NewBay

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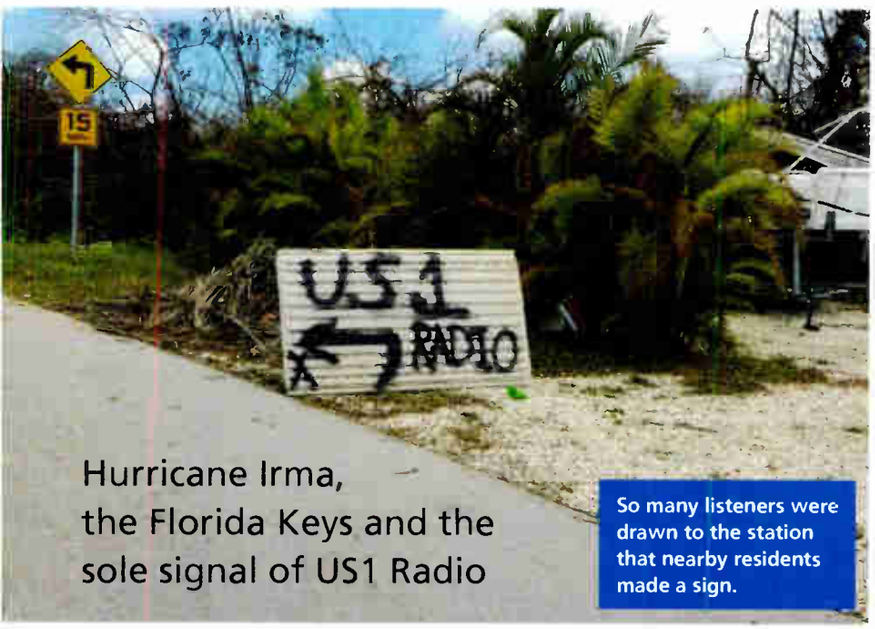
OCTOBER 11, 2017 | The News Source for Radio Managers and Engineers | $5.00 | RADIOWORLD.COM

Radio Stubborn in Face of Irmageddon



Hurricane Irma, the Florida Keys and the sole signal of US1 Radio

So many listeners were drawn to the station that nearby residents made a sign.

FIRSTPERSON

BY RICKY CARTER

My adventure began when I arrived in the Keys on Thursday, Sept. 7. I was in the company of my friend and employer Bob Holladay. Our trip was in support of a limited crew of dedicated broadcasters who had volunteered to keep Florida Keys Media stations on the air through whatever Irma had in store over the next few days: Kimberly Beier-Brown and Steve Miller, the on-air professionals. Bill Becker and Ron Saunders, the award-winning news team. Rick Lopez, the GM extraordinaire. And Holladay, the hands-on owner.

Fate brought seven individuals together but purpose made us one family.

My role as a broadcast engineer was to do whatever was necessary to keep as many signals on the air as possible. The group operates WCTH 100.3 FM Thunder Country, WFKZ 103.1 FM The SUN Classic Rock, WCNK 98.7 FM Conch Country, WAIL 99.5 FM Rockin' the Keys, WAVK 97.7 FM My FM, WKWF 1600 AM Sports Radio, WEOW 92.7 FM Today's Hit Music, and WWUS 104.1 FM US1 Radio.

These signals blanket the Keys from Florida City to Key West, the southernmost point.

GIANT FRISBEE

Our first task was to stage generators, fuel, food, water and engineering supplies at the two studio facilities in Tavernier and Sugarloaf Key. Both facilities are elevated and rated for Category 5 storms. To say Irma was somewhat unpredictable is an understatement. However, once we had indications the path would take her toward a landfall in the lower keys, we configured the Tavernier stations to simulcast US1 Radio and relocated our central operations point to Sugarloaf Key.

The prevailing winds and rain were

(continued on page 6)

Shortwave Station Bends But Doesn't Break

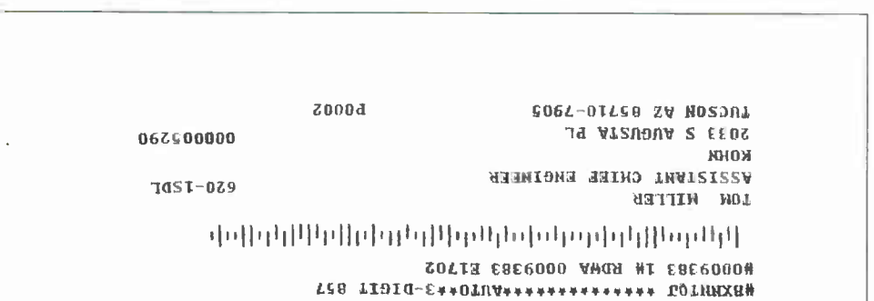
WRMI in Okeechobee scrambled back to service despite hurricane damage

BY JAMES CARELESS

Among the many victims of Hurricane Irma in September was the transmitter/antenna farm of Radio Miami International, WRMI in Okeechobee, located on a cattle ranch 40

(continued on page 3)

Folded tower.



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40 Years
RADIOWORLD
Vol. 41, No. 25 October 11, 2017

Next Issue of RADIO WORLD October 25, 2017
Next Issue of ENGINEERING EXTRA October 18, 2017

Website: www.radioworld.com | Email: radioworld@nbmedia.com
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Radio World Founded by Stevan B. Dana

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

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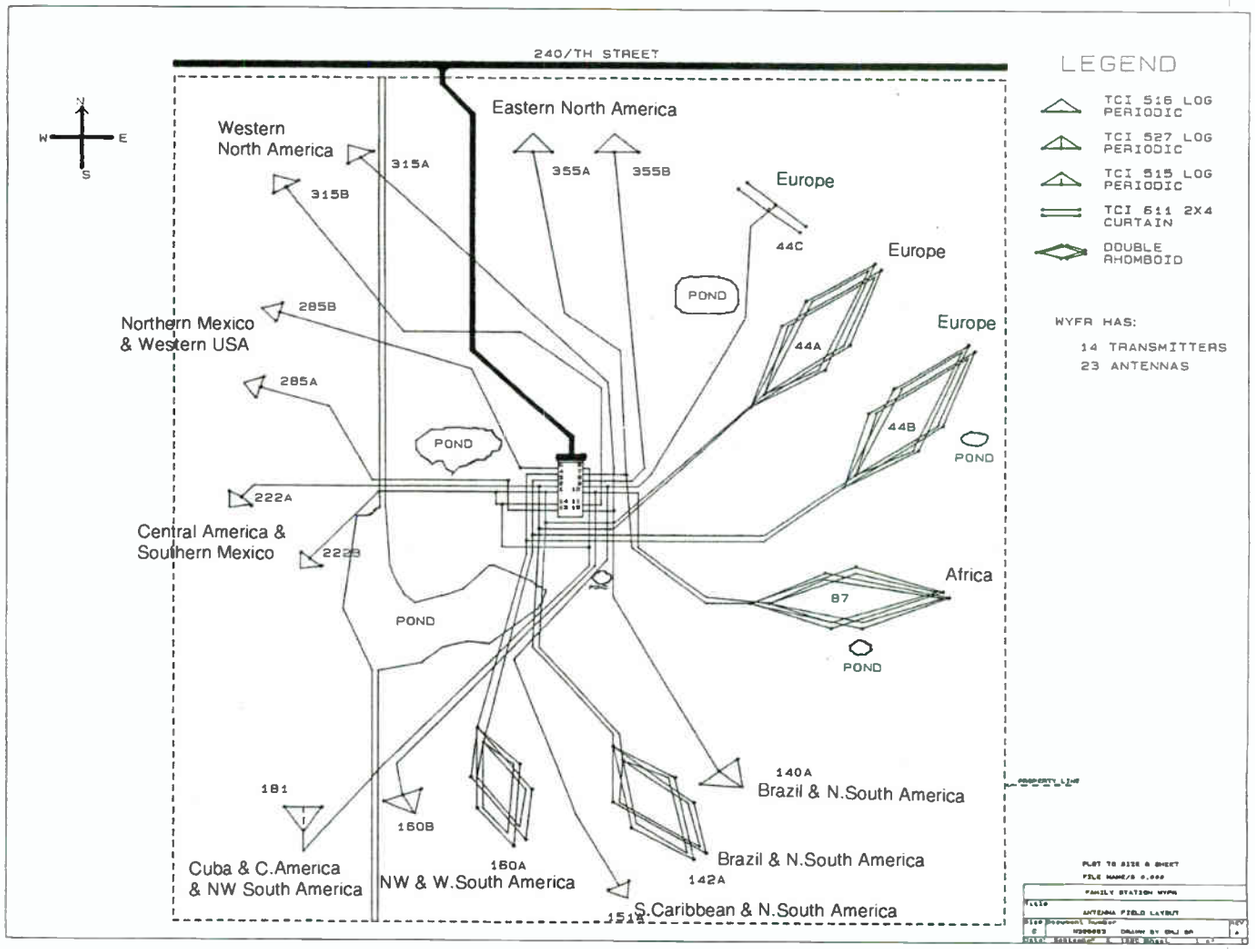

WRMI

(continued from page 1)

miles inland from Port St. Lucie on Florida's Atlantic coast.

On Sunday Sept. 10, Irma's roaring winds tore across the flat plains housing WRMI's 23 antenna systems, comprising a total of 68 towers — the largest commercial shortwave radio transmission site in the United States. The hurricane-force winds snapped one of WRMI's towers in half, leaving the torn metal lattice dangling suspended in the transmission lines. A second tower was bent in half like a paperclip. Many transmission lines radiating from WRMI's central 16,000-square-foot transmitter building to the arrays also were knocked down along with the telephone poles that supported them.

The post-Irma scene looked as if a drunken giant had wandered across the cattle ranch and tripped repeatedly, taking down whatever he had stumbled across.

Add a main power outage that lasted from Sunday to Wednesday, and WRMI was definitely hammered by Hurricane Irma. Yet the station managed to stay on air throughout the chaos, thanks to the efforts of WRMI Facility Manager Pat Travers and five others who hunkered down in the reinforced concrete transmitter building during the storm.

"We have a 25 kilowatt diesel generator on site, which powered a 100-watt shortwave transmitter feeding a dipole antenna," WRMI General Manager Jeff White said. "This kept WRMI's programming on air to the world 24/7 throughout Irma."

Irma's roaring winds tore across the flat plains housing WRMI's 23 antenna systems, comprising a total of 68 towers – the largest commercial shortwave radio transmission site in the United States.

Granted, 100 watts has nothing on 100,000 watts, the power rating common to most of WRMI's 14 SW transmitters. To cover the world successfully by bouncing radio signals off the ionosphere, serious transmitter power is required.

"But as any amateur radio operator will tell you, you can cover a lot of ground with 100 watts," White quipped. "We received reception reports from listeners as far away as southern Ontario and Sacramento, Calif., who had picked up our 100 watts Irma transmissions."

MEGA TRANSMISSION SITE

Built originally by Christian broadcaster WYFR (Family Radio) to reach the world, the Okeechobee transmitter/farm was purchased by WRMI in 2013.

Previously, the commercial shortwave station founded by White and his partner Kiko Espinosa (chief engineer, deceased in 2005) had broadcast from Miami via a 50,000-watt SW transmitter using either a corner reflector antenna beaming 160 degrees toward the Caribbean and Latin America, or a yagi-style log periodic antenna beaming 317 degrees toward North America. The two original antennas were used at different times of the day, depending on which part of the hemisphere was being served.

(continued on page 4)

WRMI

(continued from page 3)

With the acquisition of the Okeechobee antenna farm in 2013, WRMI's transmission options became global; the station subsequently shut down its Miami transmitter site while retaining its studio and office in that city.

STORM PATROL

Spreading out from the transmitter building in a hub-and-spoke pattern of antenna arrays, antenna switchers and feeder lines, the station's transmission infrastructure is an RF engineer's fantasy of curtain array, log periodic and double rhombic antennas collectively aimed at 11 regions of the globe. Add 14 high-power SW transmitters, and WRMI has a near-perfect platform for transmitting its own English and Spanish programming worldwide *and* for leasing airtime to third-party broadcasters.

The threat of hurricanes is nothing new to Jeff White.

"I have operated stations through a few of them," he said. "So I know what it takes to prepare for a hurricane, and to keep things going when it hits and during the recovery process afterwards."

Fortunately WRMI's transmitter building is strong enough to survive a hurricane. The original roof had been damaged by a previous storm when Family Radio owned this site. But they replaced it with a super-strong roof that could resist high winds and did just that during Irma's onslaught.

Meanwhile, White always has lots of diesel fuel on hand to keep the station's 25 kW generator running, "many five-gallon water jugs for us and our water-cooled transmitters," and plenty of gasoline for the station's trucks. "We have an old Florida Power truck with a cherry-picker for putting up telephone poles and attaching wires to them," he said. "You need to have your own to maintain a site of this size."

With plenty of food supplies and bedding, the WRMI crew hunkered down at the antenna farm.

"At 4:30 on Sunday afternoon, the winds starting whipping up," White said. "Next the alarm bells started ringing, which tell us when transmission paths have been interrupted due to fallen lines. Then we lost electricity from outside, knocking our main transmitters offline. So we powered up the generator to keep the lights on, turned on the 100-watt backup transmitter and stayed on air via the dipole antenna as best we could."

FALLOUT AND RECOVERY

The two towers wrecked by Irma are part of WRMI's 44 degree double rhombic array aimed at Europe and the Middle East. Before the storm, the station transmitted on 15770 kHz on this array. It delivered a

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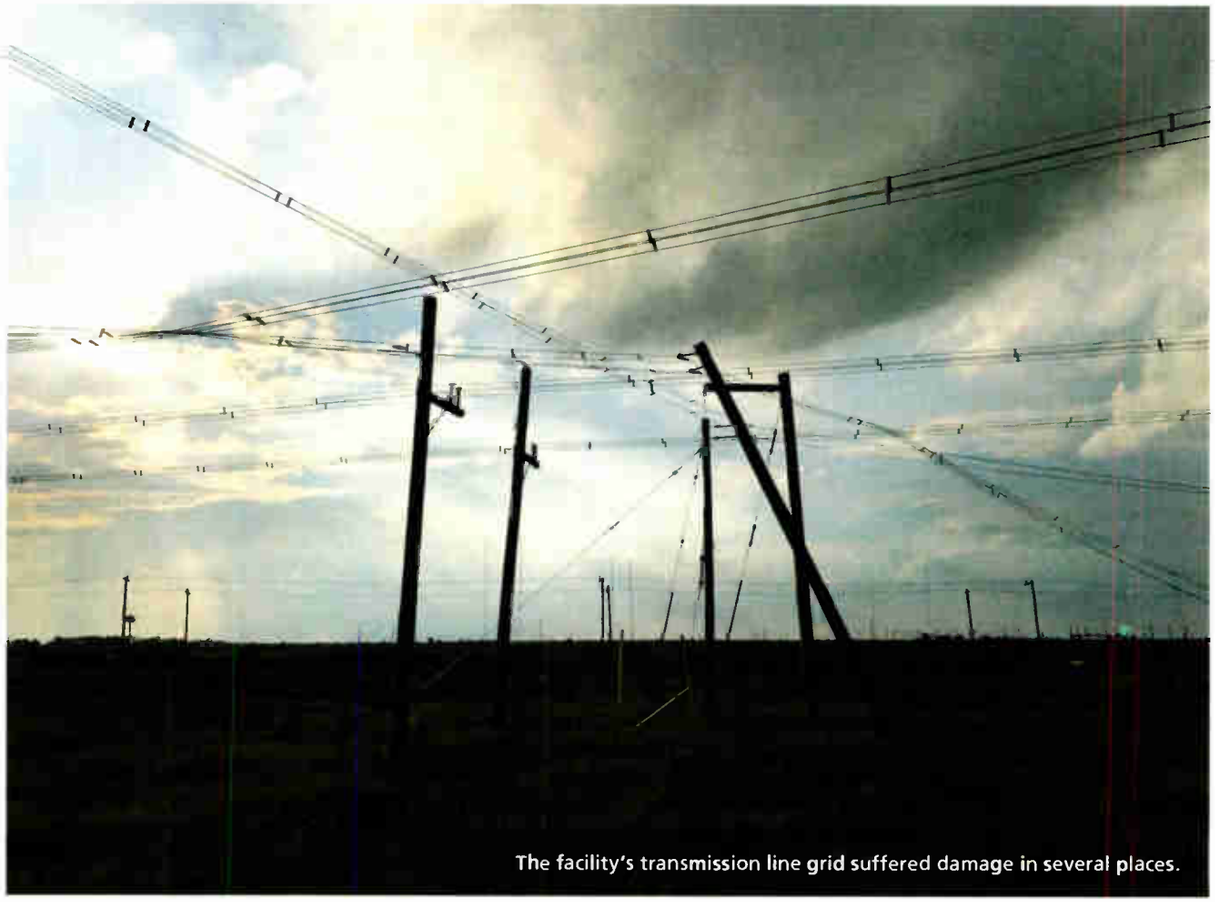
THIS ISSUE

OCTOBER 11, 2017



The facility's transmission line grid suffered damage in several places.

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strong, reliable signal to this market on this channel.

"With the loss of the 44 degree array, we have switched to other arrays to cover Europe and the Middle East on 7780 kHz and 11580 kHz," said White. "I don't know when we will be able to afford to replace the two towers Irma damaged, so this will have to do for now."

The fallen transmission lines and poles were not a big issue. "Right after the storm, our crew got out in our used Florida Power truck and started putting things right," White said 12 days afterwards. "Today, almost everything is back in place — and 13 of our 14 transmitters are already back on air."

WRMI's antenna farm had external power restored on Sept. 13. "Our internet was down for a while after that," said White. "This left us trying to link up to the outside world using a microwave internet link, which was problematic."

Still, not long after Hurricane Irma did its worst to WRMI's Okeechobee antenna farm, this commercial SW broadcaster was back in business.

"We have yet to figure out how to repair the 44-degree double rhombic array and its two destroyed towers," said White. "But other than that, Radio Miami International has bounced back from Irma quite quickly."

IRMAGEDDON

(continued from page 1)

intense, and core services began failing a full day ahead of Irma's landfall. We initially lost power and internet/cable, then landlines, cellular and water as Irma arrived on Cudjoe Key the morning of Sunday, Sept. 10.

It came as a bit of a shock to us to realize we were the only beacon of information remaining. All that brilliant new technology, advanced information conveyance platforms, satellites and cell towers, all silent. Yet there we were. A sweaty troop of seven with a couple of combustion engines, some whirling coils, miles of extension cords, live microphones and two nervous Pomeranians.

Irma made a direct hit on our location with 130 mph westerly winds, gusting to 150. She battered and buffeted our studios relentlessly for several hours.

The walls shook, every door and window seal gushed, but the studio staff remained at their posts behind the mics, dispensing much needed emergency information. With the failure of several IP/STL links, our remaining signals were WWUS and WEOW. The owner, station manager and myself were busy keeping the US1 Radio simulcast live, the generator running and the water at bay, though the latter was a fruitless effort.

Our satellite dish was the first casualty. It freed itself and like a big Frisbee circled the back lot before performing a face-plant that would garner a high score even from the Hungarian judge.

When the eye of Irma was positioned directly overhead, we were afforded 45 minutes of unnerving calm to refuel the generator, survey damages and restock our water supply.

We only had about a foot of surge water, but observed a great deal of damage to our immediate area. Trees down, vehicles overturned, damage to roofs, and the transformer pole feeding our building snapped off.

After 45 minutes, the breeze picked up, sounding the bell for Round Two. Within 120 seconds, the eyewall was on us again, and Irma's winds accelerated to 135 mph in the opposite direction.

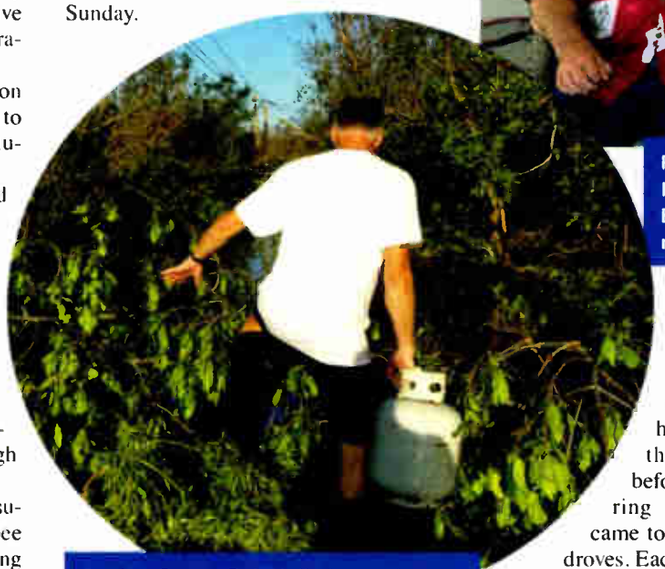
Back within the walls of our studio complex, the on-air and news staff continued their coverage. The phone calls were unceasing.

Residents described what they were experiencing, and let family and friends know they were faring well. The Emergency Operations Center and Monroe County Sherriff phoned regularly with updates. And while the landlines held up, we continued to broadcast weather updates from our staff meteorologist. Marconi would have been proud to know his 130-year-old invention, radio, had bested them all when the chips were down.

Irma continued her trek to the North, and left us with several powerful bands of wind and rain in the tail. This went on for remainder of Sunday.

Rob O'Neil, robo.zenfolio.com

Persistent Seven. Standing, from left: station owner Bob Holladay, manager Rick Lopez, air talent Kimberly Beier-Brown, engineer Ricky Carter. Seated: air talent Steve Miller, news director Bill Becker, news staffer Ron Saunders.



Station Owner Bob Holladay trudges to the Cudjoe Key transmitter site.

When we finally emerged from our refuge, we discovered another foot of surge water, minor compared to what we would learned about other areas in the Keys. We had no power, no water and no communications, as our landlines were now inoperative, as well. The studio crew continued to broadcast their own observations and what information they gathered just before the lines went down.

HULLS AND MASTS

Then an incredible thing began to happen. Keys residents, who had hunkered down with their radios hours before, were now stirring about; and they came to the radio station in droves. Each was invited to tell his or her story on the air.

This continued for days, even after our landlines were restored. They spoke of what they experienced. Many brought food and water. Some requested assistance and some offered assistance. The barter system came into play, with most local responders working for a few gallons of gas so they might continue down the road to help elsewhere.

Like a boxer who had been dazed by a punch, it took us an entire day to fully grasp our circumstance. Rumors were rampant. Mass casualties, bridges out and Jose was headed our way. In reality, there were but two fatalities, neither directly associated with Irma.

Driving north through Big Pine Key to Marathon, the devastation was shocking. Key West had suffered damage but escaped the brunt of Irma's fury.

Boats were everywhere, except where they belong. We saw one boat in an electrical substation. The waters around the lower keys were littered with sunken vessels. In many cases only hulls and masts were visible above the surface. Gas stations, restaurants, resorts, businesses and homes decimated.

A common sight in the Florida Keys after Irma.

With no potable water service, the team gathered flushing water from surge pools.

But even amidst this hardship, the

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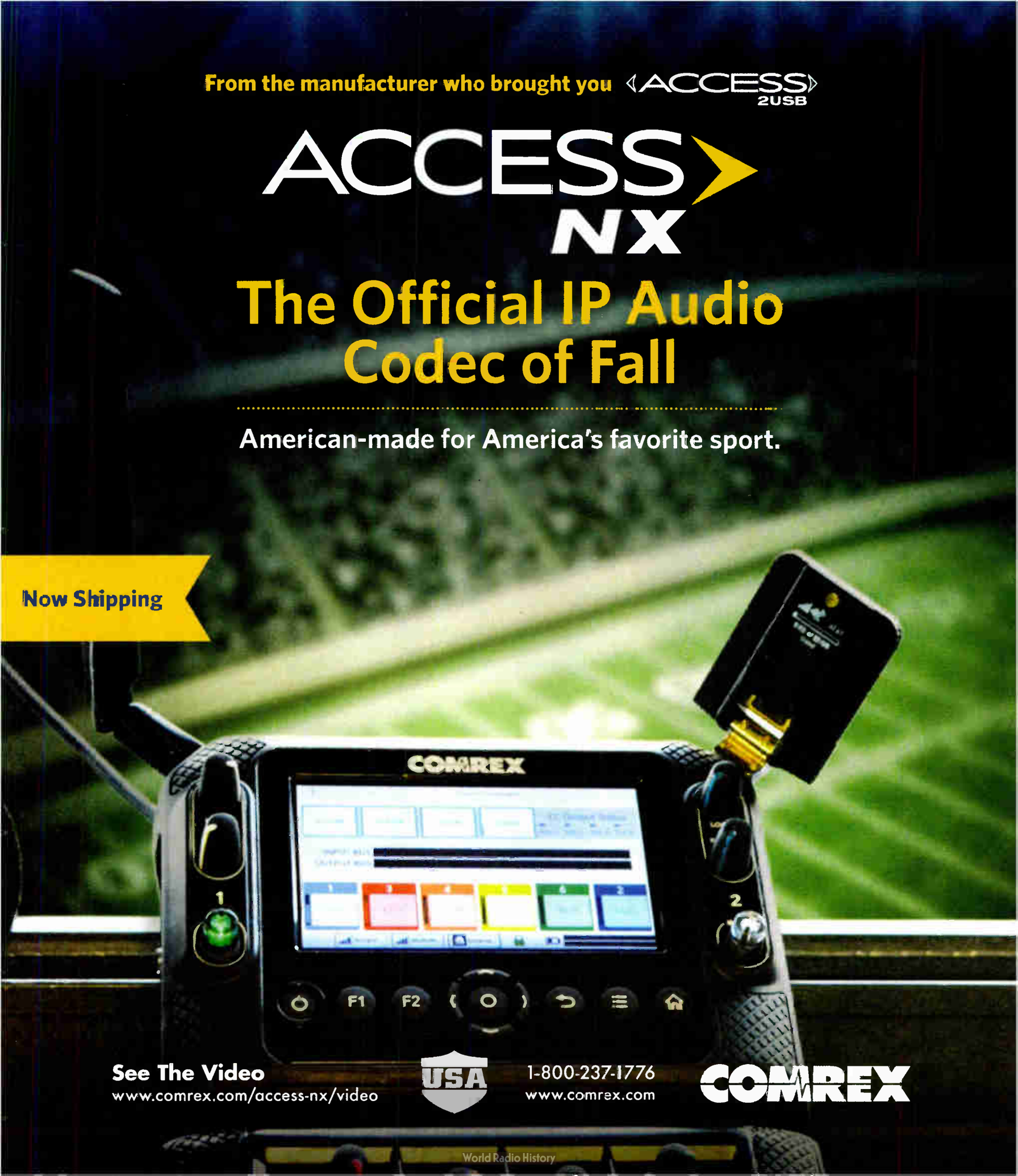

IRMAGEDDON

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Conchs were busy. Not busy fretting over themselves but busy helping their neighbors.

The next few days ran together. Slowly outside aid began making its way down the island chain. The landlines came back first, but power service to our location took five days. The studio and transmitter generators were unfaltering throughout the storm and the station remained the only reliable source of information and encouragement. The steady flow of people continued and we aired their unique tales of "Irmageddon."

By Friday Sept. 15, electrical service had been restored, and water was available in some areas, although a boil notice was in effect. The on-air crew had shifted largely to information dissemination and interviewing representatives from FEMA, EOC, Aqueduct Authority, Sherriff's Office and a constant string of other officials. Prior to our losing internet service a week earlier, we had been taking calls from listeners of our web streams from Germany, Amsterdam, Jamaica and throughout the states; once we reestablished our Internet stream, the calls began pouring in once more.

Steve Miller, Ron Saunders and Bob Holladay in the studio.

One after another, Keys residents told their stories on US1 Radio.

Stock Island Marina donated fuel to keep station generators running.

LIFELINE

Over the past decade it has become a commonly held belief that terrestrial radio is old-fashioned, outdated and irrelevant. However, when our digital infrastructure and smart devices fail us, that archaic little radio becomes your lifeline.

I finally hitched a ride out of the keys with a couple of big-hearted AeroBridge volunteer pilots. They were shuttling much-needed supplies in from the mainland.

While waiting for a hop, I worked with the distribution crews on Summerland Key and then at the Homestead Airport. Selfless people with compassion and strong backs. Reflective of every single responder I encountered during this eye-opening experience.

There are bunches of great stories to tell. Catching the STL antenna before the winds removed it. Making a transmitter run in the bowels of the storm. Hearing 100 mph winds howling through the tower. Gathering surge water for toilet flushing. Trying to make a pot of coffee and knocking the stations off the air. Buy me a beer at Sloppy Joe's sometime, and I'll expound upon these and many more.

The team nicknamed its unfaltering studio generator "Zippy."

The way Keys residents and those in support roles responded to Irma and her aftershock renewed my faith in my fellow man. And I am proud to have been a small part of a great team of individuals who weathered a storm and served a community. And after all, isn't that the true purpose of a broadcast station?

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

Author Ricky Carter. "The way the Keys residents and those in support roles responded to Irma and her aftershock renewed my faith in my fellow man."

IN CASE YOU MISSED IT

Here's 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's Pai Confirmed to New Term
The chairman was approved by the Senate for another five years. Separately, he called on Apple to turn on latent FM reception capability in its phones, but the consumer electronics giant said iPhone 7 and 8 don't include radio chips or antennas for FM signals.

➤ Next Step in Revitalizing AM: FCC Order on Directional Arrays
Commission eliminated several technical rules pertaining to how AM stations employ and maintain DAs.

➤ Groups Call on Members to Aid Puerto Rico Broadcasters
SBE, NAB and AFCCE were among those letting people know how to assist colleagues in the U.S. territory in the aftermath of Hurricanes Irma and Maria.

➤ Mixed Opinions on ETRS Post EAS Test
A few hiccups emerged with the filing system, but the third national EAS test generally went smoothly.

➤ In Largest Penalty to Date, FCC Fines Both Pirate Operator and Property Owner
It heaved a $144,344 fine. It was the first time the commission has attempted to make a property owner equally liable for operation of such a station.

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Auntie Mo Educates, Entertains

Kids' internet station brings educative programs to African children and their families

RADIONET

BY JAMES CARELESS

IBADAN, NIGERIA — Educating Africa's children is a real challenge.

Due to factors such as poverty, corrupt governments, along with military conflict on many parts of the continent, many children are getting a substandard primary school education.

"There are 12 countries in Africa — namely Malawi, Zambia, Ivory Coast, Ghana, Benin, Nigeria, Chad, Ethiopia, Congo, South Africa, Namibia and Comoros — in which 30 percent or more of children do not meet a minimum standard of learning by grades four or five," said The Borgen Project, a nonprofit group advocating to make poverty reduction a major part of U.S. foreign policy. "In countries such as Ethiopia, Nigeria and Zambia, over half of in-school students are not learning basic skills by the end of primary school."

Taking action to educate lower-income children — especially those without access to schools — is the goal of Auntie Mo Kids Radio *(www.auntiemoradio.com)*, a nonprofit 24/7 internet radio station aimed at African children and their parents. Featuring a nonstop menu of spoken children's stories, educational information programs, music, and advice programs aimed at parents (and recorded by them as well), Auntie Mo Kids Radio is helping to bridge Africa's educational shortfall; one listener at a time.

"Auntie Mo Kids Radio is more than a website," said station founder/creative director (and children's author) Rotimi "Timi" Ogunjobi. "It is an evolving educational system."

WHY INTERNET?

At first glance, it may seem strange that an educational outlet dedicated to reaching African children is transmitting via the internet, rather than using radio broadcasting. However, the truth is that internet penetration is growing in Africa. In fact, Nigeria leads the continent by having 91.88 million internet users as of March 2017, out of a population of 186 million.

"More than 50 percent of communities in Africa potentially have access to the internet either through computers or mobile devices including phones," said Ogunjobi. "If you pair a mobile device streaming audio from the internet, with some other inexpensive device such as a personal FM transmitter, an internet radio can broadcast locally to nearby FM radio sets. This means that an entire class of children could receive free, good quality education and entertainment everyday from Auntie Mo Kids Radio."

Photos courtesy Auntie Mo Kids Radio

Auntie Mo's Mobola, left, and Opeyemi brainstorm for a recording session.

Auntie Mo founder Rotimi Ogunjobi records a story for the station.

But why not reach these children directly via FM broadcasts, rather than starting with internet-based distribution? The answer is money: Although radio receivers are ubiquitous and certainly less expensive than cellular phones in Africa, radio transmitters are not. For a nonprofit such as Auntie Mo Kids Radio — which operates on a shoestring budget — building and operating a conventional radio station is not economically possible at the present time. But creating and running a software-based station using a computer and the web is not.

"It is not perfect and not adequate, but internet radio was the cheapest solution that offered itself," Ogunjobi said. "Making the streaming available only via a computer browser is quite limiting, if accessibility is a concern. But now that internet-enabled mobile devices are getting cheaper and more popular, new vistas are being opened to potential listeners."

Ogunjobi's approach to programming Auntie Mo Kids Radio is based on his knowledge of effective childhood education strategies, and how they are frequently frustrated by Africa's economic conditions and cash-poor school system.

"Storybooks and songs are especially important to a child's development: They build reading and comprehension skills, excite the imagination and initiate creativity in children," said Ogunjobi. "But to the average African child, books are rarely a priority purchase because they are typically unaffordable. Good quality instructors are also few, and equally expensive."

This is why reading stories — particularly locally-written stories that are culturally relevant to African children — is a big part of Auntie Mo's daily programming. So are educational programs that look at the world from an African point of view; plus popular music, and songs that the children can sing along to.

For parents, Auntie Mo offers advice programs on all aspects of raising kids successfully, including content that is recorded by parents themselves through the station's website. To speed the production process, the website offers practical recording and content advice to contributing parents. "What is in this for you? Promote your knowledge," states the Auntie Mo "Positive Parenting" web page. "You never know, someone influential may be listening!"

Currently, Auntie Mo Kids Radio only offers prerecorded content on its internet radio station. "We plan to add some live scheduled programming soon, especially with the parent-related programs," said Ogunjobi.

As for working facilities? At present, volunteers in a small Ibadan office put together Auntie Mo's content. "For equipment, we make use of mics, mixers, ADC audio converters, computers with DAW software; and of course, efficient internet modems and huge storage devices," Ogunjobi said. "When we decide to go entirely live, we will obviously need to purchase more equipment; but right now we have an optimum configuration of facilities."

Staffing is similarly tight: "Together with me, there are only four people working permanently on Auntie Mo Kids Radio — mainly in production and programming," he said. "To read the children's storybooks, we call in a couple of voice artists once in a while."

PROGRESS AND CHALLENGES

Since it launched in July 2017, Auntie Mo Kids Radio has been making progress in building an audience.

"The number of listeners is rising every day, and from all parts of the world," said Timi Ogunjobi. "Since we published our mobile apps (for Apple and Android), the number of daily listeners has increased more than tenfold. We are optimistic that we may achieve our initial goal of 500,000 monthly listener-hours by the end of the year."

Auntie Mo Kids Radio has also gained a degree of financial support from the CISTD Foundation, a nongovernmental agency, but more money is sorely needed.

"Finance is the primary challenge," said Ogunjobi. "Auntie Mo Kids Radio is a public service project and not a commercial venture. Looking for investors is out of the question, so we need to talk more to possible donors or have more talk to us," he said.

"Content development is also a challenge," he added. "We started up with more than 60 percent borrowed content, which we aim to reduce to a maximum of 30 percent within six months. But content development costs money. We also need to promote the station like everyone else; buy web ads and other promotional resources — but you get it; money answers all problems. The road plan is there, the needs are there, and the talent is eager, but how do we pay the bills?"

WHO IS AUNTIE MO?

Despite these many challenges, Auntie Mo Kids Radio is soldiering onward; offering 24/7 content to African children and their families wherever they may be.

This fact leaves just one more question to be answered: Who is Auntie Mo?

Well, initially Ogunjobi had planned to name the station after a good friend he calls "Auntie Mimie." He says he found however that most children struggled with saying the name. "Words that come easy to us may be so much a challenge to these little ones. If you are planning to sell your brand to kids, do make sure they are able to pronounce the name; or else it is all money down the drain," he asserted.

"One day however, while visiting a local kindergarten, I heard the kids chanting one of their 'nursery songs: 'One man went to mow … went to mow a meadow.' After they were done I pulled aside a two year-old girl and asked her to sing me the song once again. 'One man auntie mo,' she awkwardly but unabashedly began. I had the name I had been looking for!"

James Careless reports on the industry for Radio World from Ottawa, Ontario.

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There's Always Room for Error

Also: This is the time of year to prevent rodent infestation at your station

WORKBENCH
by John Bisset

Email Workbench tips to johnpbisset@gmail.com

Newman-Kees RF Measurements Consultant Frank Hertel recently fell into a conversation with fellow engineers about the FCC-required harmonic and spurious emission specifications for FM.

Several of the engineers mentioned a couple of local 100 Watt ERP LPFMs that didn't meet the –80 dB requirement for the second harmonic. None of the others said anything to challenge their claims.

Frank writes that he couldn't help himself and spoke up, saying that 100 Watt ERP LPFMs only need to have harmonics and spurious emissions at a level no greater than –63 dB when referenced to an unmodulated fundamental carrier.

Frank stressed that the reference is an "unmodulated carrier." This is important. Of course Frank had to prove his statement to everyone.

Here's the explanation. Typically, everyone touts the –80 dB figure for meeting FCC specs for harmonic and spurious emissions. Although this is the number most of us will use in our day-to-day work, it does not apply until the transmitter system being measured operates at more than ~5,000 Watts of effective radiated power.

Lower-powered transmitter systems that operate at less than this are not required to meet the more commonly used –80 dB requirement. For LPFM stations with a 100 Watt effective radiated power, FM harmonic and spurious emissions are required to be no greater in level than –63 dB. This requirement begins at 600 kHz on either side of the reference carrier frequency.

Lower-powered transmitter systems that operate at less than ~5,000 Watts of ERP are not required to meet the more commonly used -80 dB requirement.

Here is the simplified FCC formula for *all* FM stations:

1. Determine the LOG value of the Watts of ERP power for the station.
2. Multiply the above value by 10.
3. Add 43 to this product.
4. The sum of the above math sequence is the implied negative dB value that the emissions must meet. A greater negative dB value is desirable but not required.

Adding to the confusion is that when one measures the harmonics and spurious emissions of a station, it is imperative to know the gain slope of the receiving measuring antenna as well as the losses of the antenna's connecting cable.

In most cases, an antenna that is 1/10 sub wavelength at the fundamental reference frequency will exhibit a (to be determined) gain, as it measures each increasing harmonic frequency. When directly connected to a sampling port on a transmitter, the accuracy of your measurement will improve, *if* the content being sampled is identical in level at each frequency that will be measured when compared to the RF content actually being radiated by the transmitting antenna.

Using a direct sampling method hopefully will yield minimal sampling level error and not exhibit any substantial gain, as each increasing harmonic frequency is measured. There is a lot of room for error, even when one tries to get it right. When making any such measurement claims, document everything. Field measurements are, at best, difficult and always subject to one's best "proof." That's why you document.

Interested in details of FM transmission system requirements? Search for section 73.317 of the FCC rules and regulations online.

Engineers at AM stations: You may want to check your outside antenna tuning units for rodent infestation at this time of the year. Ditto for any cracks or gaps in the AM or FM transmitter building.

Readers of this column know that expandable foam insulation can be chewed by unwanted guests, so be sure to add copper or stainless steel wool to the plug.

Pictured in Fig. 1, these pot and dish scrubbers can be found at dollar-type and big-box stores for inexpensive prices.

But make sure you don't buy scrubbers impregnated with soap!

Another caution: Steer clear of steel

(continued on page 14)

Fig. 1: Copper pot scrubbers work well to plug holes and keep rodents out.

Control Your Sonic Signature

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5 Bands

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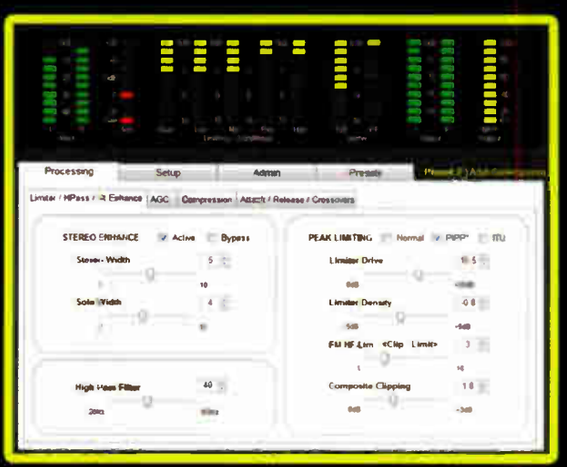

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Before Digital: Remembering the Tascam 122 Mk II

In its day, this cassette recorder was significant to the pro audio market

PLUGGED INTO THE PAST

BY TOM VERNON

When the engineers at Phillips introduced the first audio cassette recorder in 1962, they couldn't possibly have imagined where the next three decades would take the fledgling tape medium. Originally intended as a replacement for dictation machines with open-reel tape, the new format underwent continuous development. It revolutionized the consumer tape market, easily displacing eight-tracks by the end of the 1970s.

The cassette itself evolved from a crude, injection-moulded chunk of plastic into a precision-cast shell with tape rollers and robust pressure pads. At the same time, the 1/4-inch tape within the shell evolved from normal bias to chromium dioxide (CrO_2) and metal varieties. Thinner tape was also developed to enable an hour's worth of recording on each side.

The earliest tape transports had a single motor and belt drive, usually with record/playback and erase heads. High-fidelity and pro audio decks evolved with three-motor drives and separate record, playback and erase heads. Auto-reverse transports, Dolby B and C noise reduction and automatic switching of bias and equalization via the cassette shell had also been introduced.

By the 1990s, the quality of the cassette medium was approaching that of the open-reel machine. Along the way, interest in the cassette medium had been increasing in the pro audio market.

TASCAM 122 & 133

In 1980, Tascam introduced the original 122. It was the company's first venture into professional-grade, rackmount cassette decks and a sign of how much the cassette medium had matured since its introduction.

A unique feature of this first 122 was the two-speed transport. In addition to the standard 1 7/8 IPS speed, it also had the higher 3 3/4 IPS. With the higher speed, even better performance from cassettes was possible. For whatever reason, the 3 3/4 speed never became an industry standard, and subsequent recorders in the 122 series returned to the accepted 1 7/8 speed.

This first 122 was the right recorder and the right time to bring cassettes into the recording and broadcast markets. About a year after its introduction, NBC adopted the Tascam 122 as the company-standard cassette deck. This unexpected endorsement by a broadcast network turned out to be better than any advertising campaign that Tascam could have put together. Soon, CBS and ABC also adopted the 122, virtually assuring the success of the product line.

The next product in the series was targeted at the now-forgotten multi-image market, which used multiple carousel projectors to create presentations. The Tascam 133 had many of the features of the 122 but also a third cue track that could be used to control projectors and other multi-image equipment.

ENTER THE 122 MK II

The Tascam 122 Mk II was a radical upgrade to the original 122. It featured a three-motor transport with full-logic control, enabling features such as digital tape counter display, memory and return to zero and tape run time TRT display. All transport functions and status indicators are accessible via a rear-panel remote connector. Variable pitch control was also available.

The Mk II continued with one of the 122's popular features, front-panel bias/level tweaks. Proper bias settings varied considerably among tape brands, so getting top performance out of a deck required users to standardize on one brand, and tune up the machine with that tape. In the real world, different brands of tape were often used. In addition to the internal tweaks on the main circuit board, the 122 had switch-selectable front-panel bias and level tweaks. When used in conjunction with the built-in 400 Hz/10 kHz oscillator and VU meters, users could tune the bias up to whatever tape was at hand.

New to the 122 Mk II was Dolby HX Pro. This "active bias" technique

(continued on page 16)

WORKBENCH

(continued from page 12)

wool, seen to the left in Fig. 1. Steel wool will rust; the copper or stainless steel will not.

A good method is to plug the hole with stainless steel wool in combination with the spray foam insulation as a sealer. The metal will discourage the pests; the foam insulation helps seal the opening.

Fig. 2: Here are two sizes of LED flashlights, available from the big box stores like Home Depot.

Speaking of big box stores, Brian Oliger and his engineering team at WTOP/Hubbard in Washington call our attention to a couple of LED flashlights from Commercial Electric.

Available at The Home Depot and shown in Fig. 2, it is available in two sizes. Fig. 3 shows an added benefit: the magnet in the end enables the flashlight to mount to any metal surface.

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

Author John Bisset has spent 46 years in the broadcasting industry 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.

Fig. 3 (below): The built-in magnet means these lights are always at hand.

Leave Your Competitors in the Dust

Introducing VOLT, the hotrod new processor from Omnia that gives you more processing power and sonic performance in one rack unit than others give you in three. Sharing technological lineage with top-of-the-line Omnia products like the Omnia.11, VOLT drives you faster, with exciting sound that will take you from zero to *100* in seconds! In the race for electrifying, competitive, market-leading sound, VOLT puts the competition squarely in the rearview.

TelosAlliance.com/VOLT

Omnia

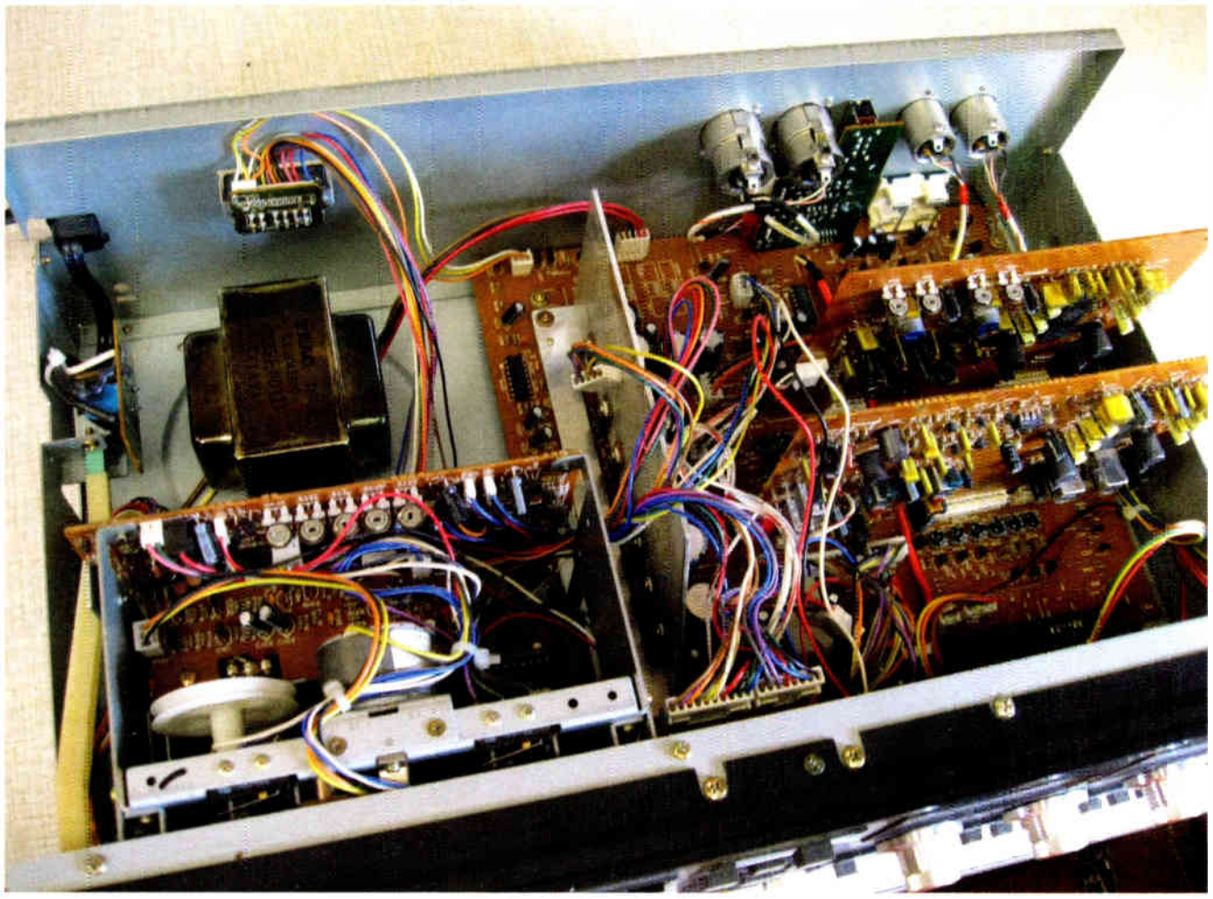
TASCAM

(continued from page 14)

largely overcame the problems with self-bias and loss of high frequencies in recordings by dynamically adjusting the bias oscillator to maintain constant bias levels. The result was improved high-frequency performance with headroom improvements up to six dB. HX Pro was a one-way process. Unlike Dolby B and C, there was no decoding necessary to reap the benefits.

Following on the success of the 122 Mk II, around 1986, Tascam introduced the 112 Mk II, a less-expensive two-head deck with many of the same features. Although it looked similar on the outside, the transport and many of the innards were quite different than the 122. A variation on the 112 was the 112R, which used an auto-reverse transport and rotating head for extended recording and playback times.

The final release in the series came in 1993 with the introduction of the 122 Mk III. It had many of the features of the Mk II but featured an improved transport. Tape handling was enhanced with a servo direct-drive capstan, which also gave the machine outstanding wow and flutter specs. Cobalt amorphous heads delivered excellent sound quality, as well as long life.



Although the Mk III has been discontinued by Tascam, it is still sought after and widely used in applications where archived cassette material is being dubbed on to digital formats.

The 122 was a real workhorse, and stood up well to the daily torture of radio station and recording studio environments. Catastrophic failures were extremely rare. If it was kept on a regular maintenance schedule, replacement of the moving parts that wore out was predictable, calibration held up well and tweaks were clearly marked on the circuit boards. As with most Tascam products, the service manual for the 122 is excellent.

One of the most tedious tasks when servicing the 122 was replacing the VU meter lamps. This entailed a major disassembly behind the front panel so the meters could be removed, as the bulbs were located inside the meter housing.

One of the most expensive tasks was replacing the head assembly. While the life of reel tape heads could be extended by having them lapped once or twice, the small size of cassette heads, combined with the fact that the record and play heads were usually in one assembly, meant that was not an option. In addition to the cost of the head itself, labor costs and the use of expensive jigs to initially set up the geometry of the head added to the expense.

In many radio stations, the 122 was located in the control room and used as the aircheck machine, with its remote start/record function interfaced into the mic switch. In the production room, it was used to dub spec spots from cart to be sent out to advertisers. It was also used by stations that aired music from local artists, before the cost of burning your own CDs dropped.

The only real competition that Tascam faced with the 122 came from the Studer A710, which was geared more to the broadcast market than recording studios. It featured the same rugged construction and uncompromising audio quality as the company's legendary open reel tape machines.

This particular 122 was saved from the dumpster in the late '90s, when a radio station was moving to new studios. By then, the transition to digital was well underway, and anything analog was on its way to obsolescence.

Tom Vernon is a longtime contributor to Radio World. Is there a past equipment model that you'd like him to recall here? Email radioworld@nbmedia.com.

MARKETPLACE

Retro Mic: The Shure Unidyne Model 55 is one of those iconic microphones that laymen think of when they hear the word "microphone." Cartoonists draw something like it in illustrating broadcasters from the golden age of radio. Movie producers might use it for a shot of a dispatcher saying, "Calling all cars..." or a crooner nuzzling up closely to a microphone.

Now after more than 75 years of production, the latest iteration is ditching the famed chrome grille for a pitch black approach.

The Super 55 Pitch Black Edition goes all matte black, including the interior. It has a shock-mounted dynamic cartridge, familiar swivel stand mount and supercardioid pattern. Price: $299.

Info: www.shure.com

Encoding Power: 2wcom's new MM08E encoder promises flexible operation in satellite or IP environments. The 1 RU box can receive audio signals by analog or digital input as well as by Livewire streams.

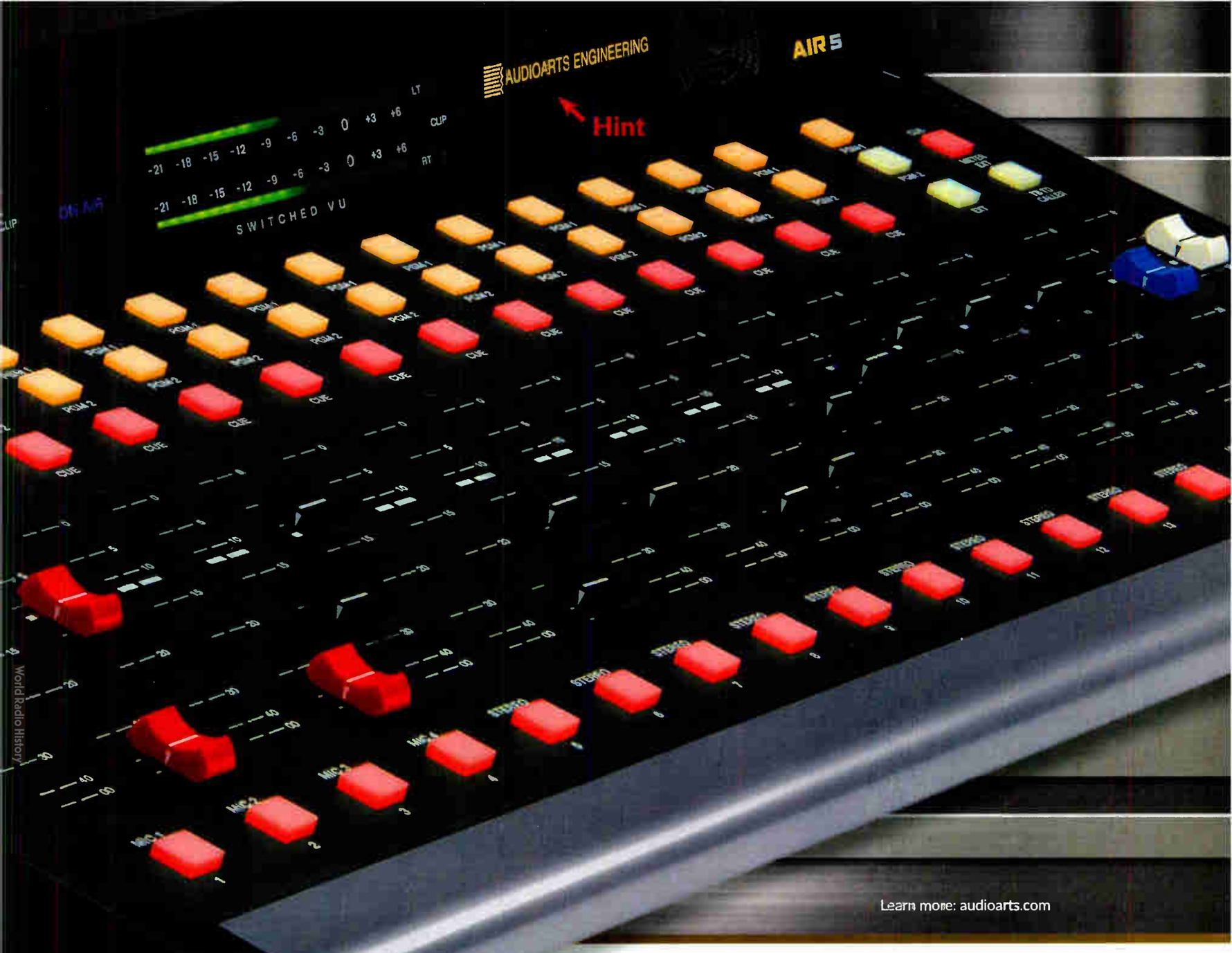
The MM08 encodes common audio algorithms like Enhanced apt-X, AAC, MPEG I/II Layer 2/3, PCM and RDS.

Additionally, it generates multiple streams independently. With the system, transmission of ancillary data and switching contact information (GPIO) can be forwarded via integrated interfaces, while activation of additional hardware channels can be managed via software update.

An optional second hot-swappable slide-in power supplies enables uninterrupted operation. The package comes with quality management functions such as MPEG FEC and DualStreaming; controlling (HTTP, Telnet, NMS and SNMP) and monitoring.

Combined with the Satellite Inband Remote Control (eSIRC) server and its DSR02+ satellite receivers, the company says this solution enables broadcasters to fully control the entire distribution chain with a satellite IP solution.

Info: www.2wcom.com



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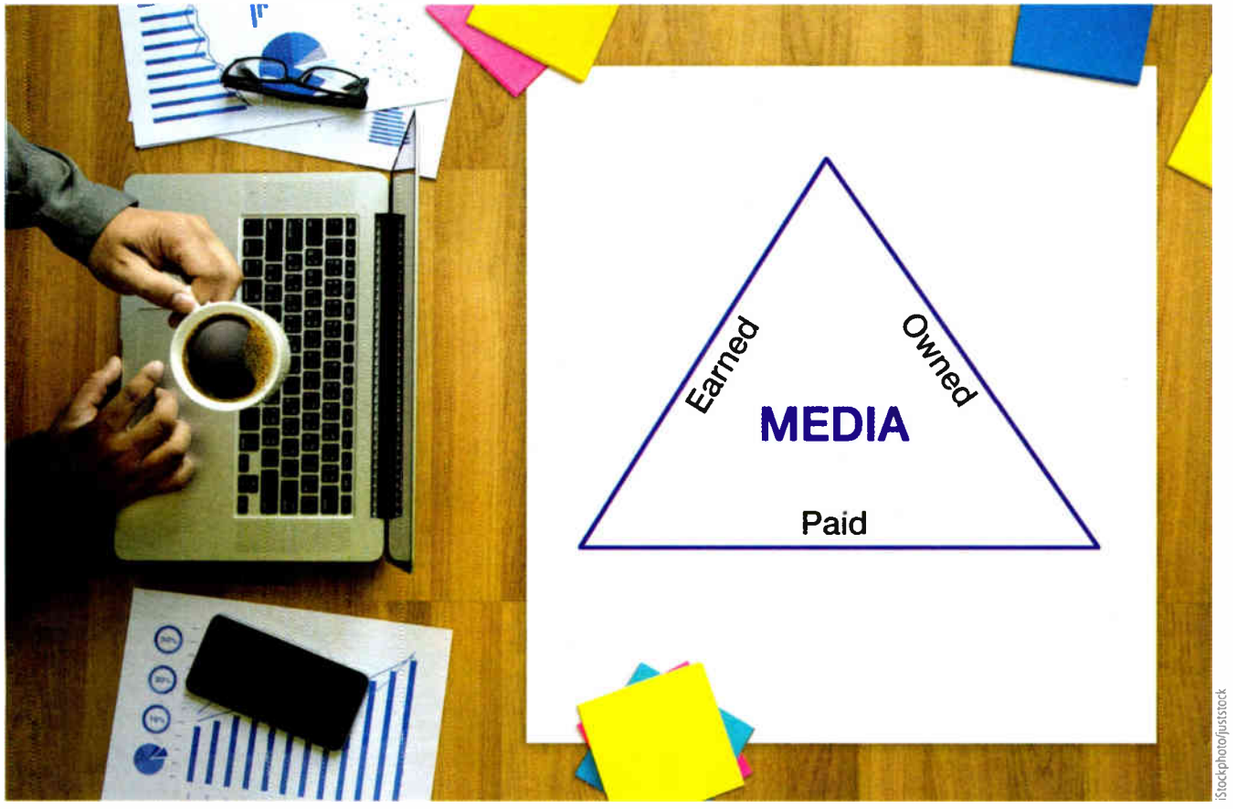


iStockphoto/juststock

PROMO POWER

Mark Lapidus

Devise a strategy to leverage your contacts and spread the word about your station

There is a rule for brainstorming sessions that emphatically states no idea is a bad idea. The genius who coined this concept deserves a cream pie … in the face!

The most consistently horrible proposition that raises my blood pressure is this Wile E. Coyote genius comment, "Let's create a viral video!"

That "idea" typically kills other creative thinking, so moving forward, I'm making it clear to any group that will have me as a member that this idea is banned from all brainstorming.

While that rare person who can intentionally create instantly viral videos may exist, I've yet to meet this super-human. Viral videos are mainly happy accidents: Something was caught spontaneously and is so authentic that it resonates emotionally.

So what's a station that wants to generate consistent water-cooler conversation to do? Devise an earned-media strategy!

MAKE A PLAN

For those unfamiliar with the term, "earned media" is publicity gained either by successfully having stories placed on media outlets (digital and traditional) or by convincing consumers to share items via social media, texting and email. "Earned media" is part of the triangle whose other two thirds are "paid media" and "owned media."

How does one obtain earned media? By far the most effective way is to actually hire a public relations firm or individual who specializes in this field. I know the go-to response to this suggestion is "we don't have the budget for that!" If your marketing budget is truly zero, I get it, and I do have a few thoughts for you coming up. However, if you have some marketing dollars, maybe it's time to consider how effectively that money is being invested.

Oftentimes radio stations will buy small TV schedules with few gross ratings points or tons of banner ad impressions with low click-through rates or social media posts with little-to-no reach. If that's the case, take the time to price out a local public relations or communications firm who specializes in earned media in your city. You may get more bang for your buck by reallocating funds.

It is certainly possible to generate earned media without a budget. The keys to success are developing relationships, utilizing those relationships at the appropriate time and persistence.

Not everyone is great at developing business friendships. It takes a willingness to meet new people and to get them to understand that you can provide value to them personally. For example, there are people in charge of content at your local newspapers (print/digital) and television news programs who are constantly looking for human interest stories. Such stories occur naturally on morning radio shows, but rarely do the right assignment editors hear about these stories consistently.

Many cities now also have local social media influencers who specialize in certain topics, such as entertainment or sports. The next time you've got an appropriate celebrity coming into the studio, invite a local social influencer to join you — the influence should take pictures, video, sound, whatever he or she wants to share with their audience.

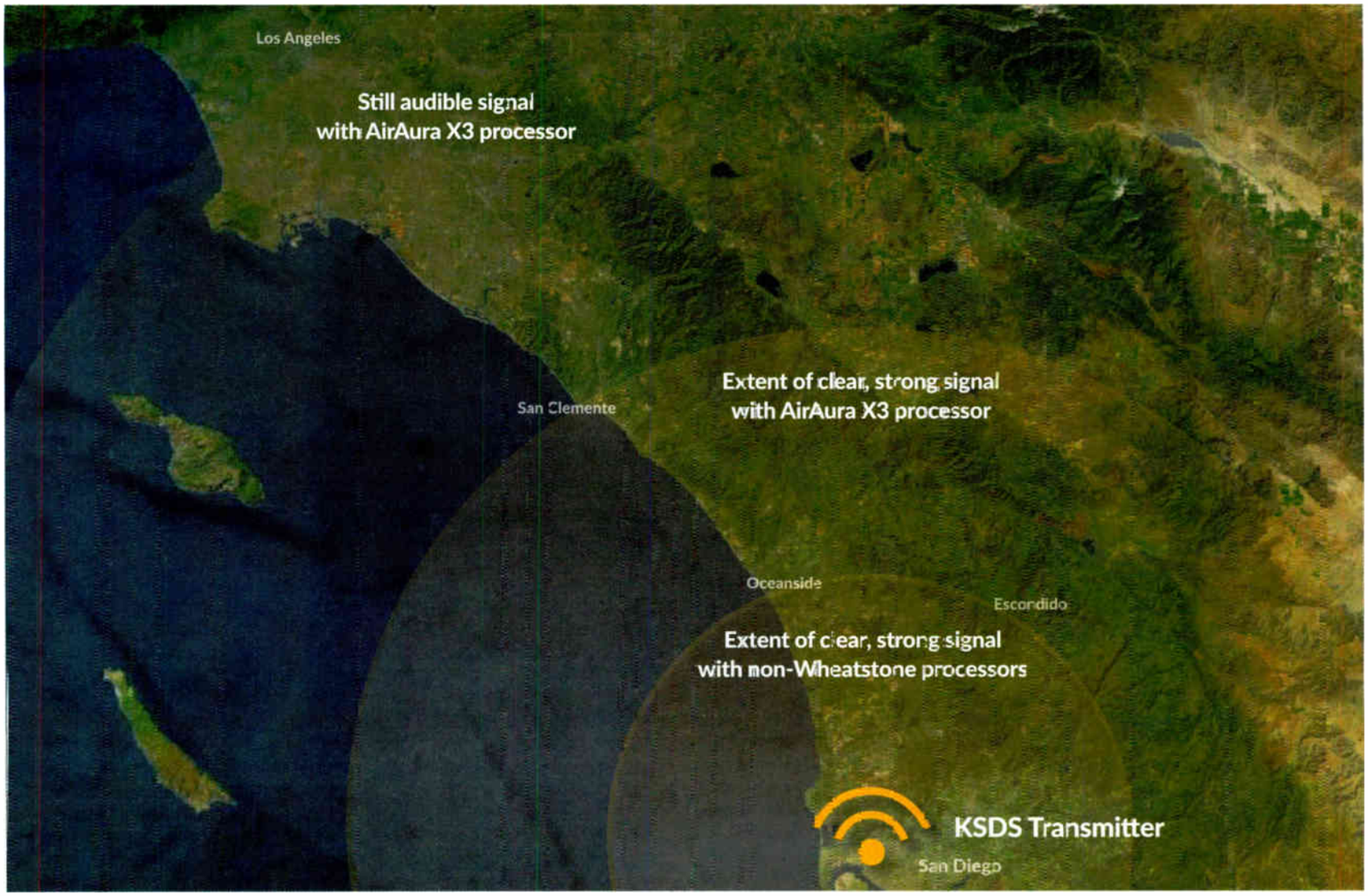
You probably already work with nonprofits to help them with fundraising or generating attendance to their events. Are you asking these groups to share stories of your work together with their membership? There could be tens of thousands of people reading their monthly newsletters or viewing their website, but if you don't ask to be included, you may be left out. One idea is to get a friendly nonprofit to interview one of your personalities on a specific topic that's relevant to the organization's readership.

Do you have a sister radio station that could be airing stories about you? For example, if there's a news station in your cluster, do they ever share about some good deed one of your personalities did in the community?

The keys to success are developing relationships, utilizing those relationships at the appropriate times and persistence.

Do you ever ask your on-air audience to retweet, share images or forward specific videos? If five people share with five people who share with five people, the numbers can build rapidly.

Do not underestimate the power of persistence when trying to generate earned media. While you don't want to wear out your welcome with media contacts or social influencers, you must be in touch regularly. When you really work the phones, email and meet in person, you will finally understand the original meaning of those two words: earned media — because you will have truly earned it!



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

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Scottie Rice, engineeer for KSDS in San Diego, shared his experience in putting a Wheatstone processor on the air in place of another top-of-the-line audio processor. He was able to increase the distance of his listening area substantially.

To see/read Scottie tell the whole story, go to
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New Tools, New Philosophies at the Weekly Music Meeting

The charts aren't what they used to be, so what's a programmer to do?

21ST CENTURY PD by Dave Beasing

Legend has it that Todd Storz, owner of KOWH(AM) in Omaha, Neb., in the 1950s, observed an odd phenomenon at the neighborhood watering hole. Customers tended to choose the same songs on the jukebox, playing just a handful of the hundreds available, over and over. Stranger still, the waitresses — who endured hours' worth of repetition during their shifts — also spent their hard-earned tips on the same few songs.

Not only did this supposedly give Storz the idea for Top 40 radio, it's safe to say that alcohol was present at what amounted to the format's first "music meeting."

Since then, music meetings attended by the programming leadership team have determined weekly playlist changes at contemporary hits, urban, rock, country stations — any format that includes new music. But until recently, program directors had very little more information than Storz did to support their decisions.

Callout research became the music meeting's first widely-adopted enhancement in the 1980s, and it's still considered vital today by those who can afford it. "Great callout" causes power rotation, while "poor callout" is blamed for dropping a song, even (record representatives often claim) before it's been given enough exposure to garner a fair test. Also upsetting to record labels, a hit song's lack of "Tired Of" or "Burn" scores can justify keeping it in high rotation longer — preventing a timely shift in emphasis to the follow-up single.

According to Jacobs Media consultant Mike Stern, "Long after their life on the chart has ended, listeners still want to hear their favorite songs."

CHANGING METHODOLOGY

New data sources that track streaming music consumption sometimes undermine music business objectives, also.

"While the song 'Believer' by Imagine Dragons was still climbing the chart, their song 'Thunder' was a top-streaming record in many markets," says Stern.

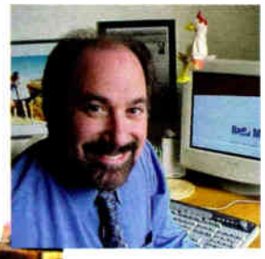
Although sympathetic to the goals of the artists and their managers, Stern advises programmers that exposing songs on the radio that their audiences are listening to online — whether or not they're label-approved singles — "proves stations are in touch with music and how listeners are consuming it."

Bridge Ratings President Dave Van Dyke points to the top of the urban format chart for another example. "Rockstar" by Post Malone is #1, but most stations are not playing "I Fall Apart" by the rapper, a song that their audiences are choosing to stream online.

"Radio cannot handle the volume of today's hit music by core artists. Programmers don't seem to know how to mechanically expose so much new music," Van Dyke says.

Nielsen Music Director of Radio Haley Jones explains: "Our listeners are platform agnostic," and they're receiving audio content — and music — from many sources.

That's why Jones says Billboard (no longer owned by Nielsen)s decided to revise the Hot 100 to include streaming data in its calculations of chart positions, and Nielsen BDS now includes national and local streaming data columns in its airplay charts. But a song doesn't have to be new to register a big increase in streaming. The latest installment in the "Guardians of the Galaxy" movie franchise created new interest in ELO's "Mr. Blue Sky," a song first released in 1977, and Nielsen's streaming data measured it.



Bridge Ratings President Dave Van Dyke

Van Dyke has created a variation of streaming reports that is station-specific. His firm first asks a panel about their radio listening preferences, then they monitor that same sample's streaming data to correlate. Even more important than having the data, he says, "It gives programmers a much bigger perspective, a greater awareness of the audience's behavior."

Stern also sees value in the charts from Shazam that show which songs are being searched and identified most using the app.

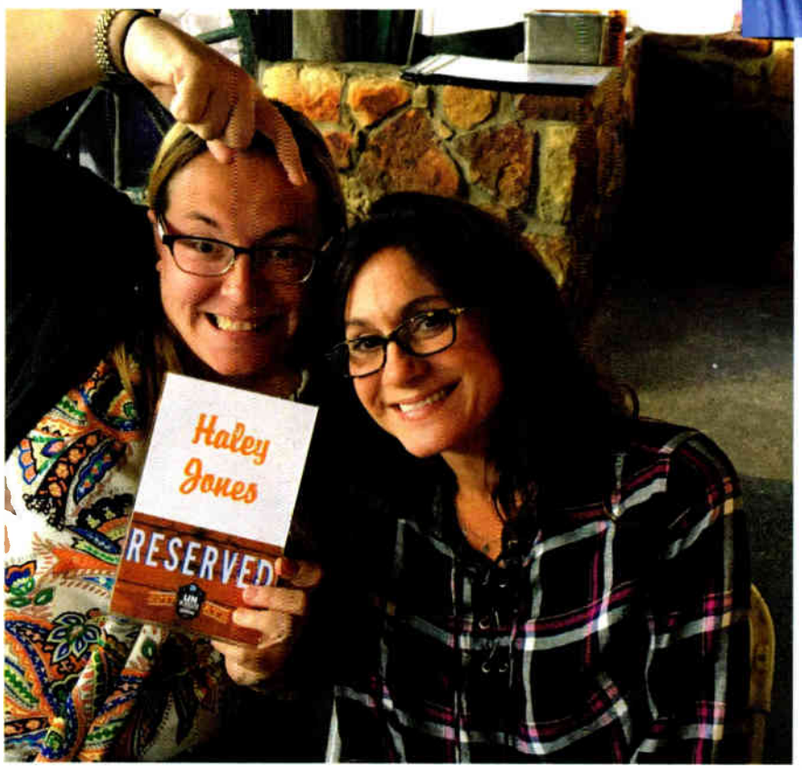
"It measures listeners' curiosity," Stern says. "If they're hitting the Shazam button, that's a good indicator of a song's potential."

He also works with stations that use M Scores provided by Media Monitors. Those assess each song's prevention of tune-out among a station's actual PPM meter holders.

Music and program directors may long for the days when they could simply ask themselves, "Do we like it?" and "Is it charting?" While smart people may differ about which of these new information sources to use, when to use each, and which to put greater stock in, this much is certain: Listeners are consuming music in new ways that give them more control and more options.

As a consequence, the goal of a radio station's music meeting is shifting, too — from choosing songs for them to reflecting the choices they're already made.

Dave Beasing is known for bringing fresh ideas and innovative strategies to radio. At press time, he's programming the final days of LA's "100.3 The Sound" — after a 9 1/2 year run, the classic rock station has been earmarked for divestiture by Entercom prior to its merger with CBS Radio.



Nielsen Music Director of Radio Haley Jones, right, shown attending the Radio Show with Becky Bennett, Westwood One director of partner relations.

Jacobs Media consultant Mike Stern participates in a music meeting via conference call.

LEAVE YOUR COMPETITION
IN THE DARK

OPTIMOD-FM 8700i

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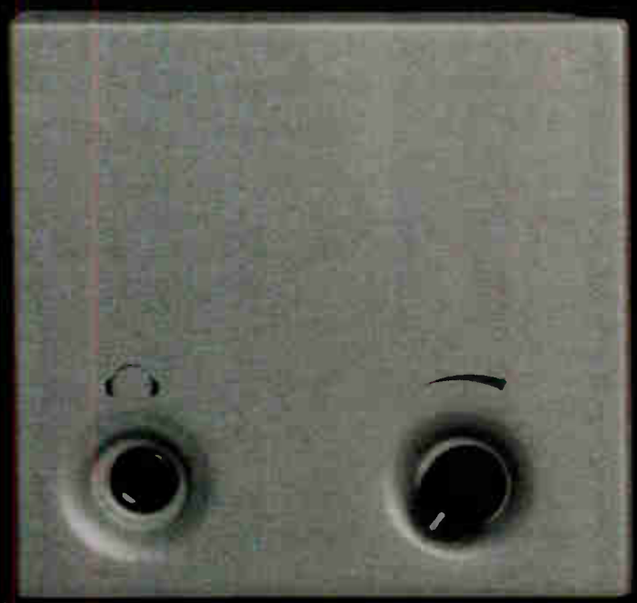

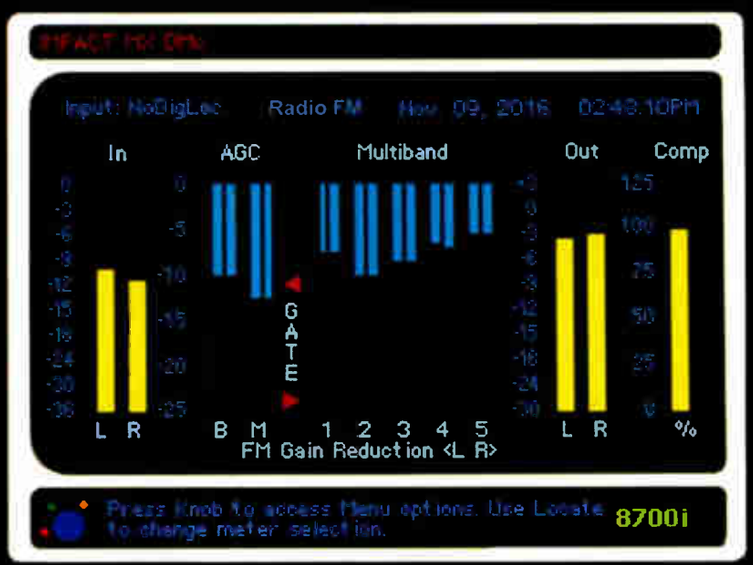

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Gatherings were recently held in Arkansas, Virginia and California

BY JENNIFER WAITS

On Feb. 25, the Arkansas College Radio Association officially launched during a meeting at Hendrix College in Conway, Ark. One of a handful of regional college radio organizations in the United States, ArkCRA grew out of college radio station KHDX(FM)'s desire to collaborate with nearby college radio stations. This brand new organization, created by students, is just the latest in a long history of networking among college radio participants.

Since college radio's earliest days, there have been numerous attempts to organize. One of the first groups, the College and University Association of Broadcasting Stations, was focused on evangelizing the importance of educational radio. A 1926 piece in the New York Times reported 28 member stations from coast to coast who were interested in "...safeguarding and extending technical and educational features" of radio.

The Intercollegiate Broadcasting System formed in 1940, initially as a consortium of campus-based carrier current radio stations, with attendees from 30 college radio stations convening at IBS' first convention in 1941. Still going strong today, IBS held its 77th annual conference for student broadcasters in 2017.

Other national organizations that regularly host conferences related to student broadcasting include College Broadcasters Inc., Broadcast Educational Association and, until recently, CMJ. Some of these groups have also done regional events. IBS, which has traditionally held its annual conference in New York City, branched out with its first West Coast conference in San Francisco in 1977. Hosted by KALX(FM), the event drew approximately 350 delegates from 70 to 80 stations. In recent years, IBS has put on smaller confabs across the U.S. and CMJ produced a "College Day on Tour" in Portland, Ore., in 2015.

Photos by Jennifer Waits

Jacob Turner, right, chats with KHDX Faculty Advisor Maureen McClung at KHDX.

Under-the-radar local college radio collaborations and gatherings have always occurred, from the sharing of programming to playful sports competitions. For decades, college radio stations affiliated with University of California schools have regularly met up under the auspices of the University of California Radio Network, one of the most established regional college radio organizations.

Today, UCRN (which includes a few non-University of California schools) participants communicate through calls and twice-yearly conferences organized by member stations. The most recent event in April was held at Loyola Marymount University in Los Angeles. Hosted by college radio station KXLU, the conference included station tours, a "swag swap" of promotional items and panel discussions ranging from "Intersectional Feminism in the DIY Scene" to "Fundraising 101." Approximately 100 college radio participants from all over California caravanned to L.A. for the event, which concluded with a night-time concert at a local DIY music venue.

KXLU relished the chance host its first UCRN conference and KXLU adviser Lydia Ammossow was thrilled with the day, saying, "...it was one of the *best* days of our lives at KXLU, to welcome our college radio brethren to our home and celebrate the engaging, eclectic, and magical world of college radio we are all so privileged to be a part of."

Ammossow has been attending UCRN events for five years and explained, "UCRN is unique in that it specifically brings California-based college radio stations together and that it offers two conferences per year [in the spring and fall] that rotate amongst the various participating radio stations. Panel presentations cover a diverse range of relevant topics and the whole day is an excellent opportunity for networking, sharing ideas, cultivating creativity and creative solutions to common conundrums, and building community."

VIRGINIA COLLEGE RADIO ASSOCIATION

Another recent college radio event, the "College Radio: Then, Now and Next" symposium, was hosted at University of Virginia in Charlottesville by WTJU(FM) in March. Although not necessarily designed as a regional college radio conference, it attracted participants from eight Virginia-based college radio stations.

I was an invited speaker, and at one point I remarked that this may be the first meeting of the Virginia College Radio Association. By the end of the day, Lizzie Fulham, general manager of College of William & Mary station WCWM(FM), had set up a Facebook group for college radio stations in Virginia.

Fulham was inspired by the WTJU symposium.

"It was so incredible to meet other college radio students," said Fulham. "It was especially fun to talk to other directors who were experiencing some of the problems I had been experiencing. Sometimes, it gets a little bit frustrating to run WCWM, because no one understands the type of work I am doing or the amount of work I am doing — I found that many of the other managers had similar thoughts and could relate."

Nathan Moore, WTJU's general manager, organized the symposium. He reflected on the day's accomplishments, saying, "the symposium was a nice way to get some face-to-face contact with stations around Virginia. And this way, whatever activities this nascent network engages in can grow more organically from these relationships and the needs of our stations."

During the symposium, students made tentative plans for a college radio meet-up at the upcoming MACROCK music festival in Harrisonburg, Va. Coincidentally, MACROCK was initially launched in 1996 by college radio station WXJM(FM) at the Mid-Atlantic College Radio Conference, focusing on bringing together independent artists, radio stations, record labels and fans. It

Some of the attendees at the "College Radio: Then, Now and Next" symposium.

was fitting that decades later, another group of college radio station participants congregated at the festival.

ARKCRA

While the WTJU event led to the creation an informal Virginia college radio network on social media (which has already led to increased communication across stations), students in Arkansas opted to launch a more formal organization. At the February gathering at Hendrix College, college radio participants from four stations developed goals, wrote a constitution and elected officers for the Arkansas College Radio Association, which now has seven participating stations.

ArkCRA founder and President Jacob Turner told me over email that he was inspired in part by my own Arkansas college radio tours in October 2016.

Turner wrote, "I had a chance to read the radio station visits you made to KXUA and others as well as our very own KHDX, and after both that and the Grassroots Radio Conference (which the KHDX staff thoroughly enjoyed and were inspired by) I brought up the idea of collaborating with other college radio stations in Arkansas at one of our KHDX staff meetings. After getting votes of support from the other staff members and faculty advisor, I sent out an email and survey to all of the four-year colleges in Arkansas, as well as any two-year colleges with radio station licenses, explaining the idea and trying to gauge interest. After getting positive responses from stations across the state, we went ahead with planning a meeting for formally forming the ArkCRA!"

According to the ArkCRA constitution, "The purpose of the Arkansas College Radio Association is to assist with the formation, development, and operations of college radio stations in the state of Arkansas, whether online or through terrestrial broadcasting, to develop and maintain an accessible collection of resources for college radio stations in the state of Arkansas, to facilitate cross-station collaboration, including but not limited to syndicated radio and news broadcasts, events and festivals, and event coverage, and to conduct outreach to community members interested in college radio in the state of Arkansas."

Turner continued, "We want to really focus on not just building up our stations, but really building connections and bridges between groups as diverse as the colleges we are all a part of. In addition, I think an organization like ours really sends a message to the world that 'college age people care about radio and we're not just going to let it fall by the wayside.' We hope to really get into the swing of things and not just have our own meetings and conferences, but work with other groups to co-sponsor events for young people across our state."

Music on the shelves at KHDX(FM)

Several members of ArkCRA have already visited other college and community radio stations in Arkansas and beyond. Lucas Coberly, who I first met while visiting his station KXUA(FM) at

Lucas Coberly at KXUA

University of Arkansas, is now actively contacting other stations for tours and has been to stations in Boston and Philadelphia.

Now the media-technical coordinator for ArkCRA, Coberly shared that, "Our biggest purpose, in my view, is creating a support network for radio stations, existing and upcoming, at universities and colleges within Arkansas."

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.

From Supercars to Sedans: NissanConnect

The system is available now on 10 different Nissan models

Photos by Paul Kaminski

Nissan 4G Wi-Fi for internet connection is available on the following models: Versa Note, Sentra, Altima, Maxima, Rogue, Murano, Pathfinder, Armada and the Titan pickup truck. Subscription plans for one and 5 gigabytes of data per month are available from Autonet Mobile.

The audio controls for NissanConnect use a combination of voice, touchscreen and old school knobs and buttons to navigate through the menus. To tune in to an HD channel, for example, a user would first find a channel broadcasting a HD signal, then turn the tuning knob a notch to the HD1, 2, 3, etc. signals.

NissanConnect customers will encounter various screens. Here is a sampling, shown counterclockwise from top: the home screen/main menu; audio source screen; FM/HD Radio screen; XM satellite radio screen; and the AM radio screen. Note that this dashboard retains the physical tuner and volume knobs.

Teeter says a tutorial on NissanConnect is "part of the checklist review during a new car delivery, and the tutorial includes an instructional video and short overview of the features." Nissan has an extensive website with answers to most questions about the system (*nissanusa.com/connect/faq*). If your station has a sales or trade relationship with a Nissan dealer, then that website might be a good one to read, before an initial or follow up visit with the dealer.

How can a station be a resource for the Nissan dealer wishing to help its customers take full advantage of the NissanConnect system? Much of that begins in the engineering shop and transmitter site, with signal optimization and appropriate processing for both analog and HD channels. Some of that includes the quality checks from the programming department to see if the metadata for each piece of music or program element is properly entered, so it displays properly on the user screen. Obviously, the programming should be compelling enough to convince the user to navigate through the menus and twist dials to find that programming, whether on a main or HD channel.

Nissan's advertising tag line is #InnovationThatExcites. Come to think of it, that could be a good motto for radio.

Paul Kaminski, CBT, has been a Radio World contributor since 1997, and writes the Road Warrior column which deals with connected car topics and tools for radio newspeople. Twitter: @msrpk_com; Facebook: PKaminski2468.

RADIO ROAD WARRIOR

Columns are archived at radioworld.com

BY PAUL KAMINSKI

Whether in the dashboard of a $120,000 supercar, or a $15,000 economy sedan, NissanConnect presides over the infotainment ecosystem in Nissan's line of cars, trucks and sport utility vehicles.

Don Teeter is Nissan North America's director of overseas program development and vehicle connected services. He says NissanConnect "combines navigation, security, entertainment and ways to stay in touch with a dash mounted system system designed to keep the driver connected to the vehicle."

The first vehicle equipped with NissanConnect was the 2015 Nissan Maxima sedan. The system is available now on 10 Nissan models. Some of those models have Apple CarPlay and Android Auto connectivity with a USB tether to a smartphone, and through NissanConnect Mobile, apps such as Pandora and iHeartRadio. NissanConnect with Navigation includes satellite radio, SXM Traffic and Travel Link data (weather, movie times, sports scores and stock quotes). Some of the other telematics functions (vehicle control and monitoring, for example) are performed with an embedded modem.

143rd AES Convention for Radio Broadcasters

SHOWPREVIEW

iStockphoto/Sean Pavone

IF YOU GO

What: AES New York 2017

Where: Jacob K. Javits Convention Center

When: Oct. 18–21, 2017

How: www.aes.org/events/143/

How Much: Four-day all-access, $595 member/$695 nonmember; various packages available. Exhibits Plus badge, $50–75

AES NY
MAXIMUM AUDIO

BY DOUG IRWIN, CPBE AMD DRB

I believe many broadcasters view the Audio Engineering Society as a professional organization concerned only about standards pertaining to the audio and audio-video trades. But the reality is that AES has everything to do with gear and technology in use every day around radio and TV stations.

New York is hosting the 143rd AES Convention this year, and there are plenty of reasons to attend. Not only will a tremendous amount of gear be on display, there's an incredible lineup of sessions, many of which will be found to be of interest to broadcasters.

Let's take a look at some of the sessions scheduled for the Broadcasting and Streaming Media track at this year's New York show.

The entire show schedule can be seen at *www.aes.org/events/143/calendar/calendar.cfm*

B01 — Designing and Constructing a Radio Performance Space
Wednesday, Oct. 18, 9–10:30 a.m.
Moderator: David Prentice, Dale Pro Audio, New York
Panelists:
Sam Cappas, CBS Radio, New York
Joshua Morris, Walters-Storyk Design Group
Steve Shultis, New York Public Radio, New York
Jeff Smith, iHeartMedia

Increasingly, radio stations are adding performance spaces to reward their audiences with exclusive performances, to create new programming, add video content for their online and streaming channels and simply increase audience interaction.

Balancing the various requirements for various uses requires rethinking traditional designs for single-use spaces: The lighting and sound need to be appropriate for both video and audio recording; control rooms will be required to service several different venues and functions; acoustics and aesthetics need to be appropriate for conversation, acoustic or electric music; and everybody needs audio, video and intercom monitoring. The four panelists are ready to share what they've learned.

B02 — Audio Cable Problem Solving
Wednesday, Oct. 18, 10:45 a.m.–12:15 p.m.
Presenter: Steve Lampen, Belden, San Francisco

Steve will moderate a panel discussion on common cable-related problems and solutions. The panel will feature prominent designers, installers and users in the audio arena in sound reinforcement, recording, film sound and broadcast. Many of these problems, and their solutions, can be cross-pollinated between these industries and the hope is that the audience will add to the discussion of problems encountered and possible solutions to those problems. Newer technologies, such as audio over IP, will be included on the menu.

B05 — The Broadcast Facility of One World Trade Center
Wednesday, Oct. 18, 7:30 p.m.
Host: John Lyons, Durst Broadcasting, New York

Durst Broadcasting will host a short offsite panel discussion plus tour of the new broadcast facility at One World Trade Center in New York City. John Lyons, assistant vice president and director of Broadcast Communications for The Durst Organization, will host.

Following the discussion will be a tour of the broadcasting facilities and communications spaces. Note that the tour will *not* include the roof as there is ongoing work on the building maintenance systems and darkness will not be conducive to touring.

Capacity is limited to 65 people due to security issues; tickets are required. You must book your ticket before Oct. 13 for a security check to be a part of this experience.

B08 — Audio Considerations for Podcasts
Thursday, Oct. 19, 4:30–6:00 p.m.
Moderator: John Kean, Consultant, Washington
Panelists:
Malik Abdullah, NPR Digital Media, Washington
Dan Jeselsohn, New York Public Radio, New York
Angelo Mandatto, blubrry
Samuel Sousa, Triton Digital, Montreal

Podcasting is a system for packaging and distributing audio shows to listeners via the Internet. It is estimated that more than 40 million Americans listen to podcasts weekly — five times more than attend movies — and the numbers have risen more than 10 percent since 2016. Panelist will discuss best practices in production and distribution of podcast programs.

B11 — Metadata for Radio and Streaming: The Digital Dashboard
Friday, Oct. 20, 3–4:30 p.m.
Moderator: Glynn Walden, Consultant, Marlton, N.J.
Panelists:
Stu Buck, Arctic Palm
Mike Englebrecht, NextRadio + TagStation
David Julian Gray, NPR, Washington
Mike Raide, DTS

Each participant will have 10 to 15 minutes for opening comments, after which discussion will be opened up to the panel/audience participation. Panelists will talk about how the digital dashboard contributes rich textural support for audio for analog/HD Radio delivered over the air or via a hybrid radio and streaming services.

AES SESSION PREVIEW

EVOLVING BEST PRACTICES FOR STUDIO CONSTRUCTION AND REMODELING

Wednesday, Oct. 18, 4–5:45 p.m.

Moderator:
Kirk Harnack, Telos Alliance; Owner, South Seas Broadcasting Corp., Pago Pago, American Samoa

Panelists:
Anthony Gervasi, Former Senior Vice President Engineering & Technology, Nassau Broadcasting Partners
Daniel Hyatt, Director of Engineering & IT, Max Media Denver; Principal Owner, DK Global Sourcing
Gary Kline, Kline Consulting Group LLC, Atlanta
Jason Ornellas, CBS Radio Sacramento, Sacramento, Calif.
Christopher Tobin, Newark Public Radio, Newark, N.J.

Radio World: *The broadcast studio is the heart of the radio station yet it is often the last thing to be kept current, why is that?*

Kirk Harnack: Since broadcasters began using audio over IP networks for infrastructure about 12 years ago, many would say that it's now the AoIP network that is the "heart of the radio station." With networked media and control, a studio can be turned up in any room inside the building — or even out of the broadcast facility. Nowadays, the traditional studio is more important as a gathering place for interviews or live music than as a technical room, central to the operation.

That said, given the brisk pace of AoIP console sales for the past decade, we're seeing an overwhelming number of studios that are, indeed, up to date. My own stations — all 10 of them — have AoIP-based studios using equipment from one to 10 years old. And all of it still fully supported by the manufacturer.

RW: *Redoing facilities is often a budget- and time-consuming endeavor. Is there any benchmark on when commitment moves from "plan on" to "consider" to "must"?*

Harnack: Largely this decision comes down to the waning flexibility of older equipment. In a "console-centric" radio station, one depends upon an aging audio console to work 24/7. When the options or flexibility desired by station operations exceeds the flexibility of the audio console, then it's certainly time to look at the newer options.

For example, a traditional control room may not have the flexibility to serve as a morning show studio for Station A, then do production work all day, then be a night show studio for Station B. Sure, older gear can be fitted with relays and custom Bud boxes, as we made and installed so frequently in the 1980s and '90s.

However, moving to a networked AoIP infrastructure suddenly opens up myriad options for using equipment and rooms efficiently and on-demand.

This serendipitous nature of AoIP flexibility is often not seen when a purchase decision is made. However, most broadcasters are quick to discover the flexibility they've installed and begin using it creatively to save time, money and trouble.

RW: *How have the technologies of the broadcast studio and adjacent facility changed over the last decade?*

Harnack: In a phrase: audio over IP. Using commercial off the shelf (COTS) rugged IP network gear, as well as specific AoIP studio equipment, broadcasters are pretty quickly moving to an AoIP world.


Kirk Harnack

RW: *Does that change require a refitting of the facilities or can a station continue on and still remain competitive?*

Harnack: One terrific feature of moving to an AoIP infrastructure is that you can do this one step at a time. Begin with one control room and an audio node in the rack room. You'll start to see the benefits.

Then, replace another studio, and another. Soon you'll have all your rack room gear on the AoIP network. As an example, when you want to install an audio logger, just buy some software and install it on a PC that's connected to the same AoIP network. Now you can log a dozen or more channels if you like — to an inexpensive PC — and have secure remote access to it.

RW: *As much of the technology involved with the studio has become computer-/IP-oriented, is it possible that future studio/facility upgrades can be modular, replacing a few things such as cable and routers rather than old-fashioned tearing out of walls and rebuilding studio sound isolation?*

Harnack: We'll always need acoustically appropriate spaces for audio production. That said, yes! And the new equipment tends to cost less — perhaps a lot less — than the equipment it replaces.

We've watched several broadcasters do wholesale remodeling jobs in which the sheer weight of the old wiring they removed was far greater than the weight of the equipment they installed — and all connected with a few dozen Cat-5e cables.

While we don't think of broadcast equipment and infrastructure in terms of weight or mass, it is interesting to consider this to see how amazing the AoIP paradigm really is.

RW: *Does old-fashioned acoustical concerns such as sound isolation, background noise, dampening reflections still exist?*

Harnack: Absolutely — if you care about your local audio. I will point out that while excellent mic technique along with today's intelligent audio processing can hide and overcome some poor acoustic spaces, best practice is still to provide enough isolation and dampening.

Acoustically bouncy rooms create a level of reverberation that can be annoying to listeners. Also, consider that low-bitrate audio coding will not perform as well with extra, undesirable noise in the audio. A clean and dry audio presentation is best for listeners and for our current technology in audio coding.

RW: *You've assembled an impressive panel, tell us about them.*

Harnack: Each of the presenters — Tony Gervasi, Gary Kline, Daniel Hyatt, Jason Ornellas and Chris Tobin —have extensive experience in building and remodeling broadcast studios. Tony and Gary are particularly expert in the use of materials and installation techniques to get the desired acoustic effect along with human factors — "creature comforts."

Daniel and Jason have extra experience with good lighting and staying within a tight budget. Actually, each of these panelists knows how to get a huge bang for the buck.

Chris Tobin's experience is largely major market. He knows which design factors are critical for a market No. 1 studio space and where money can be saved, too. Plus, Chris' experience with a variety of recording mics lends to his outlook on acoustics.

RW: *Show attendees are pressed for time. Briefly, why do they need to check your session out?*

Harnack: If you put a price tag on this group of professionals, you're looking at over $2,000 per hour for the collective advice being presented. An hour, or a bit more, invested in this session will help assure any engineer's success in the next studio project.

ACOUSTICS

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

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; collection of very old 78s dating back to 1904; 12' satellite dish on concrete base; prices drastically slashed. 315-287-1753 or 315-528-6040

WANT TO BUY

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2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

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

I'm looking for 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.

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

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

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

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

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

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WANT TO SELL

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10 KW	1998	Nautel FM10, Solid State
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22.5KW	1990	Continental 816R2B, SS IPA
35 KW	1991	BE FM35B

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READER'S FORUM

SPORTS BROADCASTS

In a radio industry based on constant change, there are exceptions.

When the WAVU(AM) 630 sports crew in Alabama opened the mic to broadcast the local high school football team Aug. 25 it marked the 70th consecutive season their home town station has aired Albertville High School Aggie football.

WAVU's commitment to the local team has roots that sprouted even earlier than the first broadcast in 1948. Station owner Pat Courington, Sr., had stepped in to coach the team for a year in 1946. Pat also handled play-by-play duties for the first few radio broadcast, but replaced himself after deciding that he sounded more like a coach reviewing film than a radio announcer.

Regardless of the Aggies' ups and downs over the years, the broadcast always sells out thanks to loyal sponsors. And through the decades, listenership has remained strong as the station added an FM signal a few years back and last year with the help of the school began simulcasting the games in HD video over the internet.

Tommy Lee
General Manager
WAVU(AM)
Albertville, Ala.

SPECTRUM MANAGEMENT

The front-page article on spectrum (mis-)management ("Noise Inquiry Spurs Recommendations," RW July 5) pushed me over the edge!

I fear that the constantly rising RF noise floor will ultimately put all of us broadcasters out of business. There are just too many unlicensed RF generating devices out there, polluting the spectrum. There are places around greater Boston where you cannot listen to WBZ(AM) because of all the background noise. And I dare say that WBZ has one of the best AM transmitting plants in the nation.

Pandora has been let out of her box, and I don't see how anyone can get her back inside it.

Ultimately, radiated radio signals will go the way of the buggy whip.

Lewis D. Collins
Retired electrical engineer
Wayland, Mass.
Glendale, Calif.

HAM RADIO WASTELAND

This in response to "Strong Ties Bind Amateurs and Broadcasters" published June 13. The essence of the article was that ham radio provides a pool of talented and motivated employees. That may have been true back as late as the '60s. The exams have been greatly watered down, the only skill required was Morse code and that was eliminated. All the questions and exact answers are published verbatim.

My daughter passed the test when she was eight in 1989 (when the test was harder); would you hire her to be a tech at your radio station when she was eight? After all in the article it says, "I don't think that there is anyone who understands radio science and technology at such as profound a level as hams," and she was a ham at age eight. Today, even younger hams are licensed.

The article references emergency communications rendered by hams. Few hams ever do a scintilla of any type of public service. I invite the reader to grab a shortwave radio and listen to the ham bands — most weekends they are having 30-second contacts where they give false signal reports.

I got my license at age 14 (K1OIK), 57 years ago, when you actually had to draw a schematic on the exam, and an FCC examiner gave the test, not friends like today, no questions were published, and it did help me get my FCC First Class Radiotelephone license.

Newton Minow, a long-past FCC chairman, once referred to television as a vast wasteland. Today that could be applied to amateur radio.

Burt Fisher

WEATHER RADIOS

Thank you for an excellent article in Radio World's Aug. 2 issue: "EAS is Still Relevant as WEA Works Out Kinks."

As you are aware, NOAA Weather Radio is the first service to be activated in the cascade of EAS modalities. Despite continued focus on cell phones and the WEA alerts, it is worth noting that NOAA Weather Radio (NWR) continues as a vital alerting service in many areas of our country, including rural areas with sketchy, or non-existent cell phone service.

This was recently highlighted in Gila County, Ariz., where a family of ten was swept away by flash flooding. A severe thunderstorm warning had been issued 90 minutes earlier, but the family was swimming in an area devoid of cell phone service. NWR had the warning and they would have received it had they been carrying a portable NOAA weather radio.

In the Moore and Joplin tornadoes, Hurricane Sandy and the Washington earthquake, cell phone systems were so overloaded that emergency messages could not get through. In Moore and Joplin, cell phone tornado warnings arrived minutes or hours after the tornadoes struck. Following the total destruction of the area's cell towers by Hurricane Sandy, the Wall Street Journal described Jersey Shore cell phones as "$400 phone books," whose utility was reduced to being the device upon which you looked up the phone number you proceeded to dial on an old-fashioned pay phone.

If terrorists ever strike NYC again, the gridlock of the phone system will be tragic, and people who rely solely upon their phones for life-saving information will quickly regret that decision. The National Weather Service, the Dept. of Homeland Security, FEMA and the American Red Cross have all recommend a NOAA weather radio for every home, school, and business in America. We need to keep reminding Americans that there is a very well-proven system that provides them with free, immediate and official life-saving information direct from their local National Weather Service office.

If Americans will simply purchase a $30 weather radio, they'll be directly connected with America's EAS system at the highest level of the chain.

Thanks for your article, and thank you for supporting "The Voice of the National Weather Service," NOAA Weather Radio.

Bruce Jones
Meteorologist/Spokesperson
Midland Radio Corp.
Kansas City, Mo.

READER'S FORUM

WHY THE FIRST PHONE MATTERED

Responding to "The Demise of the First Phone," read at radioworld.com, *which originally appeared in a print version of the magazine in 2006.*

I was licensed, with a first class radio ticket (as they used to call them). It was your ticket to work. I had been a radio telephone operator) in the military, in Vietnam, which required a strong back. A "PRC 25" weighed 28 pounds plus extra batteries. Along with ammunition, C-rations, water, claymore with blasting cap remotely located; in case the radio set it off, and all kinds of extras like bandages, mosquito repellent, poncho liner, socks, foot powder. TP and whatnots.

When I was growing up, I had crystal radios and tinkered with all the new stuff like TV, Ham radio and, I even had a Morse code merit badge when I was in the Boy Scouts. Hell, I was high tech.

After the Army, I really wanted to be a broadcaster (DJ), the only way to do that was to get your ticket. You needed your ticket, because to begin in broadcasting you had to go to some small market (mine was Carson City, Nev., KPTL Capital Radio) and be bad. If you could have heard it, you would have said this guy is terrible. The entire collage of personalities was astounding: the old guy, George Webb, was in the bag (he had a drinking problem), but he knew radio,and he knew broadcasting. It was like a scene from "Mash" or "Taxi."

Radio guys used to have a profile. In the Navy they called the radar guy "Sparks" because he worked on Spark Gap radio, a way of raising the signal to a higher frequency, this predated TWT (traveling wave tube and reflex oscillators, which were a mini klystron). In a lot of the old movies, there was always a "Sparks."

The other thing a radio guy was known for was the wiring in a radio shack, usually at the top of a mountain where no one ever came to look, there would always be some kind of Kluge on the wall almost pure bread boarding without the ICs. Radio kind of had that way — recluses tweaking on things at the top of a mountain.

The reason you needed a First Class license was, when you would do your bad radio broadcasts at night, you were alone at the station. To run a station, which essentially was what you were doing, you had to have a first class license. The main part of running a station was an AM radio, which has a big ionosphere skip, so at night the power is cut in half. Only the station master and or a First Class licensee could change the power.

To get your ticket, you had to pass the FCC exam and the exam for First Class, which I remember was all about, dip the plate peak the grid, O-scope video signal characteristics, transistors, federal law and all calculations, were done with a slip stick (slide rule) the best of which were made of bamboo. After that experience, I was very careful changing things or doing anything that would jeopardize my license. To me, a station log was like signing a pact in blood.

60 Radio World — FEATURES — March 29, 2006

MILESTONES

The Demise of the First Phone

by Charles S. Fitch

Have you noticed a trend in how qualification problems are addressed inside the Beltway over the last 50 years or so? In Washington, it seems, when enough people can't reach the qualification bar, they just lower the bar. Do away with the problem by the stroke of a pen; eliminate the requirement.

Ohhhh, if only we were so all-powerful! We would do away with taxes, reruns on TV and marriage (I must be crazy), among other things.

In our industry, the notable instance of this phenomenon was the disappearance of the Radio Telephone Operator License First Class, the possession of which was a long-standing requirement if you hoped to find meaningful and gainful employment in radio engineering.

Let's be clear. The FCC only licenses operators: it never licensed engineers engaged in intrastate commerce, professional or stationary. The commission never intended that one would have to operate high-pressure boilers or a power plant or design the foundations under your towers. Licensing of professional and stationary engineers is a power held only by the states.

Boilers aside, that still leaves us ordi-

Radio Telephone Operator License First Class

a lot of meaningful technical matters at hand, routine and otherwise.

Push to talk

The FCC licensing structure through the early 1960s was simple. In general terms, if you wanted to speak on a two-way radio, you needed a Radio Telephone Third Class Operator Permit, theoretically was supervising the system, his unlicensed police officers in their patrol cars could push the buttons on their mobile mics and speak back.

The holder of a "Third" couldn't service or install any transmitter equipment. If you wanted to service and install communications-level transmitters or certain safety

Restricted Radiotelephone Permits (just fill out a form and mail it in) to operate broadcast transmitters of nearly all classes and powers.

This requirement ultimately was dropped; now no operating license at all is needed for local or remote controlled stations. Responsibility for proper operation at this time falls completely to the station owner.

Equity trap

In my rear-view mirror, I think the major reason the "First" disappeared was a basic flaw: The test process used a set question base that could be co-opted. This left industry with an exam that could be passed by memorization, detracting from the value of the license as a proof that a person knew something about what they were doing.

In other professions, comparable licensing also is done through exams with a set syllabus of concepts addressed; however, the tests do not ask the same questions each time. This "equity" trap — dumbing up the exam — is a flaw that the SBE certification process, the industry's own replacement for the First's proof of knowledge, has so far been able to avoid, in my estimation.

All numbered classes of radiotelephone licenses were eliminated on Aug.

After my first job in Carson City, I moved to KNTV in Reno, Nev., where they changed the format of the radio station (KPTL) from easy listening (Frank Sinatra and other pop hits my parents liked) to country western. When a station would change its format, they cleaned house on the talent side of the house.

I moved from radio to TV because they paid an engineer more than talent, and it had more job security. I kind of lost my first love in all of that. I really wanted to just talk on the radio. I went from TV to microwave at the phone company, and then onto PBX, datacom, onto the whole world of VoIP and servers, and really it has become dismal and no fun. IT is an overmanaged process, which renders science to opinion and budget. I was never a bean counter.

I won't comment on the latest events, with internet and big business; the only footnote here is, when I was at the phone company I worked on ARPANET and the underpinnings of the internet. I worked on echo canceling for satellite communications; I saw the dawning of voicemail, and now the sun has set on that media, and so much more, which was all because of a little thing called a First Class Radio License.

Now, I always try to see where the future is going and jump on board as a first adopter ... but like remembering your first girlfriend, the old days of radio and TV were very exciting to me.

G. Ridge

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9	Tieline Technology	www.tieline.com
2, 17, 19, 32	Wheatstone Corporation	www.wheatstone.com

MAN-MADE NOISE

I read with great interest the article by Tom King and the measurements that he and Jack Sellmeyer made ("Steps to Lower Noise Floor and Revitalize AM Radio," RW July 5). I'm glad to see folks of this stature taking up the cause and demonstrating the realities of the problems caused by the increase in man-made noise.

For years, I've been saying this noise affects a lot more than just the AM broadcast band, but for some reason a lot of people seem to pooh-pooh that fact. Now they're learning the truth.

Years ago, I had a situation on Mt. Wilson where a transformer that was breaking down in an underground vault was creating serious grunge in a 450 MHz radio system as well as a 7 GHz broadcast TV STL system. The problem disappeared when the transformer finally burned up.

Most of us have seen sparklies on analog TV from arcing power line insulators. With digital you don't see that — it just refuses to decode properly, or it may often pixelate or freeze. Those of you who think digital is the panacea of all the noise problems, think again.

The only thing I would like to have seen Tom and Jack do different is to use a field meter that shows quasi-peak and/or peak reading, rather than just the RMS value of the noise. The peak value reading better demonstrates the truth and its destructive nature and shows just how serious the problem is.

A few years ago, I made a video of power line noise caused by loose hardware on a 77 KV line about a quarter mile away. I compare the RMS and peak values using a Stoddart NM-25T, which has RMS, quasi-peak and peak reading capabilities. You can see the video at *www.youtube.com/watch?v=NBdYV3IFRfw.*

Burt Weiner
Burt I. Weiner & Associates

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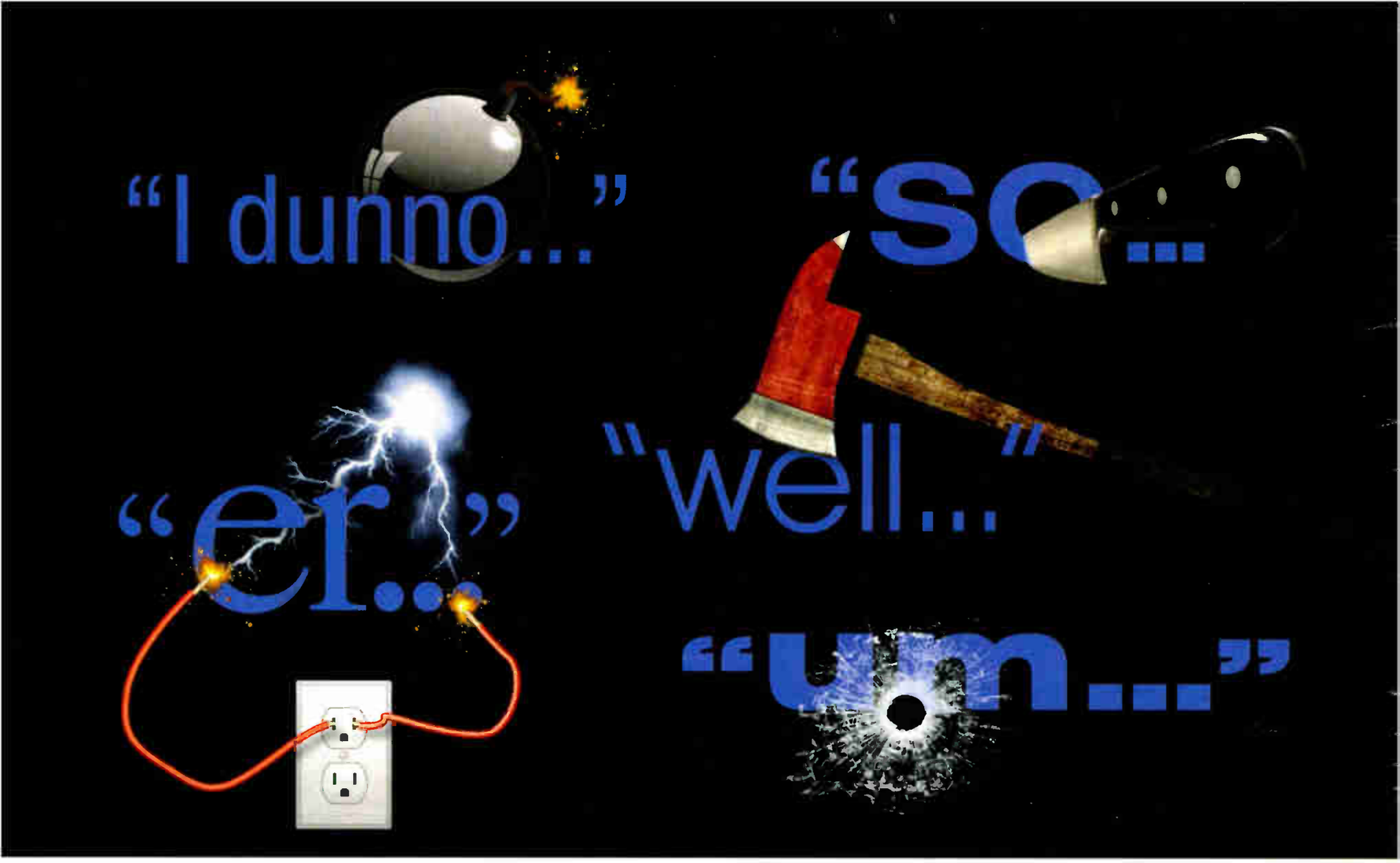

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