



# RADIO WORLD

JANUARY 3, 2018

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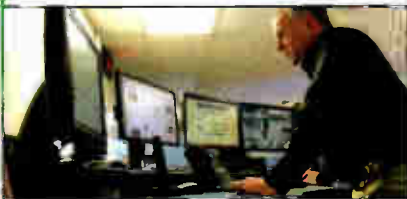
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Patrick Haggel/RFIC

## Mid-band Spectrum Talk Worries Broadcasters

NAB, NPR, iHeart and SBE among those weighing in with spectrum concerns

BY RANDY J. STINE

**WASHINGTON** — Talk at the Federal Communications Commission about how to satisfy demand for wireless broadband has some broadcast organizations on alert for potential spectrum changes that could affect their operations someday.

Earlier in 2017, a blog post by Commissioner Michael O'Rielly about repurposing parts of mid-band spectrum for next-generation wireless networks signaled to broadcasters that change was likely. A subsequent FCC Notice of Inquiry (GN Docket No. 17-183) in August spelled out the FCC's intentions to seek potential opportunities for additional flexible access for wireless broadband services in spectrum bands between 3.7 and 24 GHz.

The FCC mentioned three bands in which it is specifically interested for wireless broadband services: 3.7-4.2 GHz, 5.925-6.425 GHz and 6.425-

7.125 GHz. The commission believes those represent an appropriate starting point for inquiry into expanding access to mid-band spectrum for fixed and

mobile wireless services.

"The commission believes that exploring options to expand access opportunities in mid-band frequencies could further our goal of establishing comprehensive, sound and flexible spectrum policies, enabling innovations and investment to keep pace with technological advances and maintaining U.S. leadership in deployment of next-generation services in the long term," it wrote.

The commission also asked for com-

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## A Cartoonist's Adventures in Radio Illustration

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# Dale Sees Need for Better Alert Training

Local emergency manager is vocal about the need for well-informed EMs and dispatchers

## NEWSMAKER

BY RANDY J. STINE

*One in a series of articles about issues in public alerting and broadcasting's role in it.*

**LANSING, MICH.** — Rob Dale is concerned about how emergency managers use tools for public alerting. After spending 12 years as a meteorologist on television in Michigan, he moved into the disaster world and has been a regional planner with Ingham County Homeland Security and Emergency Management for eight years.

He is vocal about alerting issues, expressing concern that emergency managers, fire, police and 911 dispatchers are given little to no formal training in mass public communication. Commenting recently on an SBE listserv about the use of EAS and WEA alerts, he wrote: "We put a tool in hands of people who don't do this regularly, using software that is far from intuitive, with terms that still confuse people (as we

saw here with IPAWS and WEA and EAS), and an oversight organization (FCC) which says they are not going to get involved with any entity that misuses the system, and all the cards are stacked against it."

Dale graduated from Jacksonville State University with a bachelor's degree in emergency management and earned a masters in emergency and disaster management from American Military University.

Radio World asked him about the emergency management world and his work to develop better methods for communicating disaster information to the public.

**Radio World:** *When we talk about emergency management and emergency alerting, who is included in that group?*

**Rob Dale:** The folks sending out alerts are fire, police, public safety or 911 dispatchers. An emergency manager is kind of like the support staff for the boots on the ground folks. Some are police-based, which is where I am in the county sheriff's department. Some are firefighters and some are independent.

Basically, our role is when the disaster gets too big for police and fire on the scene, then we come in to assist them. We are resource finders. We are like the Amazon of disasters. They will tell us what they need, and we find it for them.

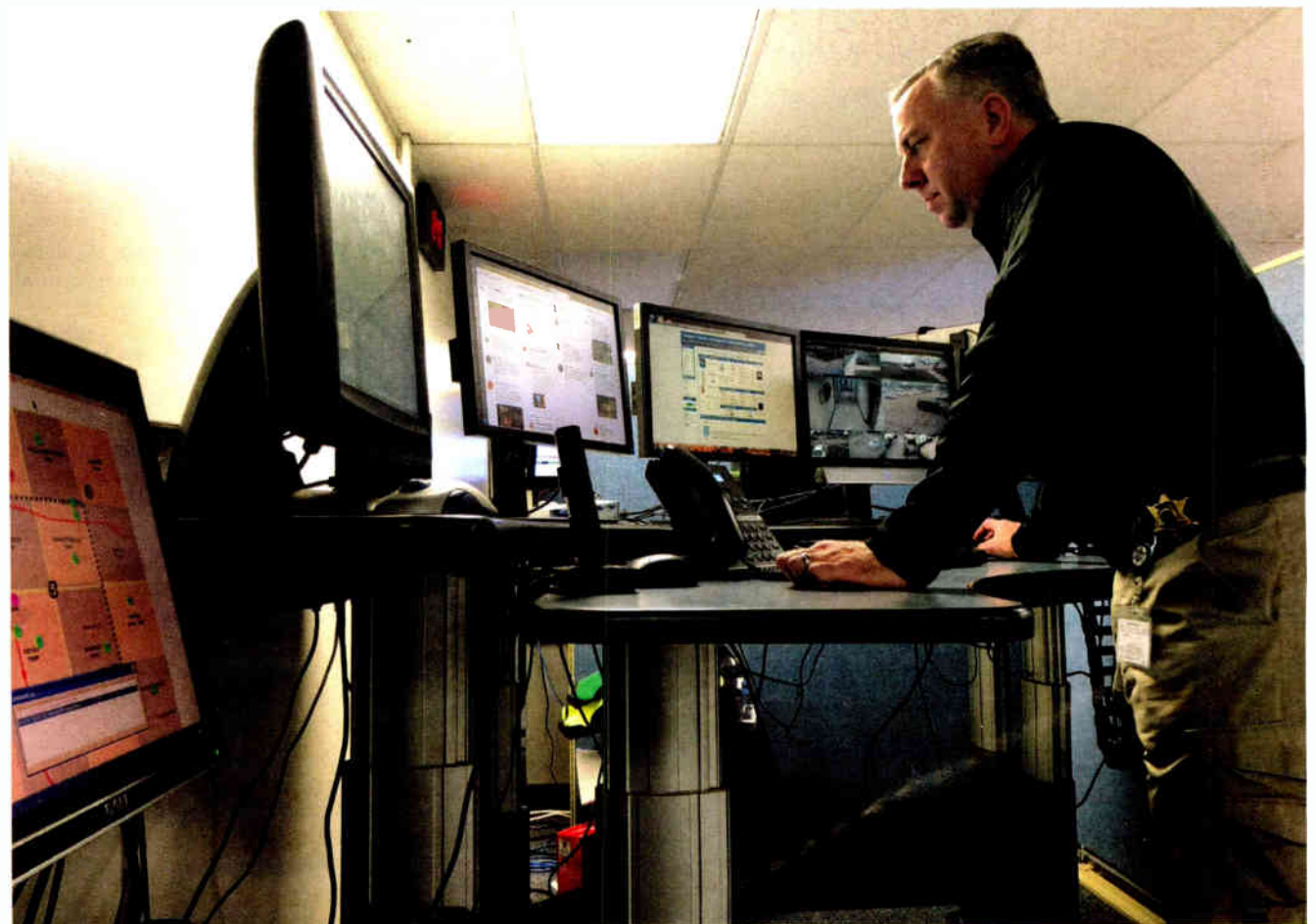
**RW:** *Is there any kind of certification needed to become an emergency manager?*

**Dale:** States usually offer some sort of training that is often required within that particular state for employment as a city/county-based emergency manager. The International Association of Emergency Managers has a certification program that is voluntary.

**RW:** *What types of messages do EMs use EAS for?*

**Dale:** Any sort of notice that using normal communication methods would not be fast enough notification. It's for use when we believe if people don't receive word they could die or be seriously injured. It could be an evacuation notice for a hazardous materials leak or a wildfire. We use press releases and social media for day to day communication but EAS would be for life or death communication. It's the next level.

*(continued on page 4)*



Rob Dale in the Ingham County Emergency Operations Center in Mason, Mich.

**DALE***(continued from page 3)***RW:** *What components of emergency alerting do EMs typically use?***Dale:** The one most people are familiar with is EAS for radio and TV on the broadcast side. It's the scroll on the TV screen and the radio broadcast interruption. That only utilized for emergencies.

More and more, we also utilize the cell phone as part of the Wireless Emergency Alert System, or WEA. The advantage of that is no one has to sign up for it. We push it out, and if you are within the geographic area, you will get it. The disadvantage is that it is very short. You can't put any links or images in the alert. We have up to 90 characters total, which is not a lot of notification, but it is a blanket notice.

Those are the two big disaster notification components that EMs will use.

**RW:** *What are some of the best practices for EMs on how to communicate effectively with the public via EAS?***Dale:** The first part of the message has to be who you are and you have to express that to the public. You are an authority as an emergency manager, and you want to put that through to the public. Then you say what the threat is and what the situ-

ation is. Then the next immediate thing has to be what the public needs to do. Whether they should shelter in place or evacuate. Or even bottle some water. The public needs those three components. If they don't understand who you are, what the problem is and what they need to do then the public may not react to the information.

**RW:** *And what are some of the mistakes emergency managers make in terms of communication?*

**When I send an EAS message I do not know which radio or TV stations are going to carry it. Some stations put everything on but some stations don't.**

— Rob Dale

**Dale:** The biggest issue I've seen is using it for non-life threatening emergency situations. I've heard of EAS being used for temporary road closures for a parade, or as a warning for windy conditions coming the next day. It has to be important — as in if people don't get the message immediately they could die or be harmed. We talk about

AMBER Alerts the same way. It has to be reserved for true emergencies.

**RW:** *How often in your position are you sending out emergency messages to the public?***Dale:** I've sent out a bunch of non-IPAWS [Integrated Public Alert and Warning System] messages through the years. The types of mass notifications we send non-IPAWS includes major road closures due to accidents, evacuations due to concerns from something

like a fire where we are worried it'll turn toxic but isn't at that level yet. If it's hazmat-related, then we'd use IPAWS. I've been here in this office [Ingham County Homeland Security and Emergency Management] for eight years, and I've yet to have to send out an IPAWS mass notification message.

**RW:** *Is there such a thing as warning fatigue for the public?***Dale:** Not necessarily warning fatigue as a whole, but if EAS is used enough for these non-emergency conditions, like school closings, then other things could be ignored. It becomes a tune out. People don't want their favorite TV programs interrupted of the music on their radio for non-emergency announcements.**RW:** *What kind of training do emergency managers get on communicating effectively with the public?***Dale:** Formally, there is very little to none. There are some FEMA online training courses on mass notification that a person has to go through before using the system, but that really consists of clicking some "yes" boxes. That's one of my biggest concerns in the field ... the lack of training in communications. Not only do we not teach EMs how to communicate effectively and concisely, there literally is no way to test a message, especially a wireless alert, before you send it. Another factor is we just don't send emergency messages very often.**RW:** *You've said elsewhere that EAS alerting for EMs is far from intuitive. What do you mean by that?***Dale:** It's really a down-the-line issue for us. When I send an EAS message I do not know which radio or TV stations are going to carry it. Some stations put everything on but some stations don't.

**Dale at the weather map for WLNS(TV) in Lansing in his days as a meteorologist.**

It's the same thing with wireless emergency alerts. When we send those out we don't know exactly where it is going to go. We don't get a list of the exact towers that are going to push that message out. We get an approximation map but that's it. I think at times the technology side just hasn't kept up.

**RW:** *What do EMs think of broadcasters and the EAS role they fill?***Dale:** I think it has really changed the past 10 years or since I have worked in emergency management. A lot of EMs have police or fire backgrounds and so I think the relationships were contentious at times. Now I think we see it more of a partnership. I know I do. We know that despite all the tools we have we cannot push emergency information out and that we need broadcast partners. In Michigan, we are meeting currently with many broadcasters here to review EM policy and EAS messaging to maintain those relationships, but that varies state by state. We do understand more and more broadcasters are automated and that we may not find anyone home if we call at certain times.**RW:** *What are some good talking points to begin discussions between broadcasters and the emergency management community?***Dale:** It would be phenomenal if we heard more often from broadcasters. We'd like to know how we can help broadcasters. In some states broadcasters can now qualify for first informer credentials. That's something we can help with. Often times we know of the broadcast stations in our areas but we don't have those personal relationships in many cases.**RW:** *Bad audio quality bugs radio broadcasters. How should EAS audio quality issues be addressed?***Dale:** I think it has improved greatly. The systems that are deployed now to EMs do auto-voice or in some cases have a microphone to record a message. It's the content of that message that is the most important thing. I think steps have been taken to address poor-sounding audio.

*(continued on page 5)*

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# Best Practices for the Digital Dash

A recent webinar for NAB members focused on how radio stations' content and brands look on digital dashboards.

Fred Jacobs, president of Jacobs Media, did an audit of the FM band in several markets to see how stations with RDS or HD Radio showed up. "It was an eye-opener for us," he said. "Much of this information was set up years ago, often without the input of the program director. It reflects the input of prior ownership or management."

Jacobs suggested best practices including:

- Optimize branding; don't miss opportunities to present your brand, personalities, shows and advertisers.
- Display personalities and programs. "A station's biggest capital investment is usually in the talent it hires and the shows it airs," said Jacobs. "Yet these are largely neglected on the display."
- Strategize spoken word displays. Many news/talk stations still showed displays left over from music formats.
- Review all artwork. Jacobs found many inconsistencies with art and graphics.
- Pay attention to identification and branding on HD2 and HD3 channels, not just HD1.

— Tom Vernon



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Paul Kaminski

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- Conduct a review of the entire market; use cars with both RDS and HD displays. Engineers and programmers should do it together; include the sales manager too.
- Standardize the use of RT and PS fields. The 64-character RT field is for artist and song title information at music stations, and can be used for host and guest names in talk formats. Be consistent in capitalization and removal of metadata notes.

(continued from page 4)

**RW:** What things did you learn from working in the media that helps you today communicate effectively as an emergency manager?

**Dale:** To tell the story with as little technical information as necessary to get the message across. When I was a TV meteorologist, as much as I wanted to tell people about synoptic lows and mesoscale highs, they don't need to know that. So from that we now know condensing a message down is best. If a toxic chemical spill occurs it's probably not that important to tell people right away what kind of chemical it is but rather what they need to do next and the steps to take to fix it.

**RW:** What's coming next to the world of emergency alerting?

**Dale:** Social media is changing things a bit. We really thought Facebook was going to be the next big thing, and then they changed the algorithm so when we push things out not everyone sees it. It depends on people sharing it. I think Twitter has looked at it. But broadcast remains the backbone of EAS along with the new wireless alerts.

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## MID-BAND

(continued from page 1)

ments about modifying or eliminating existing rules to allow for wireless services to share the spectrum.

Industry observers say broadcasters utilize 3.7 to 4.2 GHz for satellite C-Band downlinks while 6 GHz spectrum includes C-Band uplink. O'Reilly estimated in his blog post that there are 1,500 unique commercial C-Band earth station licenses in the United States; many in broadcasting consider that estimate low. They argue many more unregistered downlinks may be in use by radio and TV broadcasters, noting that registration isn't required by the FCC, which also leaves them unprotected from interference.

The commission previously carved out more space for mobile broadband spectrum, a move that directly affected broadcasters, according to Chris Imlay, general counsel for the Society of Broadcast Engineers. He wrote about the topic in the October issue of the society's newsletter: "The FCC has made its long-term strategy clear: As the demand for mobile services and products continues to increase, it is essential for the commission to continue making spectrum available."

FCC Chairman Ajit Pai appears to be supportive of commission efforts to peel away at spectrum within the broadcasting realm to help satisfy appetite for wireless broadband. He released a statement with the FCC's inquiry: "As the world goes wireless, [and] as consumers rely ever more heavily on their mobile devices, we need to keep up and that means in part looking at spectrum bands in the middle [bands] where the FCC historically hasn't focused."

A spokesperson for the FCC, in an email to Radio World, called it essential that the commission make available spectrum in the low-, mid- and high-frequency bands to support a diversity of applications and uses. The frequencies between 3.7 GHz and 24 GHz historically have not received as much attention in the context of mobile use as low-frequency spectrum below 3.7 GHz (e.g., the AWS-3 bands, 3.5 GHz) and high-frequency spectrum above 24 GHz (the Spectrum Frontiers bands), the official said.

"There is growing interest from

industry and others for 'mid-band' spectrum between 3.7 GHz and 24 GHz. Mid-band spectrum offers a balance of coverage and capacity that could provide a critical input to operators to deploy new and improved wireless services. To evaluate whether such spec-

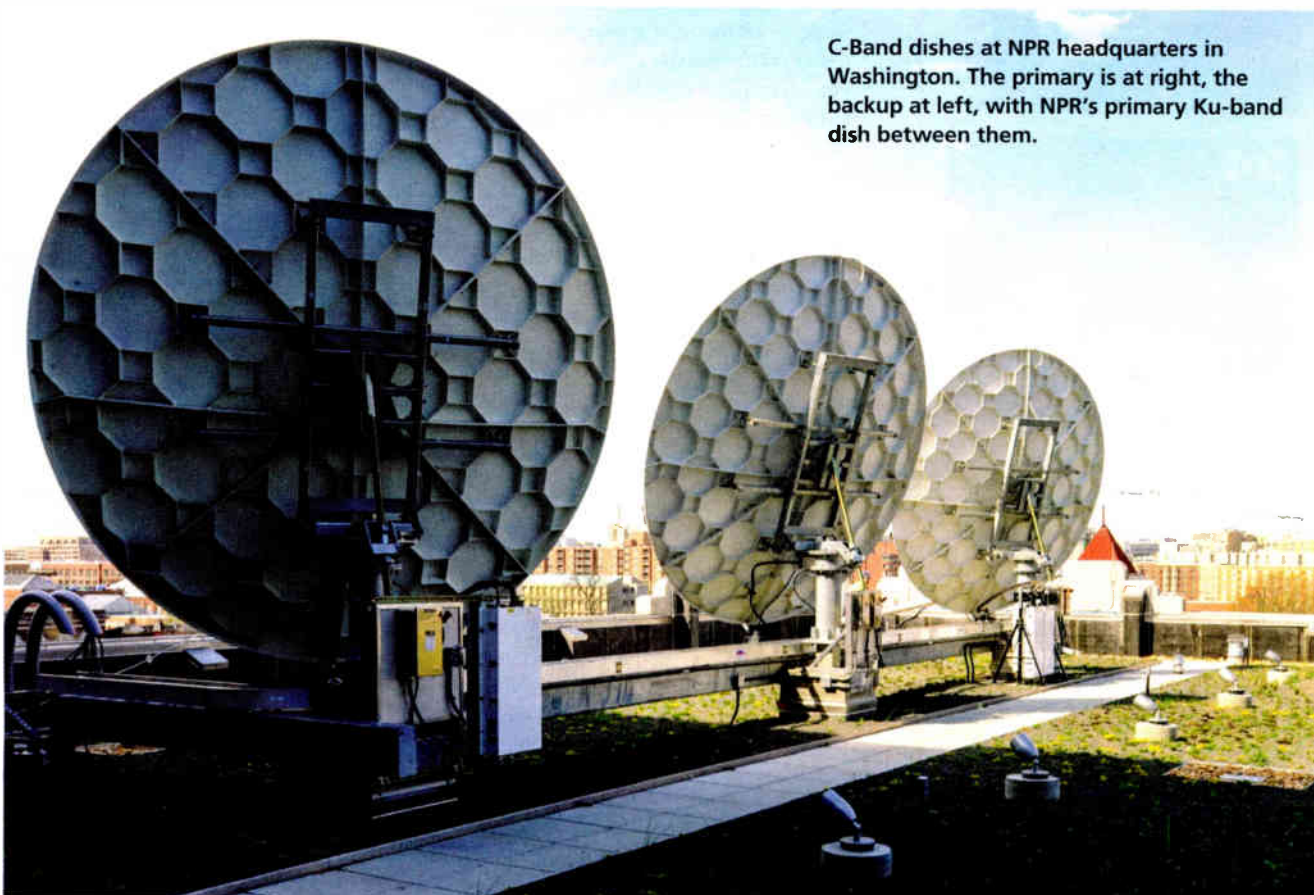
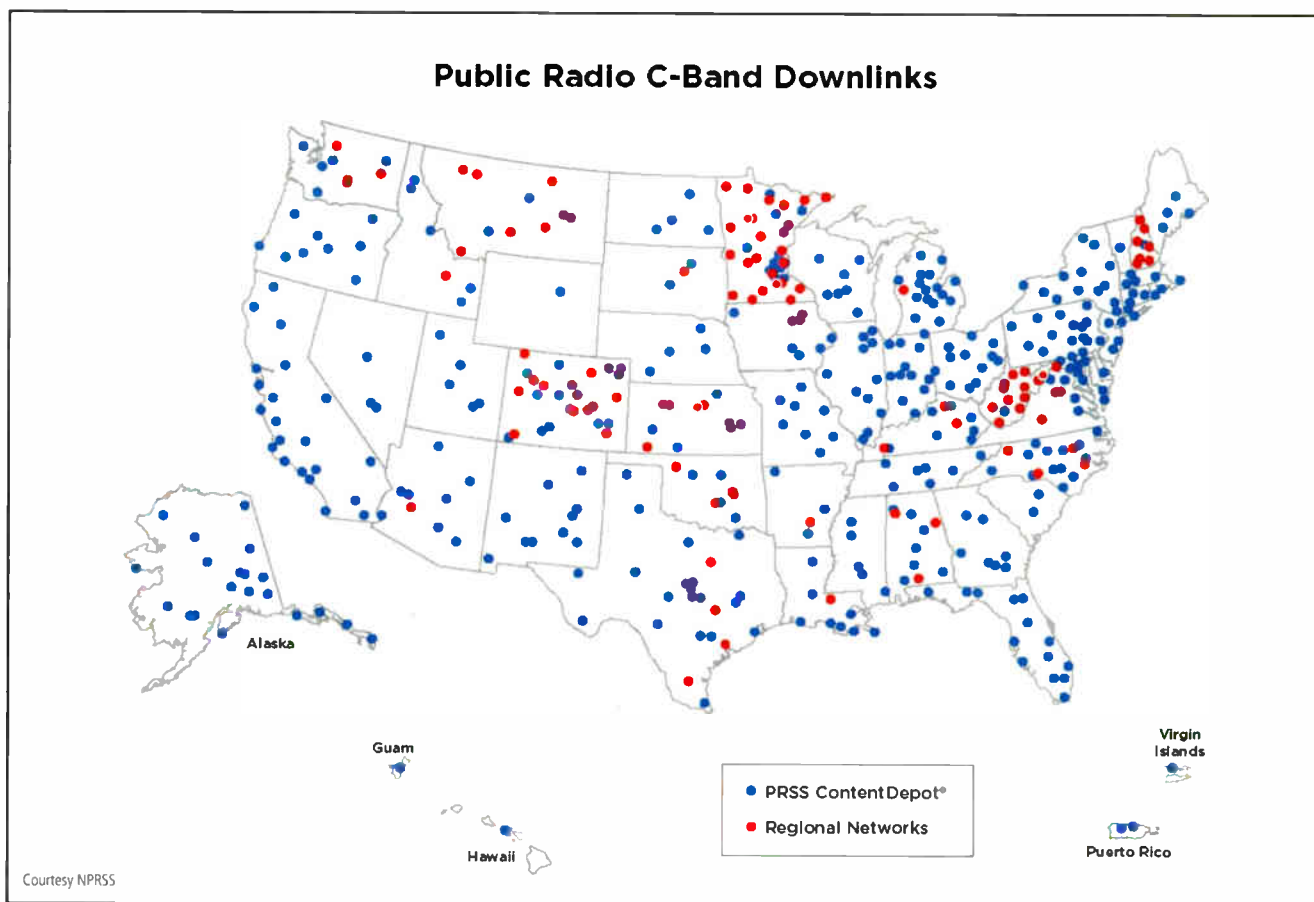
trum is available for wireless broadband use and explore options for making it available in the future, we believe it is time to explore the spectrum in the mid-bands."

Joe Snelson, immediate past SBE president and an independent broadcast

consultant, is worried that sharing mid-band spectrum will impact more than just C-Band satellite spectrum.

"The 6 GHz is where a lot of ENG stuff occurs. Mobile and temporary fixed operations for broadcasters. And

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Repointing and tending dishes for iHeartMedia are engineers Jacob Herslip in Dickinson, N.D., Tim Guentz in Sioux City, Iowa, and James Houghton in Wichita, Kan.

## MID-BAND

(continued from page 6)

7 GHz is where all of the TV broadcasters have STLs and inter-city links. That band is also used by Part 101 users. So there is a lot of potential for interference issues that could be affected by this," Snelson said.

Snelson is among those who believe the number of C-Band downlinks is being dramatically underestimated by the commission.

"There's way more than 1,500, and those unregistered links will not be protected. Getting them registered requires a broadcaster going to a commercial frequency coordination company to get a study done. That study can protect you from new interference coming in. But it does cost money including the filing fee with the FCC," he said.

Demand for wireless broadband spectrum won't end anytime soon, Snelson said; and days of the FCC "pigeon-holing" spectrum to be used only for a fixed service or mobile are over; they'll all be intertwined, and the question is how can that be done and how incumbents can be protected. "It will be a challenge," Snelson said.

The National Association of Broadcasters urged caution in comments to the FCC, calling for protection of incumbent services.

"The FCC should require specific technical proposals for any expanded use of the band to allow stakeholders to provide technical analysis, and to ensure that any commission decision is based upon a sound engineering foundation," it wrote.

Also, "the commission should not seek to fit a square peg into a round hole by allowing expanded operations that are technically incompatible with exist-

ing operations in a given band. Forcing fundamentally incompatible services to share spectrum band will only undermine the value of spectrum for those services by setting the stage for inevitable and harmful interference."

### "IT'S A BIG DEAL"

One NAB official familiar with the issue said the C-Band is critical in delivering most network programming in this country for radio and TV. "Distributors of programming send out programming over the satellite links using

and the satellite guys keep 400 MHz," he said.

National Public Radio wrote in its comments to the FCC that the push for terrestrial broadband will directly affect incumbent operators such as itself. The Public Radio Satellite System utilizes the C-Band to distribute programming to NPR and non-NPR radio stations and has 475 receive-only earth stations.

"NPR is concerned that additional terrestrial use spectrum between 3.7 and 4.2 GHz [C-Band], particularly for mobile broadband, would threaten the

company told the FCC.

Premiere Networks, owned by iHeartMedia, distributes programming to its 5,000 radio affiliates via their receive-only earth stations operating in the 3.7-4.2 GHz portion of the mid-band.

Wireless carriers have been particularly active filing comments on the FCC's mid-band inquiry. T-Mobile, Sprint, AT&T and Verizon all reiterated the importance of the FCC's recent efforts to expand flexible access for wireless broadband services.

AT&T wrote, "Given the importance of spectrum as an input to the mobile broadband market, AT&T commends the FCC for undertaking to develop a spectrum pipeline capable of accommodating future demand. AT&T also believes that the Lower C-Band warrants further investigation and holds some promise for flexible use."

But in reply comments in November, NPR said that many of the comments from wireless broadband advocates gloss over an irreducible fact: "Sharing C-band spectrum in a way that preserves incumbent uses like the public radio system is simply not possible with current technology."

The NAB official called it unlikely that the wireless industry will ever stop clamoring for spectrum. "The FCC has done an excellent job satisfying them to this point, but the demand is increasing. At some point one would think there would be an adequate amount of spectrum out there."

What next? The FCC would file a Notice of Proposed Rulemaking, if it decides to move ahead with a proposal, then collect more comments before making a final decision on the matter. Several observers said any final decision is "likely several years away."

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

**Sharing C-band spectrum** in a way that preserves incumbent uses like the public radio system is simply not possible with current technology.

— National Public Radio filing

C-Band spectrum. It's a big deal and raises concerns about interference."

The FCC's solution could result in more people sharing the spectrum, he said, but technological incompatibility is a major hurdle.

"If they decide to mix mobile and fixed use, it could destroy the value of the spectrum. You have to figure out a way to protect fixed use if you allow mobile use. That means figuring out the separation mechanisms. For broadcasters there is no perfect substitute for C-Band. Fiber could be an option but it is super expensive and not available everywhere. It's not always economical to build out fiber," the NAB representative said.

Another scenario might see the FCC splitting up the spectrum piece by piece. "Maybe give 100 MHz for wireless use

public's access to public radio stations broadcasts," NPR wrote. "The PRSS is completely dependent on extremely low-power satellite-to-earth-stations C-Band downlinks, which in turn, are particularly susceptible to interference. NPR has similar concerns about its corresponding uplink frequencies from 5.925 to 6.425 GHz."

Likewise, comments by iHeartMedia underscore the concern of radio broadcasters, especially those that depend on the C-Band for reception of programming.

"Earth station reception from satellites is highly sensitive to interference, so that authorizing other services to install nearby transmission systems would likely create intolerable interference to established satellite reception,"



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# WFAE Aims for Digital Innovation

Public station targets younger demos through “personal, localized on-demand” experience

## DIGITAL MEDIA

BY TOM VERNON

How to utilize technology to better connect with an audience, particularly the younger demographic?

This is an ongoing challenge for public radio stations. WFAE, “Charlotte’s NPR news source,” has developed a plan to address that need. It involves merging NPR news with enterprise reporting about local events in Charlotte and delivering it on NPR One, the app for mobile devices that connects users to public radio’s news and information feeds, as well as podcasts. To help launch the project, it recently received a \$100,000 grant from the Knight Foundation.

### PODCASTS AND MORE

WFAE currently serves approximately 220,000 listeners weekly with an award-winning lineup of local, national and international news, along with weekend entertainment programs from NPR, American Public Media, Public Radio International and Public Radio Exchange. In addition to its 90.7 FM signal in Charlotte, the University Radio Foundation Inc. operates 90.3 in Hickory, 106.1 in Laurinburg and 93.7 FM in Southern Pines.

Early in the process, the station had to create a position to oversee and administer the transformation of its news department and programming initiatives. The post of WFAE chief content officer was established, and Ju-Don Marshall was named to fill it. Marshall has had a long career in journalism, including 17 years at the Washington Post, most recently overseeing its website. Before coming to WFAE, she was chief operating officer/senior advisor for LifePosts Inc.

As Marshall explains, a number of driving forces led WFAE to apply for the Knight Foundation grant. “We wanted to utilize the NPR One platform to reach out to a younger and more diverse audience. Sixty-five percent of its audi-

ence is in the 25–44 age range. That’s younger than the traditional WFAE listener base. Also, 36 percent of NPR One’s audience are ethnic minorities, while WFAE’s minority listenership is at 18 percent.”

A big part of the outreach to these younger listeners will be podcasts. Marshall said this will be a period of experimentation to find the right mix.

“What kinds of podcasts, what kinds

of voices, and how this content will be different from what is on air all have yet to be determined,” she said.

What is clear is that the listeners will be involved in the process at every step. “We are going to have a call out to the community. The best ideas will be selected and developed into pilots, which then can be turned into mini-podcast series. In this way, we hope to get people excited about engaging with us.” She adds that efforts are underway to deliver on-demand content using smart speakers.

According to the grant announce-



Ju-Don Marshall

ment, data generated through the app will help the station examine audience preferences as well as turn dedicated listeners into station members. And part of WFAE’s strategy involves using NPR One to bring new listeners to the station.

“Many NPR One users are listening to NPR content, and not necessarily to our station,” Marshall said. “One of our goals is to find these listeners and

**The best ideas**  
will be selected and  
developed into pilots,  
which then can be turned  
into mini-podcast series.

– Ju-Don Marshall



“Charlotte Talks” host Mike Collins and a panel of local reporters discuss local municipal election races at Birdsong Brewing Company in 2017. From left: Mike Collins, Q City Metro’s Glenn Burkins, The Charlotte Observer’s Ann Doss Helms, the Charlotte Business Journal’s Erik Spanberg and WFAE’s Tom Bullock.



Wendy Herkey, right, executive producer of “Charlotte Talks,” counts down during a broadcast of the show from Spirit Square’s Duke Energy Theater. Host Mike Collins speaks with Krista Tippett of “On Being” about civility and having better conversations.

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migrate them over to WFAE for a deeper experience.”

When she spoke with Radio World in late 2017, Marshall was planning to spend two days with the NPR One staff, to better understand their practices and set goals for the coming year. She said the exchange will be a two-way affair.

“This will be an ongoing partnership, they’ll have full transparency to what is going on at WFAE. NPR has a relationship with many stations, and we see WFAE as a case study whose experiences will be shared with many other public radio stations.”

### “INTIMATE EXPERIENCE”

Charlotte’s demographics make it an ideal test site for WFAE’s new brand of journalism. According to U.S. census figures, it is ranked the top city for millennial population growth, and it has a racially and ethnically diverse popula-

(continued on page 12)

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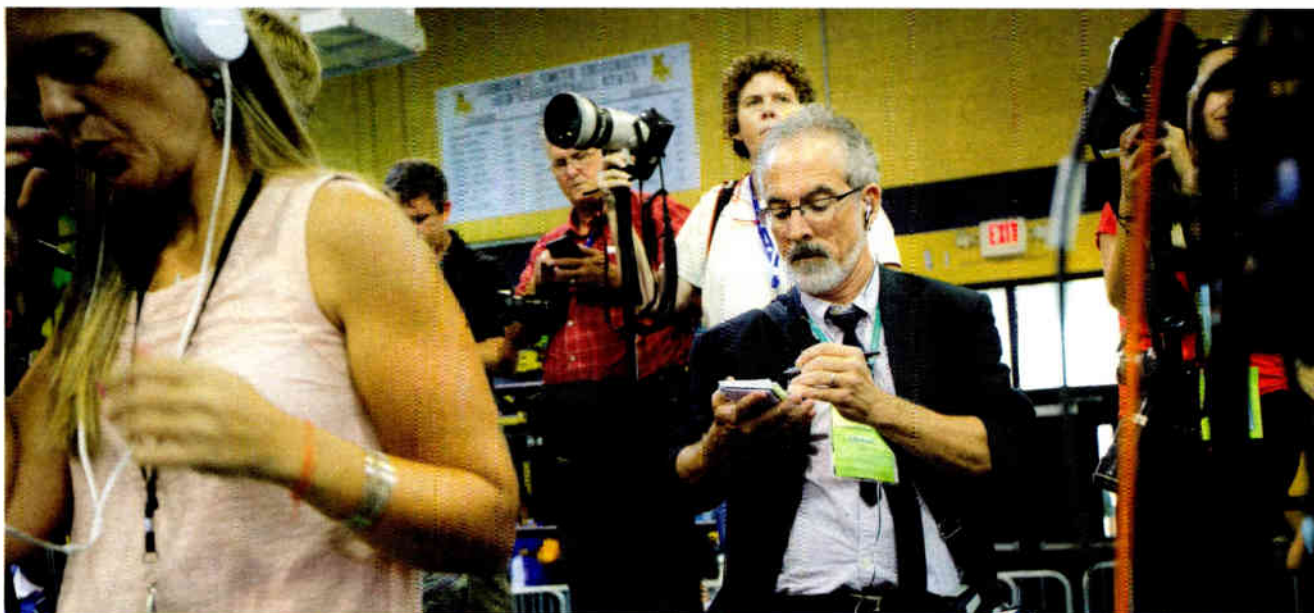
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Jeff Cravotta/WFAE

WFAE reporter David Boraks covers a Hillary Clinton rally at Johnson C. Smith University during the 2016 elections.

## WFAE

(continued from page 10)

tion. “Knowledge workers” are attracted to employment opportunities at companies such as Bank of America, Wells Fargo and American Airlines. As is the trend with young adults nationwide, Charlotte’s millennials turn increasingly to mobile for news and information, and seek out content through digital streaming and podcasts.

Marshall said the type of journalism going on at WFAE differs in some ways than what is common in the print media.

“The core values remain the same, but this is a more intimate experience with listeners in many ways. Our members have a sense of ownership over what they hear. To them, it feels much more personal than reading a newspaper. And for us as reporters working at the local level, it’s more intimate than working for a national publication or national media.”

Localism plays into the composition of the WFAE newsroom staff. “I believe that you have a much better feel for the local culture if you were born and raised here. We’re currently in a hiring phase for new reporters, and anyone who has the necessary experience and is a native definitely piques my interest.”

While this outreach is focused on bringing younger listeners to WFAE,

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## National EAS Test

Early data is out now about the recent national test of the Emergency Alert System in September.

The test was intended to assess reliability and effectiveness of the nation’s EAS system, with an emphasis on how well Common Alerting Protocol-based EAS alerts were disseminated to EAS participants through the IPAWS gateway, the Integrated Public Alert Warning System, which is coordinated by the Federal Emergency Management Agency.

It also provided an opportunity to see what lessons had been taken to heart from the 2016 nationwide EAS test.

More analysis and conclusions are yet to come. But initial findings reveals that the majority of EAS participants successfully received and retransmitted the National Period Test code; and overall, the commission reported, performance appears to have improved over the 2016 nationwide EAS test.

In all, about 19,000 participants submitted test information into the EAS Test Reporting System, slightly fewer than 2016. The FCC said 95.8 percent successfully

received the test alert, almost identical to the 95.4 percent in 2016. Retransmission performance improved; 91.9 percent retransmitted the test alert, up from the 85.8 percent last time.

Eighty-nine percent of test participants who filed Form Three reported no complications in receiving the test, up from 81.5 percent. In retransmitting it, 88.3 percent had no trouble, up from 80.2 percent.

Two hundred and seven test participants said they retransmitted the IPAWS-generated Spanish-language version, a significant jump from the 75 that retransmitted in Spanish prior.

The recent test also tracked how many participants received the alert over the air vs. from IPAWS. This year, 40.7 percent said it came over the air, while 59.3 percent said it was delivered by IPAWS. The previous numbers were 56 percent over the air and 43.5 percent via IPAWS.

All data points were gleaned from information submitted by participants via three FCC forms. More analysis is to come. The commission said it is working with FEMA to continue to analyze the results and release more findings.

— Susan Ashworth



## IN CASE YOU MISSED IT

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

### ► FCC Gives Blue Alerts a Green Light

The agency approved police-oriented emergency messages for optional distribution on EAS and wireless systems.

### ► Las Vegas STL Allegedly Caused Interference at Airport

Region Three’s regional director issued a Notice of Violation to Silver State Broadcasting.

### ► Osgood Celebrates 50

The venerable Charles Osgood has 50 years of radio

under his belt and announced an extension for his radio program with Westwood One.

### ► CTA’s Steve Koenig Offers a Market-Based Preview of CES 2018

A look at what consumer tech and products to expect at the enormous January trade show from someone intimately involved in the show.

### ► Cumulus Offers Alexa Skills for 300 Stations

Custom skills will also help the broadcaster learn more about listener behavior.

### ► “Alexa, Talk to Santa Claus”

iHeartRadio connected listeners to the North Pole.

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# A Cartoonist's Adventures in Radio

You might say this is the original "visual radio" concept

## PROMOTIONAL IDEAS

BY DAN ROSANDICH

What in the world is "radio illustration," you ask? Who can listen to images like illustrations and cartoons? Well, it's not quite that simple. The best explanation is looking at it from the perspective of the cartoonist!

I began drawing cartoons and funny illustrations when I was a little kid. It was an obsession that has carried on into my adulthood. Radio World asked me to share some of my work and the story behind it.

In the early 1970s, when the CB radio craze was rising in popularity, I placed a small classified ad in a trade publication. S-9 Magazine was devoted to citi-

zen band radio enthusiasts across the United States and Canada. With knowledge in the area of CB and an interest in cartooning, I decided to offer to create "custom QSL cards." (As many Radio World readers will know, a QSL

is a radio enthusiast's calling card of sorts. They're a postcard-sized with the user's call letters, their preferred channel they hang out at and of course, their "handle." Even radio broadcasters sometimes have them!)

In that ad, I offered to do custom cartoons for CB enthusiasts' QSL cards, and those interested would send a particular amount of money (either by check, cash or money order). The ad came out, and before long, a stream of envelopes started arriving at my address with money and people's ideas for their cards! It was my way of being vindicated as an artist. I had arrived!

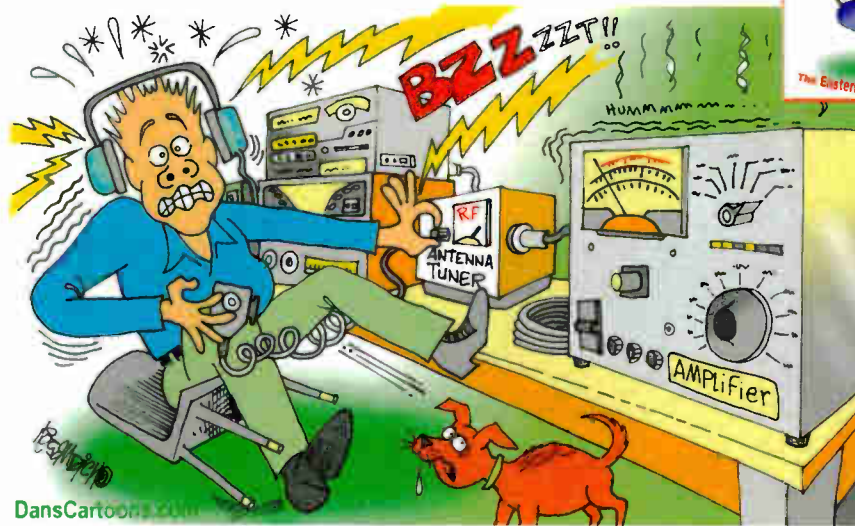
Whatever the amount was, in those days, it wasn't much, but my neighbor had worked at a local bank and one day asked me, "Dan, where are you getting all of these Canadian \$10 bills?"

I re-ran that ad a few times until things slowed down, but this experience later helped me to realize my desire to become a full-time cartoonist.

Not long afterward, I started to create what is known as "gag cartoons" in the magazine publishing business.

You've seen them — those small illustrated jokes to which publications, trade journals and even magazines like the Saturday Evening Post [yes, still around! — Ed.] might devote entire back pages in certain issues.

I dove full speed ahead into the freelance cartooning business and noticed



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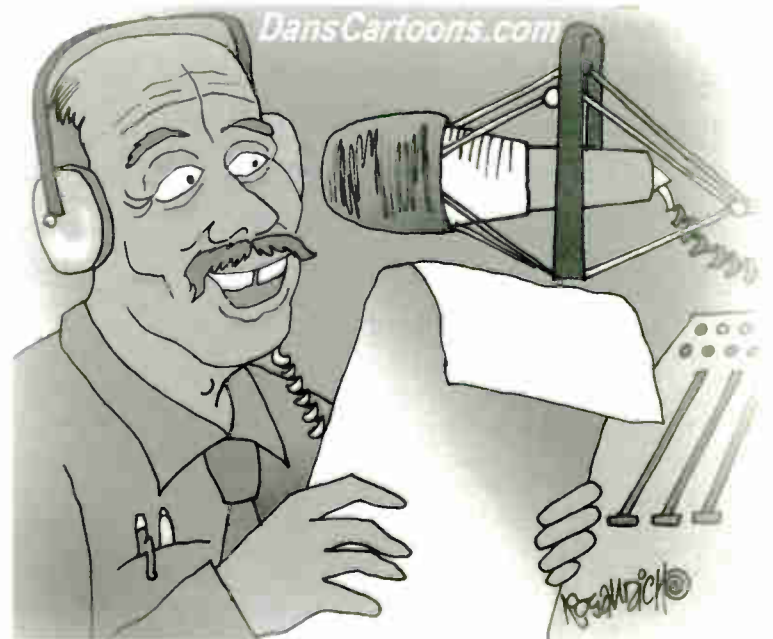
Radio illustration is kind of like visual radio — these logos and cartoons supplement broadcasts and stations by adding something for the listener's eye and imagination. Dan Rosandich has been in the biz since he was a teenager, and shares some examples of his work here.



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tion executive may want a cartoon for use on a downloadable app, another may want a detailed logo-type of cartoon to use on a website, social media, in print advertising or on apparel.

My general rule of thumb is “the greater the usage applied to an image, the greater the intrinsic value to that work,” so higher fees are applied to artwork with a greater usage applied to it.

Other uses for radio station cartoon images include:

- Station calendars
- Posters to promote an event or gathering
- Social media (Facebook, Twitter, LinkedIn, etc.)

- Downloadable apps for listeners
- Apparel (T-shirts, caps and coasters)
- Business stationery
- Your company or station’s QSL card
- Customized greeting cards (Christmas, Hannukah, Easter, etc.)
- Coloring books for children
- Banners for use in email promotions

This is a small list, but you get the idea: Custom illustration makes a point and can have an impact with your listeners.

Find more examples of the author’s work as well as contact information at <https://danscartoons.com/>.

after a few years that I’d acquired a relatively steady stable of clients who loved my work, and I drew a lot of gag panels for many of them.

After many years in the freelance illustration business, along came digital technology. I began studying HTML and web design and launched an online portfolio, offering my illustration services. Since then, I’ve illustrated a lot of ham operator radio content, as well as radio broadcast cartoons, logos and illustrations.

With the help of Adobe Photoshop editing software, I can accommodate clients in their professional graphics needs, whether it’s a special promotional banner, logo or other character cartoons needed to promote a station or broadcaster’s event or station. Artwork can be formatted in specific sizes, color enhancements and more.

I recently worked with KCYS(FM) in Astoria, Ore., which needed a specific banner to promote their station. The image they needed was for a downloadable app; the graphic appears as an introductory image for this app, which users can download to listen to their station anywhere.

**HOW IT WORKS**

Other illustrators may have their own processes but here’s how it works for me. A station owner contacts me with a concept or idea; I create a rough sketch based on that information. The more information supplied, the better; specifics help me to create a more detailed illustration of the cartoon needed. I send that rough sketch for the station owner’s (or general manager’s) review; they reply with feedback about what needs to be changed or modified, prior to formatting the final acceptable art into a specific format.

JPEG files work best for apps or web, while TIFF format works best for print or hard copy.


As for pricing these kinds of cartoons, there is no universal pricing; every need or usage applied to a custom cartoon is different. I recommend you request a specific quote and specify how the artwork will be used. One sta-

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# Is Your Future Engineer Wearing Cammies?

## How the U.S. military trains radio and TV engineers

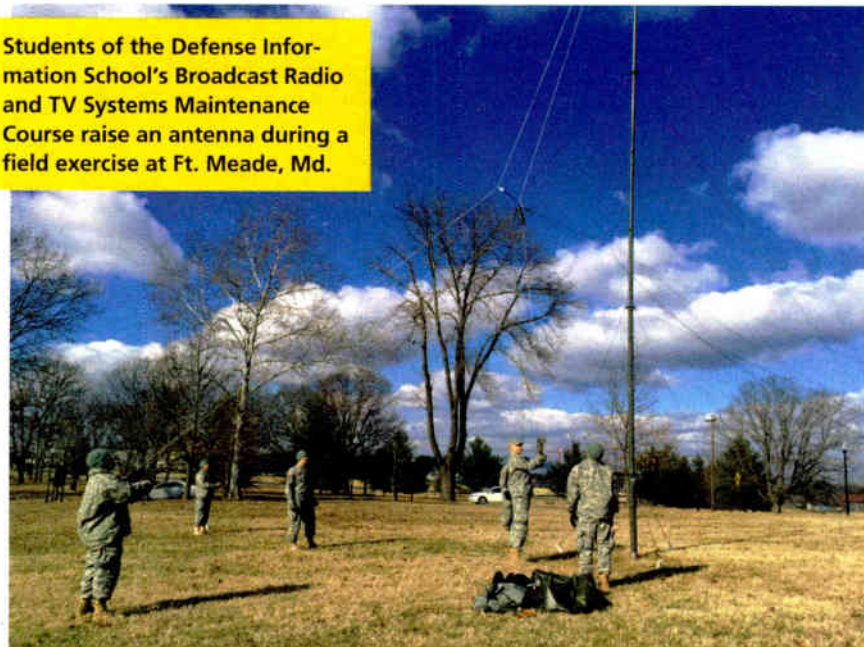
BY PAUL KAMINSKI

Over the course of its history, the United States military has been responsible for innovations that have found their way into civilian life.

Those innovations require much technical training. In the case of broadcast engineers and technicians, a soldier, sailor, airman or Marine who performs that duty gets training that makes them valuable once they hang the uniform up for good. Former military people make good employees because they have demonstrated discipline, ability to solve problems, attention to detail and flexibility. To survive and thrive in a radio station environment, one needs all of those traits.

For military engineers in broadcast, training begins at the Defense Information School at Ft. Meade, Md. There, soldiers, sailors, airmen and

Students of the Defense Information School's Broadcast Radio and TV Systems Maintenance Course raise an antenna during a field exercise at Ft. Meade, Md.



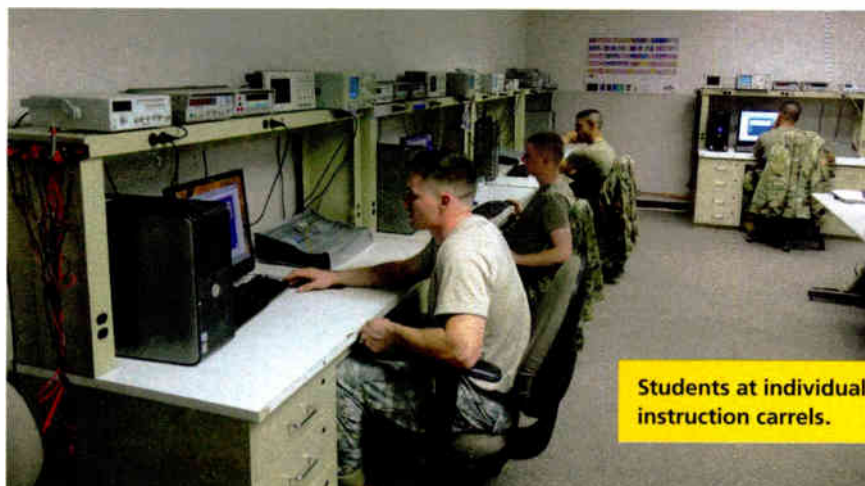
DINFOS Broadcast Operations and Maintenance Department

To pass the course, the graduate must be able to use audiovisual equipment to monitor, troubleshoot and repair computers, television cameras, videotape recorders, audio systems, broadcast studios, automated audio and visual equipment, as well as transmission systems. Additionally, graduates will be able to set-up and maintain video teleconferencing systems. This course is designed for entry-level service members.

Those courses are taught by the DINFOS broadcast operations and maintenance department. Instructors are active duty military and civilian people.

**If you don't know how it works, you don't know how to fix it.**

— Jonathan Ehrhart



Students at individual instruction carrels.

Marines assigned to American Forces Radio and Television networks and outlets hone their professional skills in a 71-day resident course involving IT, audio, video and RF called the Broadcast Radio and Television System Maintenance Course.

The course builds knowledge and skills necessary to support multimedia production and broadcast missions of the Department of Defense and the Defense Media Activity. Graduates must demonstrate proficiency in operating and maintaining transmission systems, constructing and maintaining a multimedia local area network, installing software, and maintaining radio studios and a satellite downlink system.

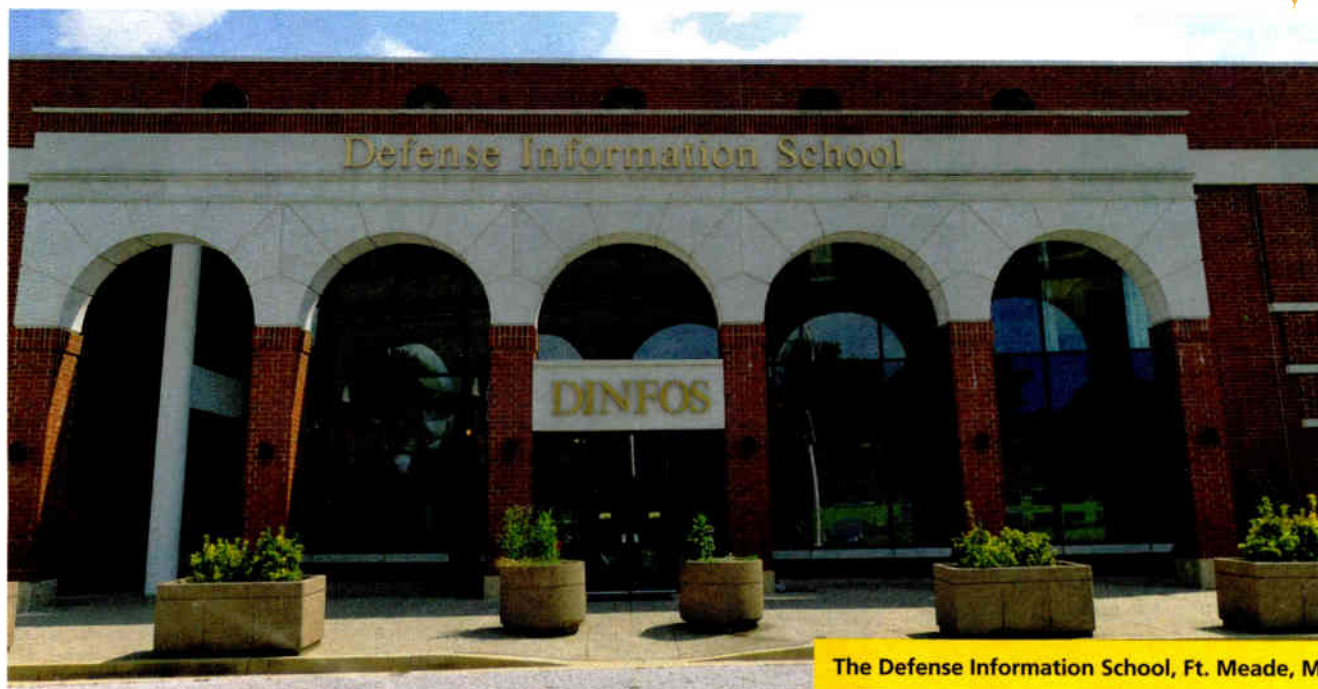
DINFOS also teaches a basic television equipment maintenance course for Army soldiers. Don't let the name fool you. The 124-day course teaches fundamentals of electronics, instruction and training on direct and alternating current principles, solid-state fundamentals, including transistor amplifier theory, digital principles and basic soldering techniques. Students then apply these basic electronic concepts to the maintenance and repair of broadcast television and radio equipment.

Jonathan Ehrhart is a civilian instructor who also taught in the BOMD while on active duty in the Army and was a maintainer himself.

"As I've explained when asked what is it you [maintenance people] actually do, is that all the stuff that you use to do your job, we fix it. We make sure you can do your job."

Ehrhart says the courses don't just rely on classroom work. All of the skills learned are tested in a field training exercise where equipment is deployed under field conditions.

(continued on page 18)



The Defense Information School, Ft. Meade, Md.

All photos by Paul Kaminski except as noted

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 appointed VP/market manager for Chicago cluster



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*Spanish Broadcasting System*  
 tapped as EVP of Aire Radio Networks and national radio sales



**Eric Johnson**  
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Students deploying a satellite downlink at the Defense Information School's field training site at Ft. Meade, Md.

Photos by Paul Kaminski

## DINFOS

(continued from page 16)

"We're going to set this equipment up from scratch, operate it, and if need be, troubleshoot it."

Graduates get to work on equipment they will find at AFRTS networks such as IP-based consoles. They get a heavy dose of RF theory and hands on practice.

"We start at the very basics of electromagnetic spectrum and what an RF wave is, and how you create one."

That includes AM, FM, TV, satellite and microwave propagation with hands on transmitter experience.

Ehrhart says there's another reason why the courses have so much hands on experience. "One of the keys to being a maintainer is, if you don't know how it works, you don't know how to fix it. Because how do you know if it's broken or functioning properly?"

Graduates of these courses are eligible to be certified by the Society of Broadcast Engineers at the Certified Broadcast Technologist (CBT) level and can receive 15 college credits at the associate and baccalaureate undergraduate level.

Ehrhart keeps in touch with former military maintainers. He says their job outlook, while OK, could be better.

"Our students have the benefit of having a variety of skills: that makes them valuable to any organization, not just a radio station or television station."

He says some of his fellow graduates have encountered managers who did not want to hire engineers and maintainers full time.



The basics.

"They don't want to hire us full time and pay us because [the equipment] is working, why am I paying you? It's a Catch-22. Your equipment is working because you have maintainers that keep it working."

A good resource for stations looking to hire veterans is the Army's Soldier For Life transition program, which has a web page for employment questions and opportunities: <https://soldierforlife.army.mil/employment>.

Paul Kaminski, CBT, has been a Radio World contributor and columnist since 1997. He's retired from the United States Army; a 1971 graduate of the Defense Information School and an AFRTS Alumnus (Armed Forces Desert Network). Follow him on Twitter @msrpk\_com or on Facebook at PKaminski2468.



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## WORKBENCH

by John Bisset

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

Many of the radio and TV stations where Dan Slentz has found himself were seriously lacking in the area of documentation. When you have the "pleasure" of being at a small station, one you get to "play with," you do a little better job at documenting. Dan does everything with Visio — like CAD, but cheaper and easier to work with for dummies. Fig. 1 demonstrates the network and new wiring layout at WDNP(LP).

The LPFM has outgrown a single studio, so Dan will be adding two workstations. Documentation is easier using CAD-like software.

If Visio is still too costly for you, Dan suggests looking at DRAW ([www.draw.io](http://www.draw.io)). The price is right — it's free and lets you do basic documentation.

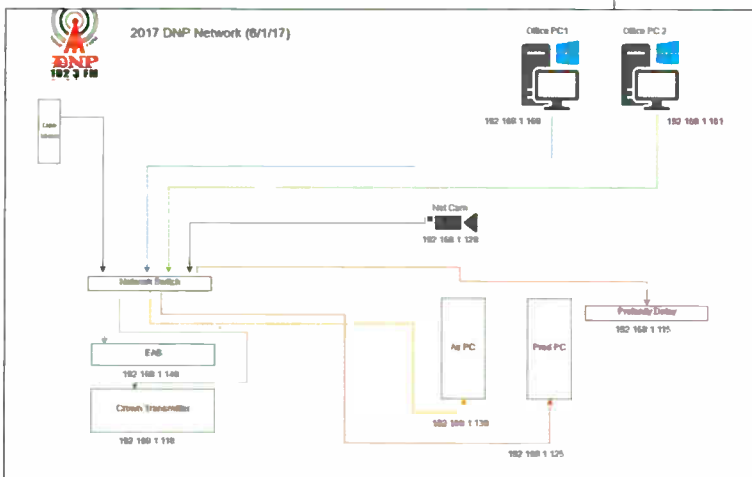


Fig. 2: DRAW is a free option for documentation.

Jim Arcaro, CPBE, sent us a comment about heating locks with flame. Be aware that some of the newer gate locks are touchless. This means they have a programmable key fob that you touch to the bottom of the lock to open it.

There are no "teeth" on this electronic fob — inside both are a lithium battery or capacitor and a circuit board and plastic parts. If you heat one of these new-style locks, it will be damaged. — and that means you can only get in by cutting the lock off.

This happened to Jim a while back when a tower owner's lock was frozen solid. They first tried heating the lock with their hands, then a cigarette lighter, and finally, a small torch. Even though they didn't heat it too much, the little heat damaged the lock nonetheless. Jim and his crew never got in that night. Fortunately it wasn't an emergency.

The tower owner replaced the lock. When Jim returned, he brought a small plastic bag, wrapped it around the lock, and taped it shut to keep the water out. No further problems occurred that winter!

Jim adds that he and his staff made it a habit to check the site every week or so, bringing extra plastic bags, in case someone else didn't rewrap the lock after

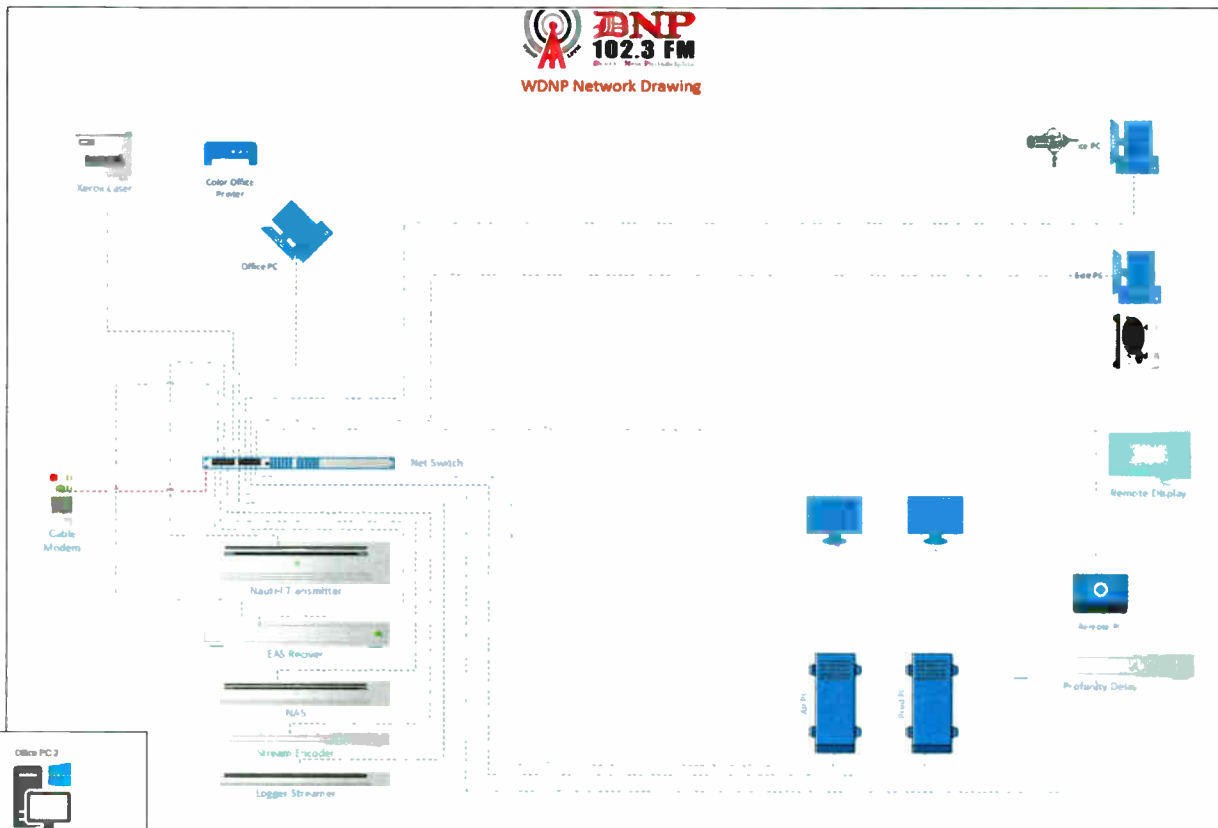


Fig. 1: Network and new wiring layout at WDNP(LP), using Visio software.

entering and leaving.

Jim says they used common grocery store vegetable bags, always in plentiful supply. Plastic bags used for transporting groceries would work just as well.

Broadcast IP networks are an integral part of the engineer's life, including internet security. For the engineer with IT responsibilities, network security is of paramount importance.

The Society of Broadcast Engineers ([www.sbe.org](http://www.sbe.org)) is presenting a four-part series of webinars by IT maven Wayne Pecena. Wayne is the assistant director of educational broadcast services in the office of information technology at Texas A&M University, and a past recipient of the Radio World Excellence in Engineering Award.

The first module will be presented on Tuesday, Jan. 30. The four sessions cost only \$57 for SBE members, \$87 for non-members.

Beginning with an "Introduction to Network Security Principals," courses also will cover understanding the firewall, secure remote access and security verification through penetration testing.

Speaking of networks, Platinum Tools of California has a neat product to test and verify the data-carrying capabilities of Ethernet network cables, up to 1 GHz.

Shown in Fig. 3, the Net Chaser Ethernet Speed Certifier and network tester evaluates cabling by testing for noise in the network. Cable installers have asked for a tester that validates data cables by evaluating all the parameters and not just the cable termination, and this tester meets that request.

Find out more by heading to [www.platinumtools.com](http://www.platinumtools.com). Your ideas make Workbench possible! Send them to



Fig. 3: Platinum Tools offers the Net Chaser for verifying Ethernet cable performance.

[johnbisset@gmail.com](mailto:johnbisset@gmail.com) or fax (603) 472-4944.

John Bisset has spent 48 years in broadcasting and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE-certified and a past recipient of the SBE's Educator of the Year Award.

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# Seven Tips for Finding a Radio Job in 2018

Hiring managers share important insights for landing your dream gig

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

by Dave Beasing

It wasn't that long ago when teenagers who dreamed of being a radio DJ would wait hours in line for a few minutes with a local program director at their high school's career fair. Recently, though, a PD told me she spent two hours at a career day and talked to just two students.

Another radio leader, Lynn Barstow, programs a station that's popular among younger people in a hip college city — KROX in Austin — so you might think he'd have lots of applicants. Nope.

"Honestly, it doesn't feel like anyone is trying anymore," he says. "I can count the résumés I received last year on maybe two hands and a foot."

The bad news is that good jobs in radio are scarce. Barstow hasn't had turnover in his full-time air staff in a decade.

If you're looking for a new gig in 2018, here are seven job hunting tips from the experts — the people who do the hiring:

### 1. Get a foot in the door.

Smart, capable people get noticed. Barstow points to a sharp young woman who got into the building as an unpaid intern and was soon the executive assistant to the general manager.

"She'd done college radio, so she parlayed that into voicing some spots," says Barstow. "She's our top swing talent now and has moved into the promotions department."

### 2. Call! (But not every day.)

"Once someone [who's hiring] is aware of you, you've done enough," says Cumulus Media VP/Programming Operations John Dimick. "It doesn't hurt to check in while a posting is still up, but trying to close the deal is pushing it a little too much."

Townsquare Media SVP/Program-



Cumulus VP/Programming Operations John Dimick, left, at the fall Radio Show with Hubbard Radio President/COO Drew Horowitz, Radio Advertising Bureau President/CEO Erica Farber, Neuhoff Communications COO Michael Hulvey and, far right, former Univision Radio President Jose Valle

ming Kurt Johnson also welcomes phone calls but says, "Don't just respond to trade ads. Do your homework. Find an employer you want to work with" and keep in touch.

### 3. Develop a relationship ... now.

"By the time we post an opening, I'm already thinking about who might be right for the position," says Dimick. "People who have already taken the time to reach out and let me know their interest in working with us have an advantage."

Dimick and Johnson say approaching them at industry events like The Conclave, fall Radio Show and Worldwide Radio Summit is a good way to get acquainted.

"Those are people who are actively working to improve themselves and their careers," says Johnson.

Then again, he notices talented people lots of places.

"I have hired people from other radio stations, social media, podcasts, YouTube, recent college grads, a funny caller to a morning show, a McDonald's drive-thru person, a truck driver, a teacher, a policeman, a person sitting next to me on a plane, and someone who dialed a wrong number."

He's not kidding.

### 4. Be social.

As in ... social media. If you think

a stage now has one, because there's almost no barrier of entry for podcasting. When hiring, Dimick still likes to hear "a good tight aircheck," but "podcasting and YouTube are great places to practice your craft."

### 6. Make it easy.

Dimick says he often listens to audio and reviews résumés while he's flying or over the weekend, "so make it quick and easy to find your materials. Attach it to an email or put it in a DropBox."

Put yourself in the employer's shoes.

"I once asked a candidate to send me their materials in an email. They told me I could find them using a link in the original package," says Dimick. Really? "I didn't bother."

Believe it or not, someone once sent Barstow a box of 75 unscoped airchecks on cassette. "It was on me to send the tapes back."

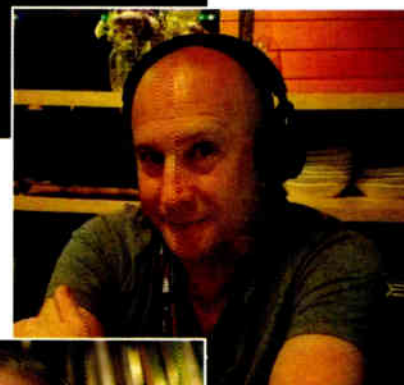
### 7. Update your skills.

Centuries before radio's invention, the Greek philosopher Heraclitus said, "The only that is constant is change." Barstow laments that some applicants are "former radio people trying to get back into the business but don't realize how much it's changed."

What skills are needed nowadays? Johnson says it's a long list, including "understanding the changing consumer landscape, being conversant in new technology, content platforms and delivery systems. Above all, you need to be smart and resourceful, able to pivot as conditions change."

A bonus final tip: As anyone who has tried to find a job can tell you, it's quite a job in itself. If 2018 is the year you want to begin your career or find that elusive "better opportunity," be persistent, don't get discouraged and ... good luck!

After 9-1/2 years programming L.A.'s "100.3 the Sound" and 12 years consulting Jacobs Media client stations, Dave Beasing is about to break ground on studios for his on-demand audio startup. He can be reached at DaveBeasing@gmail.com.



Above: KROX Austin Program Director Lynn Barstow



Left: Townsquare Media SVP/Programming Kurt Johnson

prospective employers look at your Facebook, Twitter and Instagram, you're right. Demonstrate that you can post engaging content and have a fun personality.

Dimick warns, "It's easy to find out a lot about someone without even talking with them. Be sure your social is on-point and not off the ledge." Barstow isn't just looking for your faults. He visits social profiles "to see if they might be hiding a marketable personality under a layer of inexperience and a lack of coaching."

### 5. Podcast.

I begin every talk to college broadcasting classes by asking, "Who wants to host their own show?" A few hands go up. "Then why aren't you?" Every beginning broadcaster who needs

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# Make a Difference for the Long Haul

Longevity enables personalities to grow events that benefit their community



KLUC's Chet Buchanan spent 12 days at 30 feet in the air and broke his all-time record to benefit the needy in Las Vegas.

## ♥ RADIO DOING GOOD

BY MARK LAPIDUS

As a regular column, "Radio Doing Good" is now celebrating its first birthday. One thing is undeniable: We could fill an entire issue of Radio World with the great work that radio is doing every day across the USA! Thanks so much for your submissions. Keep'em coming during 2018.

Here are just a few of the terrific community events that happened leading up to holidays.

There's nothing like longevity ... Not only does many years on the air bring consistent ratings, this enables personalities to grow events that benefit their community.

On Entercom's 98.5 KLUC(FM) in Las Vegas, Chet Buchanan conducted his 19th annual Toy Drive. For 12 days, Chet lived 30 feet off the ground in a scaffolding unit to raise awareness for families who need help during holiday season. Chet's listeners filled 32 different 50-foot trailers with new toys, including 8,109 bikes — plus \$455,550 in cash and gift cards.

Operations Manager J.B. King com-

mented, "After battling 30-mile-per-hour winds and near-freezing overnight temperatures, we still managed to have our biggest Toy Drive year ever."

During its annual radiothon and silent auction, 1200 WOAI, San Antonio, Texas, raised over \$200,000 for The Elf Louise Christmas Project. This organization purchases and delivers toys during the holiday season to many thousands of Bexar County's less fortunate kids. iHeartMedia San Antonio's on-air personalities — which include Russell Rush, Kyle Due and Randy Carroll — joined personalities from sister station News Radio 1200 WOAI on-air to encourage listeners to donate to the radiothon and bid on the silent auction.

"I can't begin to thank News Radio 1200 WOAI and their listeners enough," said Louise Locker, the woman who founded the Elf Louise Christmas Project 49 years ago. Over time, the station has helped raise over \$4.2 million.

"The spirit was amazing and kept everyone going. So many children will



The legendary band Weezer and Philadelphia's Radio 104.5 create beautiful charity together.

have a happier Christmas this year, thanks to this radiothon."

A minimum of 98 cents from every dollar donated goes directly to buying the toys. It now takes nearly 5,000 volunteers to process applications, wrap presents, and establish the routes for the Santa team to deliver gifts to more than 30,000 children each year.

For more information on how to donate or volunteer, listeners can go to [www.elflouise.org](http://www.elflouise.org).

Remember Mitch Albom's book about his professor, Morrie Schwartz? Morrie expressed to Mitch that "Giving

is living" and, taking that advice to heart, Mitch has made miracles happen in the Motor City on Cumulus' 760 WJR. With help from guest celebs like Hugh Jackman, Hank Azaria, Dr. Phil and Matthew Stafford, Mitch was able to raise an amazing \$1.3 million for Detroit charities.

It's great when listeners can see a favorite artist and make a difference at the same time! iHeartMedia's Radio 104.5 in Philly got Weezer to headline their fourth annual Movember Gala. Listeners made a donation and got a ticket. This simple yet fulfilling appeal raised \$27,603. Proceeds went to the Movember Foundation, a global men's health charity investing in programs for prostate cancer, testicular cancer, poor mental health, and physical inactivity.

Warming hearts can be as important as raising money. The nationally syndicated Ty, Kelly and Chuck morning show collected 100,000 thank-you notes to be sent to men and women serving in the military who won't be able to come home for the holidays. By the way, they



had a little help from — get this — Garth Brooks!

"As God is my witness, I swear, I thought turkeys could fly!" Beasley Media Group's John DeBella on 102.9 WMGK took Les Nessman's famous line and collected more than 12,800 turkeys for the needy in Philadelphia.

I've participated in many St. Jude Radiothons, and I find it thrilling that the organization continues to partner with radio, locally and nationally. iHeartMedia's nationally syndicated country program "The Bobby Bones

Show" raised nearly \$1.7 million in a two-day St. Jude Radiothon. Listeners donated via text while listening to many guest performers, including Dustin Lynch, Kip Moore, Dan + Shay, Lauren Alaina, Chris Janson and many more.

To wrap up our account of heartwarming generosity, "Stuff the Truck," on Press Communications' WBBO(FM), Atlanta, collected over 4,000 pounds of food for those in need. Chris Eagan, director of branding and programming, expresses just what I'm thinking: "Giving back to the communities we serve is exactly what local radio does best."



## HIGH CAPACITY EVENT STUDIO TRANSMITTER LINKS



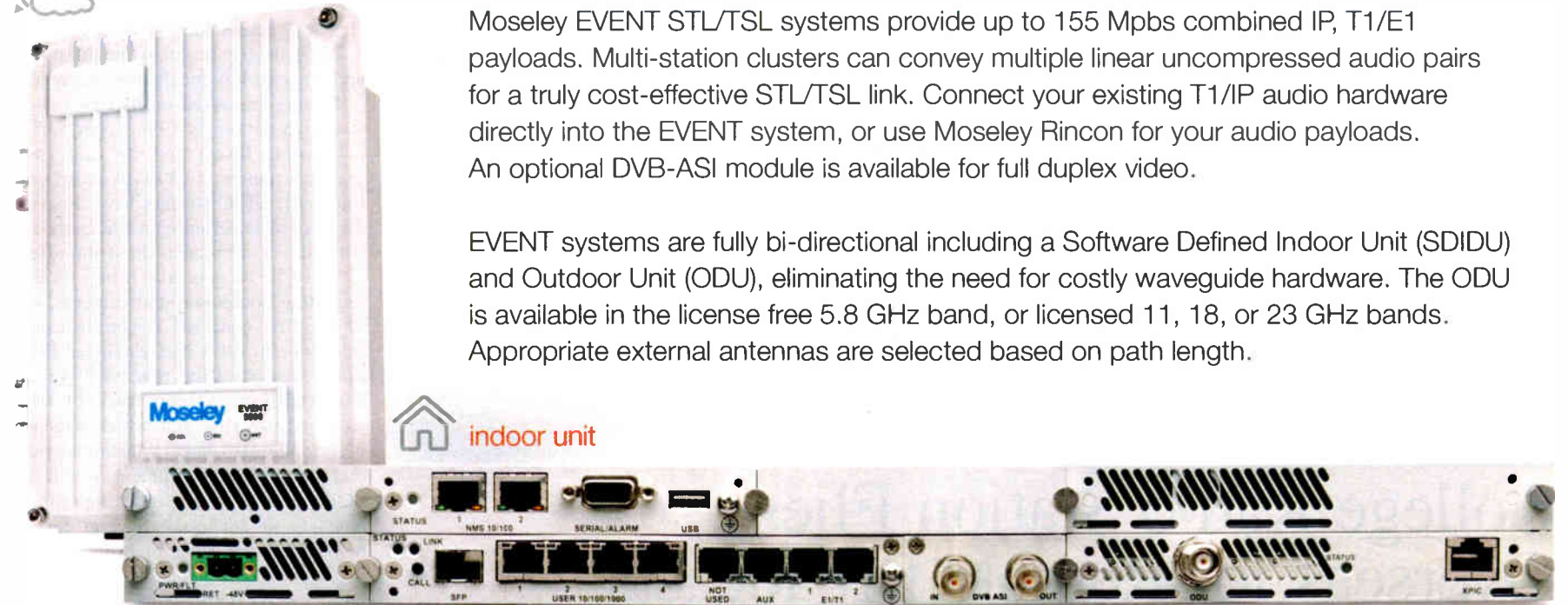
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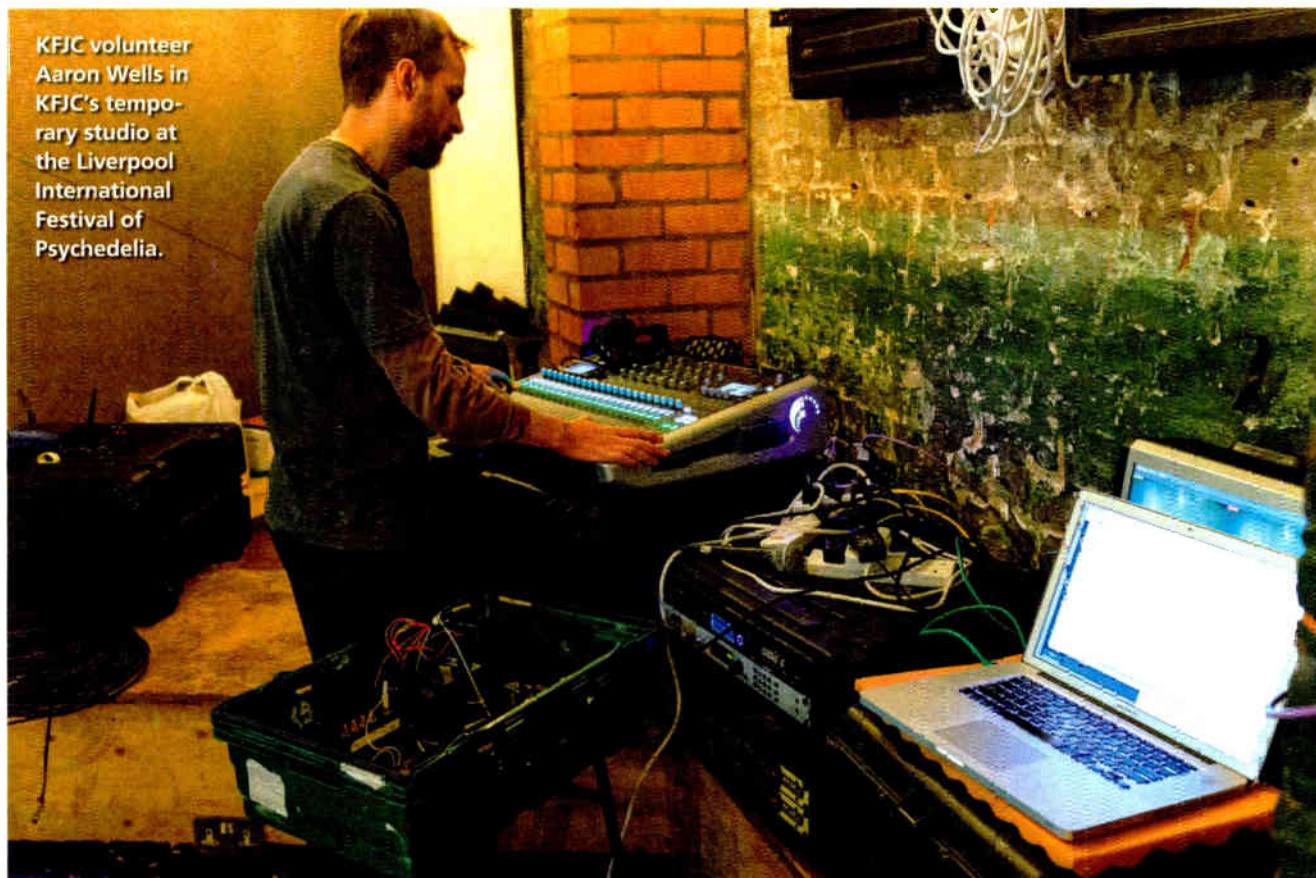
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KFJC volunteer Aaron Wells in KFJC's temporary studio at the Liverpool International Festival of Psychedelia.



Patrick Hoge/KFJC

## College Radio Station Flies Overseas for Remote Broadcasts

KFJC delivers live audio and video from Iceland and England back to California audience

BY JENNIFER WAITS

After receiving an invitation to travel to England to broadcast live from the Liverpool International Festival of Psychedelia, the volunteer staff at California-based KFJC(FM) started scheming about a long-dreamed trip

to Iceland.

In relatively short order, crucial connections were made, a venue secured, and bands were booked for a mini underground music festival in the Icelandic capital of Reykjavik prior to the Liverpool broadcast. The plan was for KFJC to broadcast music performances

live (over 89.7 FM in the San Francisco Bay Area and around the world at <http://kfjc.org>), including streaming HD video, from two nights of shows in Iceland and follow that up a week later with a remote broadcast from multiple stages during two full days in Liverpool.

In September 2017, a crew from the Foothill College radio station journeyed to Liverpool, England, and Reykjavik, Iceland, for the college radio station's

eighth and ninth remote broadcasts from overseas.

### COMPLEXITY

Complex remotes are unusual for any radio station, let alone a college radio station, but the folks at KFJC (where I'm a volunteer staff member and DJ) seek out increasingly complex remote challenges. While the 2017 travels were prompted by a return visit to the Liverpool Psych Fest (see "College Station Heads Overseas for Remote," RW Jan. 1, 2015), the trip began in the unfamiliar and otherworldly locale of Reykjavik.

Having embarked on its first out-of-state live remote in 1994 (from SXSW in Austin, Texas) and its first overseas live remote in 1996 (from Brixton, England), KFJC staffers have amassed decades of experience in the trials and tribulations of broadcasting from afar.

Since KFJC generally brings its own recording equipment and cameras, one of the first concerns is getting everything organized. Chief Engineer Brian Potter described the process: "We use a spreadsheet to keep track of what we need to bring and which bag/case it's in. We also have a technical rider that details the equipment which we send to the venue and other appropriate contacts in advance." Several factors help determine what to bring, including event requirements as well as portability. "What might be available for reasonably-priced rental at the other end" is also considered.

The next step is packing gear, which was loaded into a Pelican case, three new SKB plastic rolling cases, and within "regular suitcases with the crew's personal belongings," Potter said. Promotions Director Liz Clark said that the team "has it down to a science." Careful to stay within weight restrictions for luggage, each case of equipment is meticulously weighed in advance, with items rearranged to steer clear of not only weight and luggage limits, but also extra fees.

Although foreign travel can sometimes mean differences in equipment, Potter hasn't found too many challenges with that. "Pretty much everything is 110 V/220 V/240 V-compatible. We are usually able to borrow a transformer for the few items that require 110 V. Adapters for the various types of power connectors are either borrowed or purchased locally."

The team has learned with experience to expect unpredictable internet connections, venues in old buildings with ancient wiring and cramped quarters. Another key part of the planning is to have multiple backup options for the broadcasts. KFJC General Man-

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ager Eric Johnson said that with “three redundant systems” (they could use optical cable, Cat-6 cable, XLR cables or a standard mic snake), they could address challenges as they came during the latest trip afar.

For both Reykjavik and Liverpool, the team scouted out the venues prior to the events, scrutinizing wiring, internet, sound board specs, and stage setups in advance. On the first day of each broadcast, they arrived at least four hours before the show and began rolling out gear, setting up cameras, and laying cables.

Although Potter’s main worry before the Iceland broadcast was internet access and speed (it turned out to be just fine), specific troubles included a bad power strip leading to a blown circuit (luckily, quickly resolved) and failures in KFJC’s fiber-optic set-up (Optical Cable Corp./OCC OM3 eight-core 350-foot tactical fiber cable with custom-built breakout terminations). “We use this to send video, audio and camera control all down the one cable instead of having to run six separate cables. It was looking increasingly likely that the multicore fiber optic cable itself may have been damaged in transit. So as the start of Friday’s show drew ever closer, we had to abandon that plan and hastily swap out two of the cameras, then run separate cables for all five cameras, our digital audio splitters and camera control.”

Adding to the Day One difficulties, the camera control still would not function, so the cameras had to be moved around using a small infrared remote control that had luckily been packed along with the cameras. Potter joked, “Camera control was done by shouting across our basement room to someone at the bottom of the stairs, who relayed the messages, ‘up a bit ... left a bit ... zoom in,’ to another person with the remote control, up in the main room.” Thankfully the optical cable system was functional for the Liverpool broadcasts a week later.

## MIXING

It was also serendipitous that KFJC rented extra HD-SDI cables while in Liverpool. While it would have been challenging to bring additional bulky, heavy cable on the plane; the borrowed cable came in handy for the multistage event.

For both broadcasts, the setup brought by KFJC included a Soundcraft Performer 2 digital mixing console that was equipped with a Dante IP audio networking card. Although the Dante card wasn’t used for the Iceland broadcast, it allowed the team to split audio over Ethernet at the Liverpool live remote. To capture audio, KFJC grabs sound from the stage microphones using a



**Brian Potter, Myron Fung (back to camera), Eric Johnson, Ariya Amin, and Aaron Wells setting up for the broadcast stream from Iceland.**

splitter and creates its own mix that is then sent out for the KFJC online and FM broadcasts. Audio is recorded to a Tascam DA-6400 multitrack solid-state recorder. After doing many of these broadcasts, KFJC engineers prefer to bring their own console and do their own sound mixing largely because they find that it provides a better sound. As a bonus, “the bands love it,” Johnson said happily. The KFJC crew likes the Soundcraft Performer 2 for several reasons. “It will accept analog input along with digital inputs (Dante, MAD1, etc.) ... up to 80 channels. It’s also relatively small and light for travel [and is] easy to use for new folks training to be sound engineers.”

Camera setup comprised four PTZ

(pan-tilt-zoom) cameras (two Sony EVI-H100S and two Sony SRG300SE) with joystick controllers (two per stage in Liverpool). Four additional Go-Pro cameras were positioned on stages (two per stage in Liverpool) to capture performances and since they are HDMI output devices, Blackmagic converters were used to convert to HD-SDI. A Livestream Studio HD500 live production switcher allowed the team to move between cameras, as well as record in HD and MP4.

The main KFJC crew included seven core volunteers in addition to around six others who helped as needed. One big task was putting together makeshift studios at each venue so that KFJC could control the entire broadcast, includ-

ing doing station IDs, playing recorded music between bands, and airing pre-recorded interviews with artists and festival organizers.

Potter said, “In Reykjavik, due to space limitations in the venue, we set up in the basement. In Liverpool we set up by the main door, between the two main stages.” Various volunteers ran the board and the cameras throughout each event. Since KFJC doesn’t utilize any form of automation at home or abroad, a live staffer is always in control, speaking on the microphone and switching between recorded material and live performances.

## VOLUNTEERS

Station volunteers also set up cables and cameras, controlled video by switching between cameras and using effects, engineered sound coming from the stages to the KFJC console, and conducted and edited artist interviews. Volunteers also took photos and created dedicated web pages for the broadcasts, updating the sites with images and audio links following each set.

Meanwhile, back in Los Altos Hills, Calif., DJs in KFJC’s Foothill College home studio were on call for potential breaks in the transmission (thankfully not a problem) and for the transitions at the beginning and the end of the remote broadcasts.

The remote crew sent the signal back to the United States over the internet. “We use a pair of Telos Z/IP One remote broadcast codecs, one at each end. Audio is converted to 192 kbps AAC which is better than FM

(continued on page 28)

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**KFJC***(continued from page 27)*

stereo quality. The audio output at the station is routed to the main studio board just like any other audio input, to facilitate handover to and from the remote broadcast from the studio," Potter elucidated.

Throughout both events, Clark was scheduling and interviewing artists and festival organizers. To keep things organized, she created a Google sheet to manage details for each interview

and to indicate when audio was ready for airplay. Clark and a few other volunteers used an H4Npro Zoom recorder with a Shure SM wired microphone to record the interviews, which Clark downloaded onto her laptop and edited using Adobe Audition. When the digital files were finalized, she either shared with the rest of the team over Google Drive or played the files directly from her Macbook Pro to the Soundcraft mixing console.

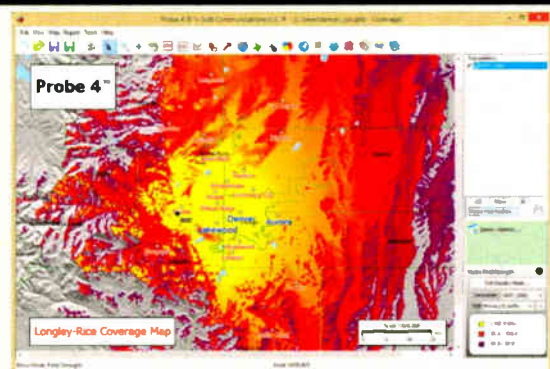
Patience and flexibility were key to the success of both broadcasts.

First-time KFJC overseas traveler Ariya Amin had been a volunteer at KFJC for about a year and a half and had worked on one remote broadcast (from nearby Oakland) before heading to Iceland, where she had a hand in everything from cabling, testing equipment, board operation, mixing, and on-air programming.

"The whole experience was new to me, so I learned a lot. Learned about our equipment, about broadcasting, and about putting on an event. I'd definitely encourage other stations to pursue

remote broadcasting, and connecting [with] folks abroad. It's a great way to promote one another, and to explore other music scenes," she said.

*Jennifer Waits is a co-founder of Radio Survivor and a research associate on the Library of Congress' Radio Preservation Task Force. She obsessively tours radio stations, which she chronicles on her blog Spinning Indie. A college radio DJ since the 1980s, she's been at four stations and has hosted a music show at KFJC(FM) since 1999.*

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I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for KTIM, AM, FM radio shows from 1971-1988. The stations were located in San Rafael, Ca. Ron, 925-284-5428.

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

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

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Good Talent! Strong sports, teams and play-by-play capacities. Competitive and enjoys a challenge. Have a passion/knowledge for sports and music, with can-do-attitude! 214-392-1133 or [codeycalloway@gmail.com](mailto:codeycalloway@gmail.com).

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attitude, very conversational seeks employment on-air or behind the scenes. Strong digital production. Sarah, 602-480-0715 or [abssarah1645@yahoo.com](mailto:abssarah1645@yahoo.com).

Passionate about my work. With passion comes success. Fun, energetic great female Radio/TV Personality. Excellent copywriter, and reporting. Ability to perform voiceovers. Helen, 972-639-4246 or [hm.jackson.5@gmail.com](mailto:hm.jackson.5@gmail.com).

Motivated to excel in media! Astute, bold, detail-oriented, peppy with creative/imaginative ability in commercial copywriting/production skills with unique on-air/news talent. Derra, 214-200-6023 or [absderra7545@yahoo.com](mailto:absderra7545@yahoo.com).



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

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

Looking for KSFY radio shows, Disco 104 FM, 1975-1978. R Tamm, 925-284-5428.

### RECEIVERS/ TRANSCEIVERS

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Johnson Electronic SCA880 module, 67/92 Khz, 417-881-1846.

#### WANT TO BUY

AM Stereo radio. Call 417-881-1846.

### RECORDING & PLAYBACK HARDWARE

#### WANT TO BUY

1960s-vintage MacKenzie Repeater machines, magazines, spare parts and manuals, complete or "parts" machines considered, James, 870-777-4653.

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

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READER'S FORUM

QUANTIFY MULTIPATH FINDINGS

When I read the Buyer's Guide User Report article "Wheatstone AirAura X3 Tames Multipath" about the experience of San Diego's KSDS with that new processor (radioworld.com, keyword "KSDS"), I was intrigued.

Some background: KSDS is a Class B-1 operating with 22 kW and a vertical antenna. KSDS's B-1 status puts it at a greater than 6 dB disadvantage vs. many of the competing Class B stations in San Diego that are operating with dual polarization at 50 kW horizontal and 50 kW vertical.

I had several questions in mind. A quick look at the map appeared to indicate there should be reception in Oceanside. Also, I am not sure how the Left-Right channel can be modified by the processor to work across the plethora of diverse multipath reduction algorithms in use today. And I felt it was not right to assume that subjective coverage assumptions in a period of time separated by one week have validity.

Initially, it appeared that there was sufficient signal at the GM's house for mobile reception regardless of what processor is being used. An FCC F 50:50 contour map would tend to support that mobile reception would be possible at the general manager's house, as Oceanside was within the 50 dBu contour. The FCC's basic F 50:50 contours do not always accurately predict signal levels at ground level and in areas of extreme terrain variation. So to get a better estimation of the signal level in Oceanside, a Longley-Rice propagation model, using the parameters 50 percent of the time, 50 percent of the locations at a 2 meter receive height, was conducted. The model showed that the predicted signal levels in Oceanside varied from 47 to 60 dBu, well within the range where reliable mobile reception should be expected.

It may be possible for processor manufacturers to develop algorithms to modify the transmitted L-R information to take advantage of the multipath mitigation algorithms. (Note that in FM reception, the signal-to-noise ratio degrades exponentially as you depart from the carrier frequency and thus the stereo sub channel ~23 to 53 kHz is at an approximate 10 dB disadvantage. When the receiver matrices the L+R channel with the noisier L-R channel the signal-to-noise ratio diminishes by approximately 10 dB.) Older receivers manipulate the L-R signal to minimize multipath by using several techniques including dynamically reducing the amount of L-R injection into the matrix, dynamic control of the receiver bandwidth and reducing the high-frequency response. For more than 10 years, car radios have incorporated software-defined receivers. Once the signal is in the digital domain, the designers have access to all of the older multipath mitigation tools plus many more algorithms to mitigate L-R noise (multipath). With the plethora of diverse multipath reduction algorithms in use in modern car receivers, it seems impossible that any processor technique could be developed that works with all receivers.

Even under the best of conditions, it is nearly impossible to compare the results of tests made at a different time, much less tests made one week apart. Scientifically meaningful tests would have to be conducted simultaneously with recordings being made and then subjectively evaluated. Over the years, engineers have incorporated many techniques to try to get valid field test data in situations where direct comparisons are not possible. A technique that can be used where direct comparisons are not possible is to conduct recordings from multiple consecutive test routes at a time of day where traffic will not impact the timing of the test run. Recordings derived from multiple test runs

BUYER'S GUIDE User Report: Wheatstone AirAura X3 Tames Multipath. San Diego's KSDS gets loud and long with new processor. Includes a photo of the radio and a technical update on the DEVA DB6400.

conducted under nearly identical conditions can then be subjectively evaluated to see if a diverse listening population can hear any meaningful differences. Given that it would be impossible to test under truly identical conditions, it would be interesting to see this test repeated on multiple receivers where the processors could be compared under nearly identical traffic and weather conditions at as close to the same time period as possible.

E. Glynn Walden
Former Senior Vice President of Engineering
CBS Radio
Marlton, N.J.

Table with 3 columns: PAGE, ADVERTISER, WEBSITE/URL. Lists various companies and their contact information.

MAIN STUDIO RULE

Holding on to the "main studio rule" is the last, however minimal, point of contact that a community has with its "local" broadcaster. Notwithstanding that an excuse to remove any business from "Main Street" does not help the health of Main Street to begin with.

This is the perfect foundation for creating the kind of media situation that Adolf Hitler used. All sources of information coming from one source and one source only with no ability to input from any other area.

No sir. The Main Studio Rule needs to remain in place, if only to serve as a reminder that stations are "licensed as a public trustee to serve in the public interest."

Bill Shrode
Vice President and Director of Engineering
Mason Prairie Enterprises Inc.
Parkersburg, Ill.

SPECTRUM REPACK

About the article "Repack Could Bring Significant Challenges" (radioworld.com, keyword "repack"):

Broadcasters should call this what it is: "more bandwidth for pornography."
David R. DeSpain, P.E.
Fort Worth, Texas

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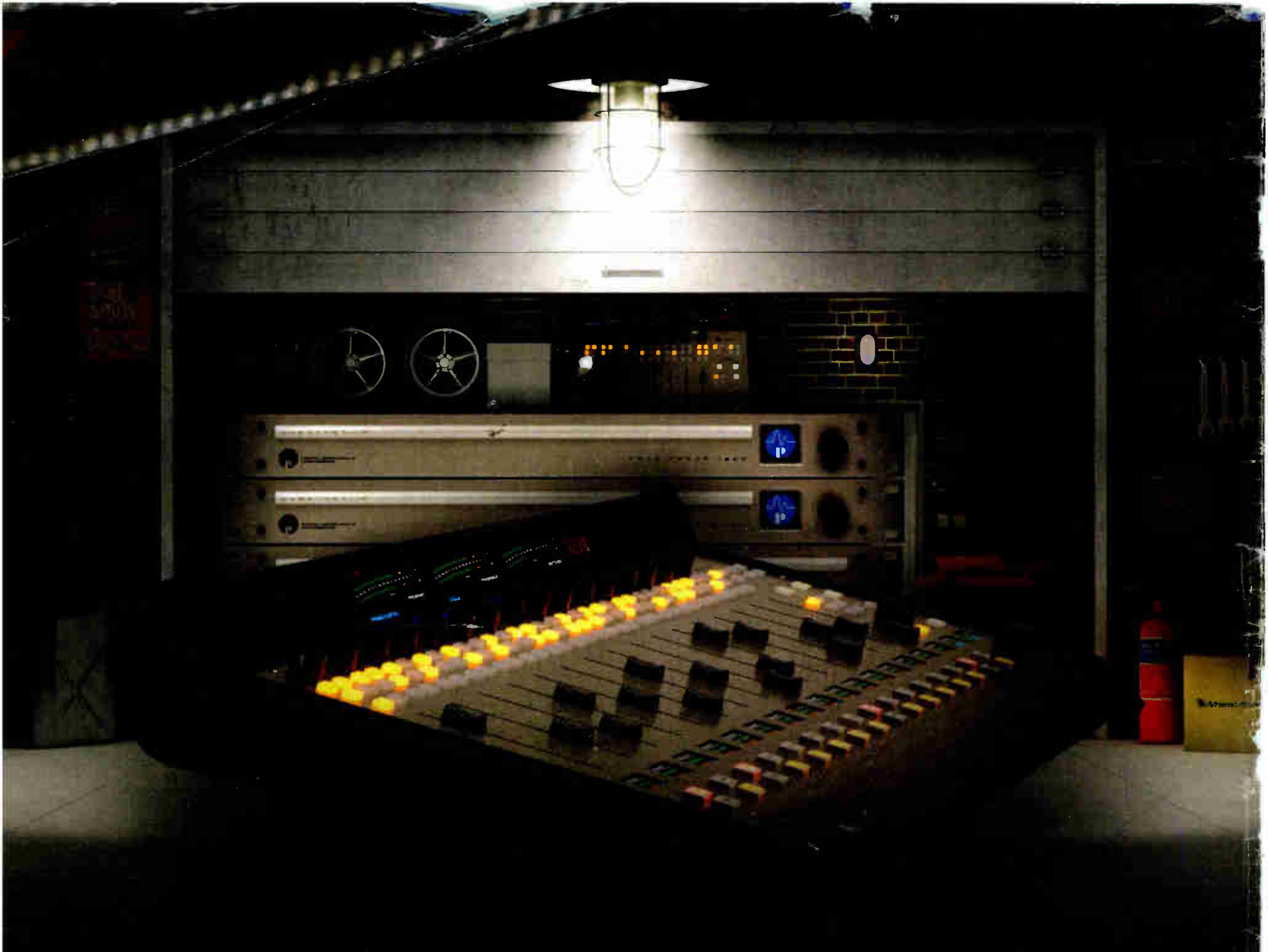
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