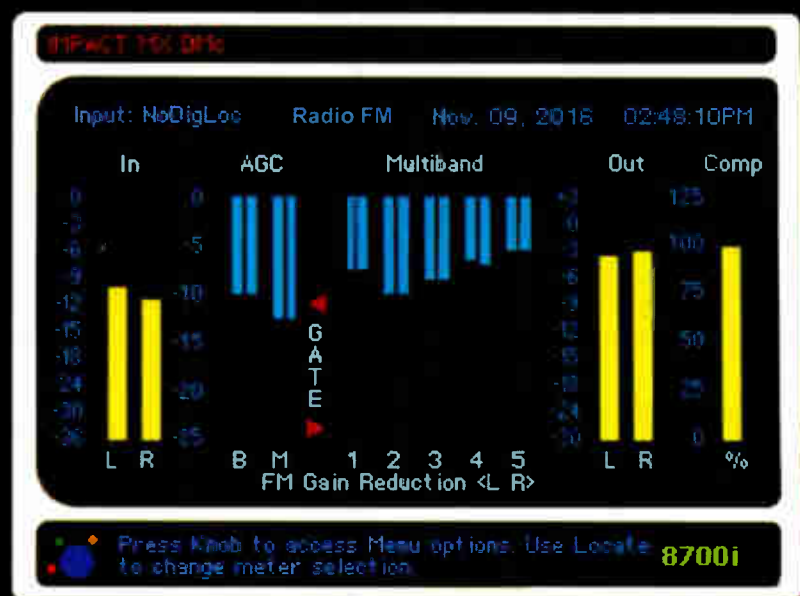
An image from the Infinite Dial report by Edison Research and Triton shows the growing familiarity with podcasting.



# LEAVE YOUR COMPETITION IN THE DARK

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# SHIPPING NOW!!!

# Your Public File Is Now in a Fish Bowl

People will be watching, Montero says; here are more tips to keep in mind

## REGULATION

BY PAUL McLANE

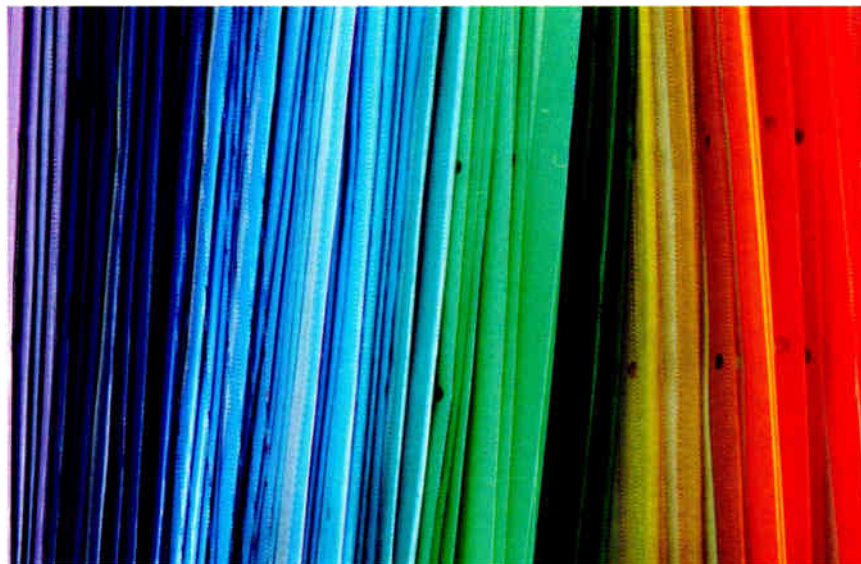
The public file has been part of life for radio and TV broadcasters for a long time, but the FCC has made several notable changes in its rules lately.

Frank Montero, managing partner of the law firm Fletcher Heald & Hildreth, will participate in a webinar in October about the public file process, produced by the Colorado Broadcasters Association (see link at end of article). Radio World asked him for an update on the topic.

*Radio World:* What's your top-line message to broadcast owners and managers about the public file?

**Frank Montero:** Don't let the relaxation of the FCC public file rules, such as the removal of the public correspondence requirement, cause you to take the obligation lightly. The FCC is cracking down on public file compliance and issuing hefty fines for violations. Moreover, public files must now be online for TV and larger commercial radio stations with five or more employees in the top 50 markets. Non-commercial radio stations with fewer than five full-time employees will have to put their files on line starting in March of 2018.

This means that the FCC no lon-



Frank Montero

ger needs to send an inspector to your studio anymore. The FCC's Enforcement Bureau will be able to monitor your public file compliance from the comfort of their computer screens back in Washington, D.C. TV stations found this out when they were applying to participate in the reverse auction.

Remember that at renewal time you will have to certify that your public file is complete and the contents were timely filed, only now there will be an FCC official back in Washington who will be able to confirm, in real time, whether your answer is accurate.

*RW:* Review that commission timetable by which certain broadcasters would

need to be set up online.

**Montero:** TV stations have had their public files online since 2012. Radio stations located in the top 50 markets and with five or more full-time employees were required to have their public files online by June of 2016. So they should already be up and running.

**Don't let the relaxation of the FCC public file rules, such as the removal of the public correspondence requirement, cause you to take the obligation lightly.**

All other radio stations, including non-commercial stations, those outside the top 50 markets or those with fewer than five full-time employees must have their public files on line by March 1 of 2018.

*RW:* What are the questions or concerns that stations have so far?

**Montero:** The most common questions revolve around the technical aspects of setting up the public file, logging on to the FCC system, and establishing links from the station's web page. Stations also frequently ask about retention periods of various materials required to be kept in the public file.

However, with the public file now going online, there are actually some stations in a panic asking very basic questions about what needs to be in the public file. I think the process of putting the public file online and making it public is causing many stations to dramatically rethink their internal public file maintenance practices.

*RW:* For those that have already made the transition, how are their daily operations different?

**Montero:** I actually think that for those stations that have made the transition to an on line public file, the process is easier.

For one thing, apart from some AM applications still filed on paper, stations no longer have to place filed FCC reports and applications in the public file because that is done automatically. Also, if you have to place the same document into the files of multiple stations across a large geographic region, that can now be done with a single click rather than having to make multiple copies that are sent out to multiple station GMs.

In contrast, you have to appreciate that your public file is now in a fish bowl and observable by anyone who logs in, so an effort has to be made to keep it current. Every station should name a staffer in charge of public file maintenance. It's like balancing a checkbook: If you maintain it every day it's easy, but if you let it slip over weeks or months, it's hard to catch up.

*RW:* How does the whole correspondence file aspect play into this now? What's left of that?

**Montero:** Back in January, the FCC voted to do away with the requirement that commercial broadcast stations retain in their public inspection files copies of letters and emails from the public concerning their stations' operations. The rule went into effect as of June 29, 2017.

This type of local correspondence had been the only thing broadcasters were still required to maintain in their physical public inspection file (due to privacy concerns, these documents were never included in the online public file). With this elimination of the correspondence requirement, at least for broadcasters who have transitioned to the online public file system, there is no longer any need to maintain a hard copy public file at their main studios (which may themselves not be required for much longer).

*RW:* What else should managers know?  
**Montero:** I think it's important for all

(continued on page 22)

## PODCASTING

(continued from page 18)

Richards encourages his talent to create original content solely for on-demand listening, asking, "What do you love to do? Chances are you're not alone. What are you an authority on?"

Goldstein agrees, adding, "Podcasting is growing because it covers so many things most radio stations don't get to, whether it's travel, woodworking, real estate tips, e-sports, science. Focus on filling niches and delivering unique difficult-to-duplicate content."

Richards cautions, however, that some interests might be too narrow even for podcasting. For example, he's a Rube Goldberg fan but realizes that talking about a cartoonist who died in 1970 is just too obscure.

Consistency and commitment are important, too. KISW morning host

B.J. Shea's daily "Geek Nation" podcast is five years old, and KNDD morning man Greg writes, produces and voices a new "Nerd Talk" every day.

For local TV stations, as little as 10 percent of viewers still watch using "rabbit ears." Will digital distribution of radio — with all of its on-demand capabilities — become as prevalent?

"Only time and technology will tell," says Richards. In the meantime, he doesn't see a downside in using radio's enormous reach to extend and grow its talent and brands via podcasts. "Why wouldn't we take advantage of new distribution channels and get started playing in this sandbox?"

For radio broadcasters, Richards is blunt about the risk of not podcasting. "Remember when the music business didn't embrace file sharing? Don't be that guy."

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# Capture Hearts With Local Events

Listeners remember anytime radio gets involved off the air, in the community

When Entercom CEO David Field issued a statement about the company's merger with CBS Radio, I was drawn to one word in particular.

Field said, "We are building a company to win and thrive and prosper in the years ahead. Radio is the #1 medium in the U.S. and no company will have a stronger lineup of outstanding local brands, content, personalities, marketing solutions, digital assets, events and other resources."

The magic word that grabbed me? **Events.**

In many cases over the past decade — due to smaller staff sizes and a concentration on the "core" business of selling advertising — organizations have eliminated senior positions in promotions and marketing, placing that responsibility on a very busy program director. Inevitably, involvement with events both small and large has been sacrificed.

I have long contended that events are vital to radio's local connection. While a listener may not easily recall the call letters of stations they listen to, they will almost always remember which radio station events they attended. Even years after stations have switched formats or disappeared, locals reminisce about the good old days when a certain event was part of their lives.

## A CASE IN POINT

The WHFStival, a huge radio concert produced by the now bygone alternative station in Washington, D.C., became so iconic that years later it still comes up in the press and in social media chatter.

There's another reason events are a key to success: profit.

I remember debating a corporate suit about a relatively costly event. He deemed it "too expensive" and "risky." He explained that this specific event "only" doubled the investment.

K-Rock Syracuse has its own "Beach House" at the New York State Fair.

Call me naïve, but I'll take doubling my investment any day.

As to risk, there's no question that events require professional management — in particular, a sales professional. And the best choice of sales pro may or may not be the same person who manages on-air sales.

In my experience, sales managers with the right skill set are gifted at putting together sales packages that included a nice mix of on-air spots, on-air promos, an on-site booth and product sampling, on-site signage, free tickets for the event, social media/web-site/email exposure and more.

Conversely, sales managers who focus too strictly on the air component don't grasp how much value can be added for advertisers who care just as much — and

perhaps even more — about this variety of strategies that make the most of an event.

Does a station have to own its events? There are certainly advantages to controlling a large event, but it is not always necessary. For example, I've worked with open-minded, collaborative nonprofits that have provided staff, media assets and sometimes even funding in return for a portion of the proceeds. Whenever stations can partner with local charities, it's a win-win situation. This enables stations to contribute to the fabric of the local community while adding exposure and manpower to the event itself.

I like the idea of doing four major events per year, ideally one per quarter. For most of the United States, this means doing both indoor and outdoor events. In

## PROMO POWER

Mark Lapidus



addition to the concerts I've mentioned, there is a wide range of events within several categories that stations can promote. You have sports-oriented 10K runs, marathons and bike-a-thons; consumer-focused auto and motorcycle shows, garden shows and — in certain communities and formats — gun shows; and finally, community events such as state fairs, fireworks shows, food festivals and other traditional seasonal gatherings.

Not all events have to be large. Regular appearances at bars/restaurants, grand openings, city activities and even local political debates, all come with connections to local people, one-on-one interactions.

When executed properly, radio station events can leave positive memories for listeners, generate money for stations and charities alike and help bring communities together.

Activate your brain trust and start your calendar planning today!

## PUBLIC FILE

(continued from page 20)

managers to stay on top of the public file rules because they are fluid. This current administration intends to make significant changes in the FCC's media rules. Tracking rule changes as they're reported in Radio World and on blogs like my firm's *CommLawBlog.com* is critical.

I think we can expect more changes in the future. Aside from keeping abreast of rule changes, I recommend conducting your own audit or self-inspection of what's in the public file and removing those documents that no longer have to be there. Remember that a radio license renewal cycle will be coming up between 2019 and 2022 and stations will have to certify that their public files are current and that all material was timely filed. So now would be a good time to start doing an audit of those files in preparation for your FCC license renewal.

Frank Montero and Steve Lovelady of Fletcher, Heald & Hildreth will conduct a webinar for the Colorado Broadcasters Association on Oct. 12 covering online public file requirements and procedures for radio stations subject to the March 2018 deadline. It will be archived afterwards. Learn more at [www.coloradobroadcasters.org](http://www.coloradobroadcasters.org).



# HIGH CAPACITY EVENT STUDIO TRANSMITTER LINKS



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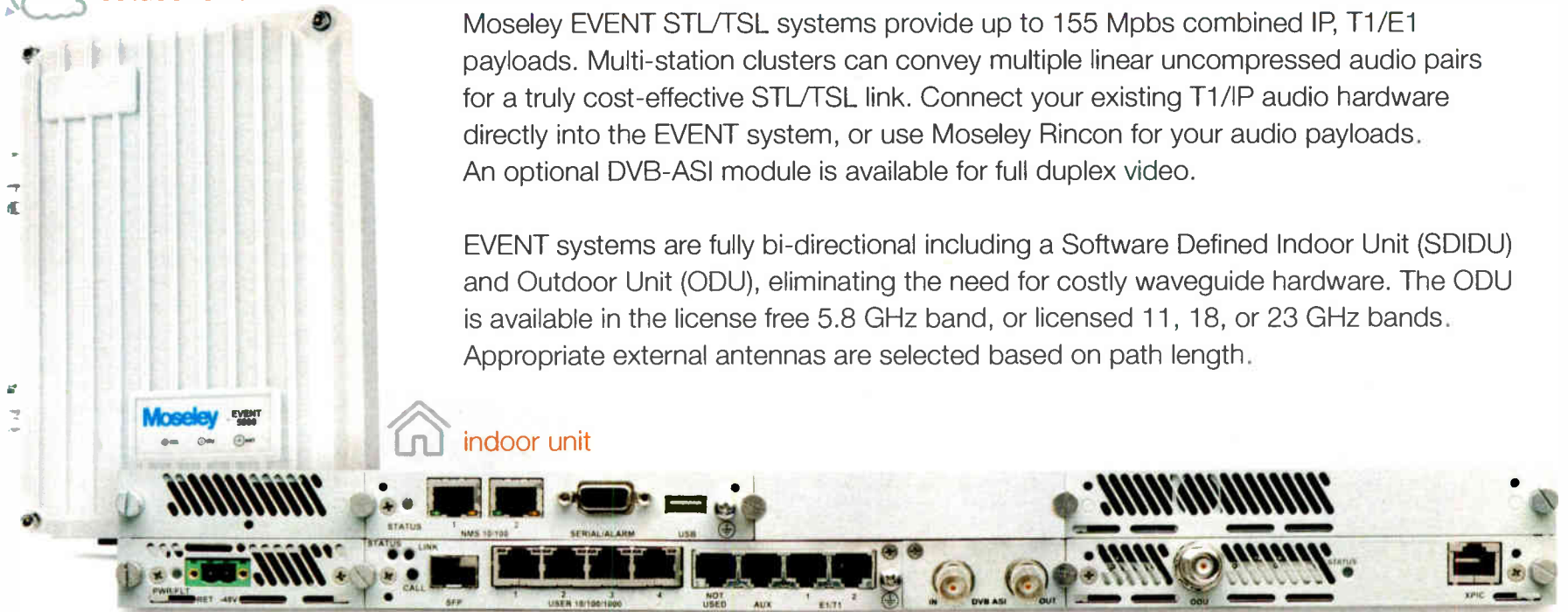
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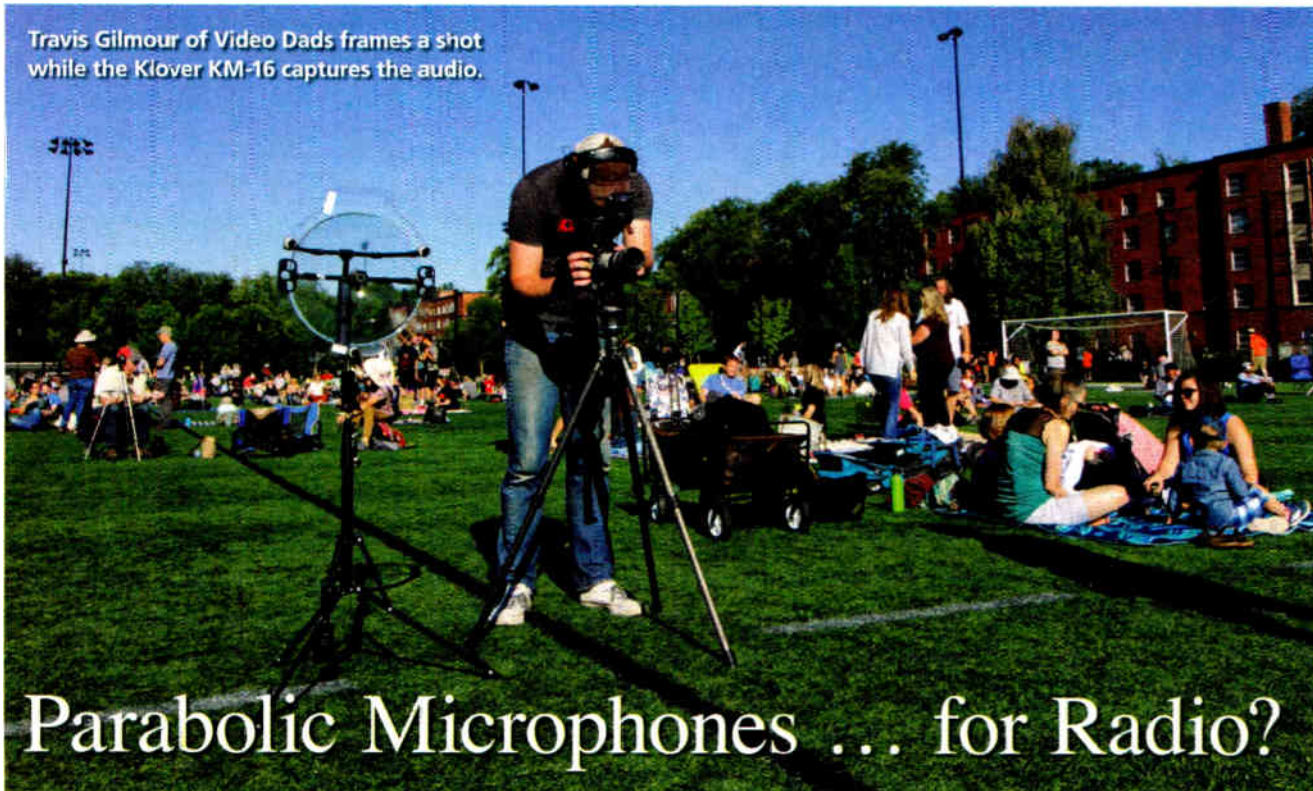
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Travis Gilmour of Video Dads frames a shot while the Klover KM-16 captures the audio.



## Parabolic Microphones ... for Radio?

"Dish Mic" might seem a luxury — but not for a well-equipped video/audio-acquisition operation

### **VISUALRADIO**

BY TRAVIS GILMOUR

For most radio and video journalists, a shotgun and a lavalier microphone are pretty much the salt and pepper of sound acquisition in the field. But recently parabolic microphones have started to appear in productions outside of their typical use in sporting events and nature documentaries.

Video Dads recently took the Klover MiK 09, from Klover Products (<http://kloverproducts.com/shop>), for a spin in a review used as an on-camera parabolic microphone. Also known as the Sound Shark, it's really pretty small (compared to the traditional options), but it still offers some of the benefits of larger, professional parabolic sound capture to the videography or radio journalism world. It's a unique alternative to shotgun microphones, and it'll be interest-

ing to see if it's adopted by event and documentary producers. You can find the review at [www.geardads.com](http://www.geardads.com).

But is there also a place for the more traditional, mid-size Klover MiK 16 (also listed as KM-16) in broadcast radio and video production? We were curious, so we took this bigger brother 16-inch parabolic microphone to a once-in-a-lifetime event: the recent total solar eclipse in Corvallis, Ore. Klover microphones are a staple in live sporting event productions such as the NFL and Olympic coverage, but we wanted to see how one would fit into a typical news or documentary workflow.

#### INTERESTING OPTION

The first thing you should know about parabolic microphones is that what you're buying is really not the microphone. The real product here is the physical dish that is designed to focus sound into the center of a parabolic dish. With the Klover setups, you can use any lavalier microphone to capture the sound itself. The company provides several mounting options for the dish along with preamplifiers and lavalier microphones from Sennheiser (MKE2-P), Countryman (B3) or their own KMEQ.

But with the basic package, it means if you already have a favorite omnidirectional lavalier mic, you can use it.

It's fairly simple to setup and remove when you need the mic for more traditional interview recording. This feature alone makes a parabolic microphone an interesting option for budget radio and video producers — if you can only really afford one trusted lav mic, you can use it for both interviews as well as long distant audio capture.

The Klover MiK 16, starting at \$1,249 is not as large as Klover's flagship parabolic microphone, the MiK 26 (KM-26), which can collect audio from 500 feet away. That's the setup you'll see on the sidelines of major sporting events. But, at 16 inches across, the

MiK 16 definitely still draws attention to itself. At the eclipse event, multiple people came up to us, asking what in the world we were doing with this gizmo.

So while perhaps a parabolic microphone doesn't often turn heads at a sporting event, in a typical environment, you can expect some interest from passersby. That's an important consideration for those who want to capture location audio without drawing attention to themselves, especially solo multimedia journalists.

On the plus side, the Klover MiK 16 can pick up sounds from up to 300 feet away. For productions where you can't get that close to subjects, that can be an unprecedented lifesaver. We used a super-telephoto lens (Canon 70-200 mm with a 1.4x extender), so we shot from a distance where most subjects could not even see us. This enabled us to capture candid and natural crowd reactions, a far cry from placing a shotgun microphone inches from a subject's mouth.

With a tool that can record conversations from hundreds of feet away, there are of course some privacy concerns. But radio and video professionals will know when it's inappropriate to use high-powered tools — such as super-long lenses — when other options are available. Public events where you can't or don't want to get any closer to subjects, however, are a perfect case for the parabolic mic.

#### PUT THEM TO WORK

Imagine an assignment where you're recording local sporting events, and you don't have access to the fully-loaded trucks and associated crews, that major outlets bring to big events. Parabolics would be ideal for large remotes, for instance at a city park or local arena.



This view of the smaller MiK 09 provides a detailed look at the lavalier microphone module.

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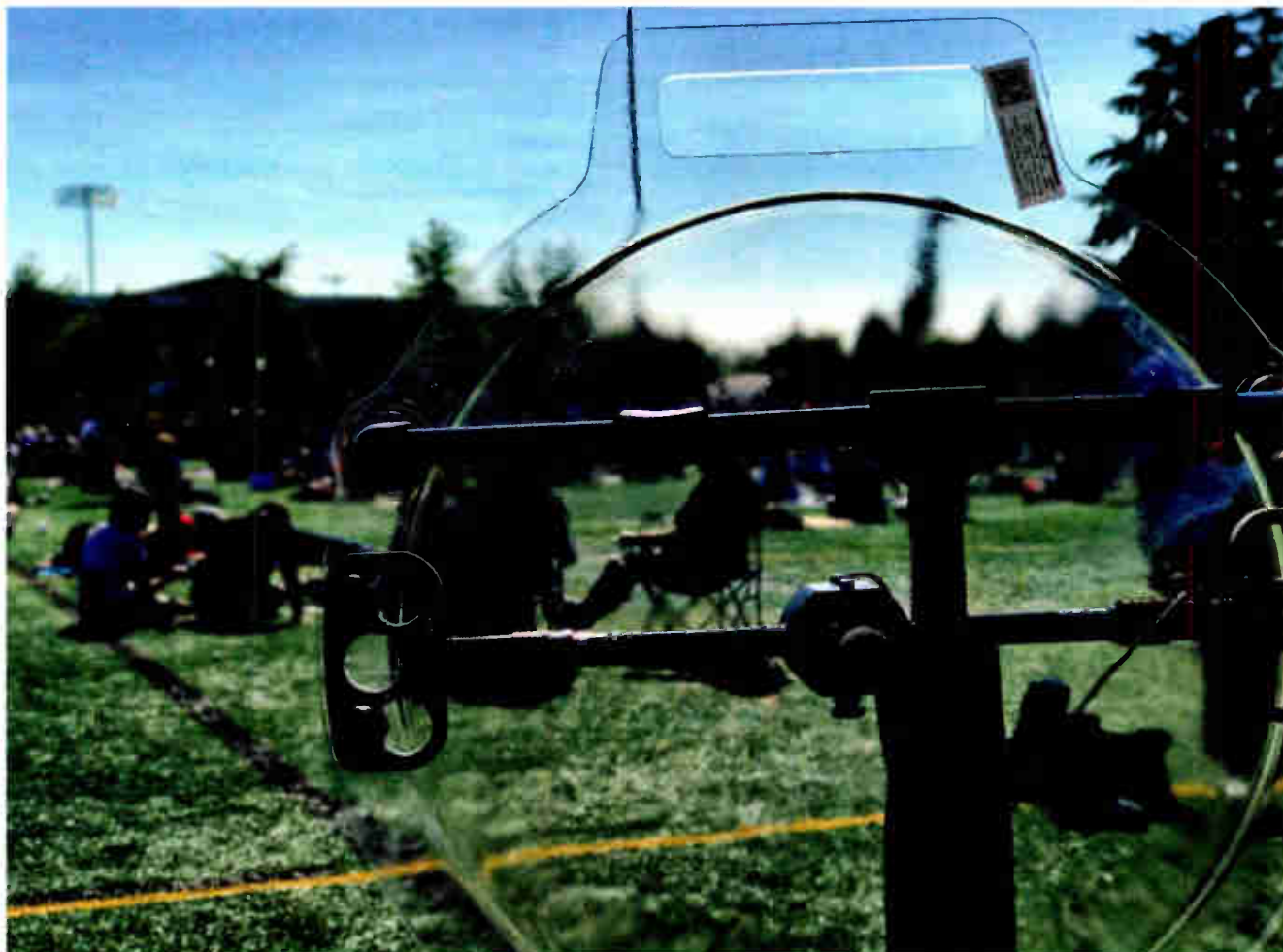


Your station may be spending a lot of money and has heavily promoted an event so why fall-down on the effort with unprofessional sound?

A serious news department could make use of an MiK 16 covering news events or demonstrations, where you can capture the crowd noise and reactions without overly influencing the scene or getting too close to dangerous situations such as fires. Or if you're tasked with covering townhall meetings where audience members are asking questions from their seats, without microphones. There are many situations where being able to record from a distance can be essential to telling a good audio story or avoiding personal injury or equipment being damaged.

In our case, we found the MiK 16 to be very easy to use, surprisingly lightweight, and overall it did a good job of capturing dialog from a distance. Now, at an eclipse-watching event where thousands of people are talking at a normal conversational level, there's only so much magic you can expect from the parabolic, or any microphone for that matter. But when compared to a handheld or on-camera shotgun, we were able to isolate dialog that would otherwise have required a wireless lavaliere attached to a person to capture.

As with any microphone, the raw recording can always be improved with some common EQ techniques and post



The Klover MiK 16 in action during the solar eclipse event at Oregon State University in Corvallis, Ore.



A view of parabolic microphone design on the MiK 09.

production noise removal tools. In our experience, the capture from a parabolic microphone does a good job of diminishing off-axis sounds, while highlighting the area that the microphone is pointed toward. It should be noted that parabolic mics are known to be a little "tinny," which means they're prone to gathering human voices and natural sounds that have a higher frequency than more bassy sounds. What all that means is when you want to EQ your

parabolic recording, you can better isolate the human voice distinctly from a host of common ambient sounds like music, wind or traffic.

Is there a place for a small- or medium-size parabolic microphone in your audio or video production kit? We think it's a useful tool that many small, but professional, crews or stations should consider adding to their arsenal. While wireless lavalieres are extremely handy, they can experience drop outs, and

sometimes you simply can't attach a lav to the person or object you want to capture. Having an alternative method of recording distant sounds can be the difference between an average story and a sound rich, immersive experience.

Travis Gilmour is co-owner of Video

*Dads*, an Emmy award winning production company specializing in video storytelling for documentary, corporate, and public media clients. Video Dads also run the site [geardads.com](http://geardads.com), which provide video and audio gear reviews for professional media producers.

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**MARKETPLACE**



**It's Like Magix:** Digital audio workstation software developer Magix continues its spate of major releases — this time for its Sound Forge platform.

Sound Forge Audio Studio 12, the company says, is built on a 64-bit architecture and sampling up to 32-bit/384 kHz. Besides standard editing and processing

tools, it has a number restoration and audio cleaning tools, including some from iZotope (Ozone Elements 7). Included in the editors are new styles such as slice editing, soft cut and crossfade editing.

In addition it also adds tools for CD mastering. Audio for video tools are also included. Price: \$59.99, \$29.99 upgrade from earlier versions.

Info: [www.magix.com](http://www.magix.com)

**Larger Pouch:** Pelican Products cases need no introduction to veteran engineers so for product blurbs it can be "just the facts, ma'am."

The Air Case line of lightweight general purpose carry-alls is getting three new and deeper members — 1557, 1607 and 1637. The newbies offer 13-inch depths. The 1607 and 1637 are wheeled.

Air Case standard features include HPX plastic body, watertight O-ring gasket, crushproof construction, rubberized handles and double-throw latches. Black, yellow, orange and gray are color options.

In addition Air Cases offer four interior options utilizing choices between different dividers, foam or open box.

Info: [www.pelican.com](http://www.pelican.com)

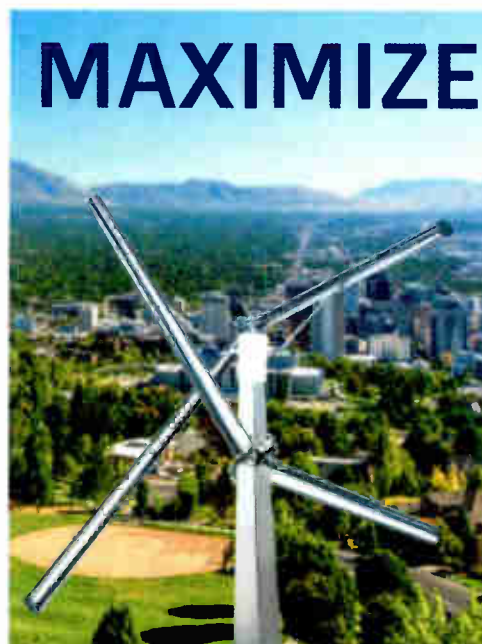


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# LPFM Puts Digital Radio to Work

California grade school is first low-power FM to go HD Radio; shares its early observations



Students produce their first live talk show in HD Radio. From left: **Jace Brock, Alexandria Torres, Jack Davis, Houston Bradeson.**

## DIGITAL RADIO

BY RALPH MARTIN

*The author is education director for Vacaville Christian Schools Radio Conservatory.*

No doubt, many low-power FM station operators entertained the thought of HD Radio broadcasting early on. That's the way it was with us at KVCB(LP), an LPFM grade-school radio station owned by Vacaville Christian Schools in Vacaville, Calif.

the "dream mode." And oh my, can motivated people dream!

Of course, reality soon set in, and we were focused on just getting on the air. Building an LPFM radio station is costly — even if all of the work is done by volunteers. We certainly had great volunteers! Parents of students were driving copper rods into the earth for our ground system, installing a mast for the antenna and running cables. Even the transmitter equipment rack was welded together by a student using metal scraps from his uncle's ranch.

As for me? I'm the station's chief engineer, operations manager, broad-

construction permit was granted.

Then came the realization that once a station is built, the real work begins. A radio station has to be fed programming constantly, and my students took it from there, producing shows to fill the broadcast day.

Everything was running fine, but only in analog.

### THE MOVE TO HD RADIO

Two years later, the HD desire was still there for us. Radio is moving the way of all other forms of media, and I wanted our students to be a part of the movement.

With the huge generosity and commitment of our school and community, we were able to acquire the necessary



Middle school students make music for airing on the HD2. From left: **Benjamin Garcia, Juliana Burns, Sydney Barber, Aliya Burns and Ryan Elledge.**

HD Radio equipment. From there it was back to "construction mode."

We began installing the additional equipment, adding an antenna bay to raise the gain and running additional studio feeds. The kids were ready with additional programming. We were broadcasting in HD by March 3, 2017. The feeling of turning on the HD Radio system for the first time was very much the same emotion as when the transmitter was first fired up. Fellow LPFMers will relate to that.

We've found several benefits of HD Radio:

**1.** In HD Radio mode, the service is more consistent. Dropouts due to tropospheric ducting and multi-path cancellation can be a serious issue for LPFM stations, with their low power and low antenna height. The digital signal appeared to react a bit differently from the analog within our service contour — filling in spaces for each other as the receivers blend between them.

In fact, at times the HD works in places where the analog signal struggles. The result is a more consistent signal throughout our community. For those with HD Radio receivers, the overall listening experience improved tremendously.

**2.** Additional sub-channels (HD2, HD3) provide increased options for our listeners. Our HD2 is dedicated to student-produced music and sound art. Called "Sound Art Central," the channel allows the kids to experiment with recording nature and adding sounds to create soothing and sometimes dramatic effects. The VCS Radio Symphony and Jazz (our student orchestra) provides student compositions and orchestrations. Lots of creativity and a very interesting channel.

Our HD3 is a lower-bandwidth mono channel we call "School Connect." It focuses on school news sports and art performance announcements as well as broadcasting schedules for all three channels. As filler we'll use classic radio shows from the early days of radio.

**3.** Increased interest and heightened perception that come from being a station on the cutting edge of broadcast technology.

We have also experienced some challenges:

**1.** The single-bay antenna we were using was inadequate for our purposes. We needed to add a second element to increase the gain so the transmitter could handle the additional power requirements. Also, our antenna system needed to be well tuned with a better than 1:1:1 match.

*(continued on page 30)*

**Radio is moving the way of all other forms of media, and I wanted our students to be a part of the movement.**

However, we believe KVCB was the first LPFM actually to implement HD Radio (and as I write there is only one other, WGVV(LP) in Rock Island, Ill., listed in the FCC database with hybrid digital authority).

Radio World asked me to share our experience and observations as an LPFM broadcasting in digital.

### GETTING STARTED

We were really excited when we received our initial, analog construction permit from the FCC. We had a feeling like we could do it all. I call this stage

casting instructor — anything I'm needed to be.

Actually, I'm not an engineer at all; by profession I'm a full-time music teacher. But in the world of LPFM, that qualification sometimes has to be good enough. It meant sleepless nights studying; it meant weekends on the roof learning how not to look down when installing and field-tuning an antenna. I'm not complaining, though. Building the station was fun. I was committed to it, and I loved every single minute.

All said and done, we were on the air about nine months from the time our

# LPFM IN HD

(continued from page 29)

2. There is a diversity delay needed so that the HD1 and analog timing mix perfectly. This was just a matter of playing a digital and an analog radio together in a room and adjusting the analog delay until the echo was gone. It was quite easy to accomplish. The sub-channels don't have the blending feature so no synchronization is needed for HD2 and HD3.

3. Processing the HD1 audio to match the sound of the analog counterpart is important for LPFM stations. Our low power and low antenna height cause car radio receivers to blend between the two signals often as our listeners travel to the edge of our coverage area. It can be very annoying if the mixing analog and digital signals sound too different. A good matching sound creates smooth transitions and really improves the listening experience over just the analog alone.

### COST CONSIDERATIONS

Budget will be a consideration for any operation, and especially LPFMs. Of course not all will be able to afford it. But it may be possible to bring the price tag for HD Radio well below the \$30K mark. I'm encouraged by Nautel's new combined importer/exporter units, which should significantly cut the cost going forward. It's also important to note that LPFM stations are exempt from the continuous yearly licensing fees for multicast-



**Louise Melendres records school news for the "School Connect" show on the HD3 channel.**

ing. Xperi/HD Radio requires a one-time \$5,000 that can be split into a few yearly payments interest free. It's my hope that manufacturers are open to making HD Radio with sub-channels more affordable for community and school LPFM broadcasters. The future success of HD Radio will require including everyone at the "digital table."

### CONCLUSIONS

So what do I think of LPFM HD Radio overall? I love it. The benefits are huge and the few pitfalls were fun to overcome. Most of our challenges were due to the fact that we were the first LPFM station to adopt HD Radio technology; we were essentially breaking ground as we go. This leads me to my final point: I found little documentation or discussion on the web about LPFM upgrading to HD Radio. What little chatter there was in the LPFM community seemed to be somewhat negative. There seems to be

### OUR EQUIPMENT:

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**Installed equipment after activation; lots of tweaking left to do.**

a longing by some radio folks to keep things analog; others would complain that the digital transition for FM in the U.S. should have been done differently. As in all debate between well-meaning people, there are good points to ponder. I only ask that we LPFM operators begin opening up the discussion to include LPFM's place in the digital landscape regardless of how it develops. There are almost 2,000 LPFM stations across the country! I think we are

certainly sufficient in numbers to get the ears of broadcast equipment manufacturers, the FCC and Xperi to work toward making the upgrade even easier and more affordable. It could be win for everyone. We should at least accept any offer to sit at the discussion table. I thank the great folks at Nautel, Xperi and the FCC for listening and helping. Without you we couldn't have made the upgrade. The station website is [www.vcsr.radio.com](http://www.vcsr.radio.com).

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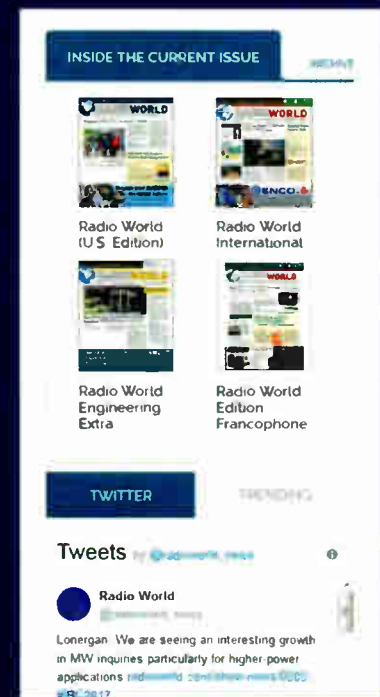
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