



# RADIO WORLD

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## IP Audio to Star at AES New York 2018

145th International Pro Audio Convention offers plenty for radio engineers



BY BRETT MOSS

The annual Audio Engineering Society show is a favorite for many engineers for its sheer variety of audio topics. Not only are there broadcast technology-oriented sessions but one can find things to learn from other audio disciplines. Of particular interest may be a series of audio equipment building and refurbish-

ing workshops.

And there are always some fun sessions as well.

The Broadcast & Online Delivery track reflects the changes in content and work methodology buffeting the radio industry. There are multiple sessions on podcast production and AES67 audio and IP audio networking.

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Courtesy Javis Center

## C4 Debate Centers Mostly on Interference Worries

More than 135 comments in the notice of inquiry were filed this summer

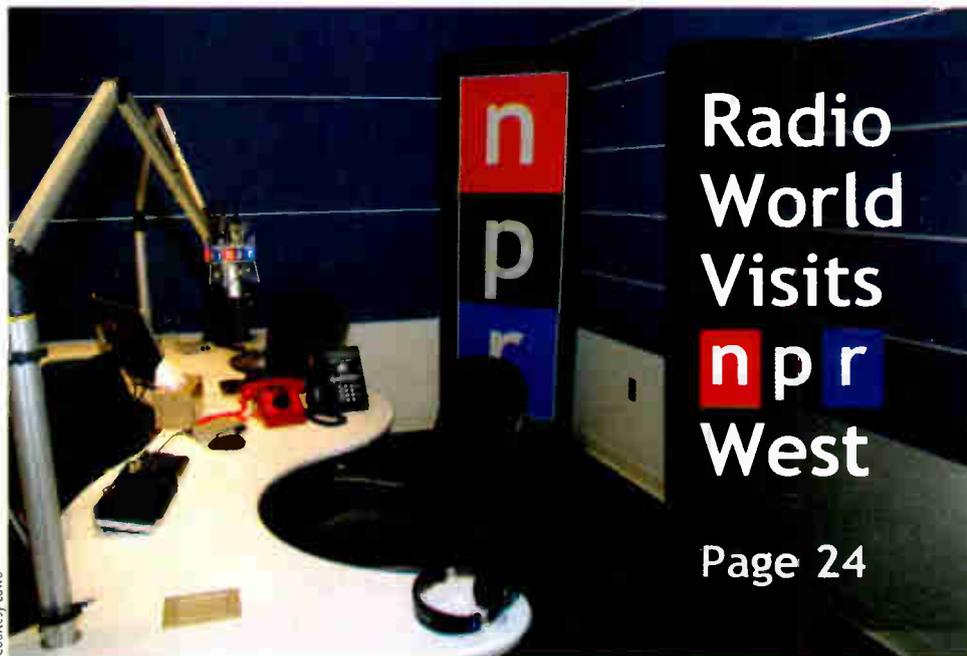
### REGULATION

BY RANDY J. STINE

WASHINGTON — Depending on whom you listen to, a new FM Class C4 radio service in this country would create a landslide of interference or a critical lifeline for some existing radio stations.

The FCC's notice of inquiry into creating the new C4 class of FMs (MB Docket 18-184) got a lot of play over the summer, especially from those Class A radio stations who stand to benefit from the proposed rule change. It is conceivable that hundreds of Class A FM owners in Zone II in this country would be allowed to double their power level — if

*(continued on page 5)*



Courtesy Lawo

# Radio World Visits npr West

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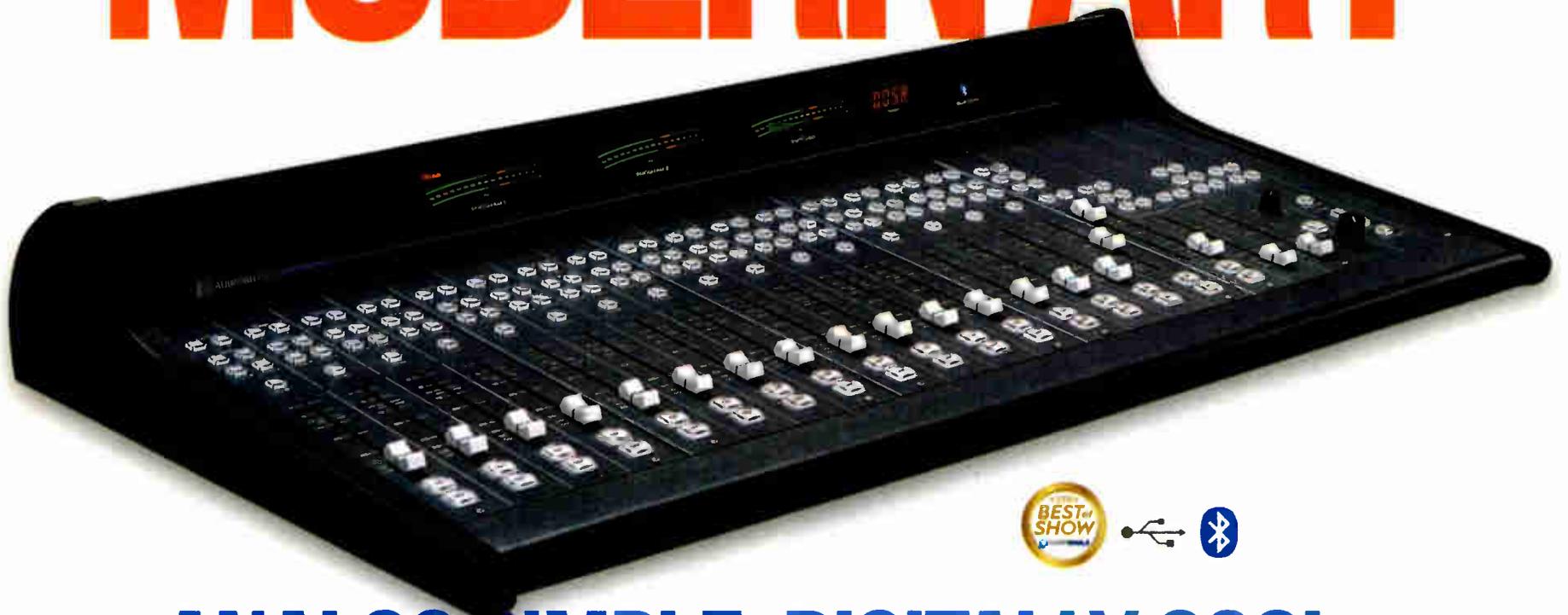
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# Nebraska Technical Workshop Draws a Crowd

State association is grateful for its partnership with SBE Chapter 74 and the Ennes Workshop

## REGIONAL EVENTS

BY JIM TIMM

*The author is president/executive director of the Nebraska Broadcasters Association.*

When 50 engineers from across the state spend a full day in a hotel conference room, there must be something compelling to hold their attention.

That "something" in this case was the August Ennes Workshop presented by SBE Chapter 74, Midlands, during the 84th Annual Convention of the Nebraska Broadcasters Association in Lincoln. Thanks to the leadership of Society of Broadcast Engineers Chapter 74 President Kevin Faris, SBE Education Director Cathy Orosz and a host of other contributors too numerous to mention, this Ennes Workshop had something for everyone.

**There seems to be a mutual understanding that what Nebraska may lack in terms of number of stations, it more than makes up for in the sincerity of relationships.**

Following a welcome from Fred Baumgartner, former Trustee of the Ennes Educational Foundation Trust, the workshop attendees enjoyed presentations and discussions on the rapid evolution of broadcasting, tower safety, Next Gen TV, grounding and lightning protection (like that's not an issue in Nebraska!).

Another popular topic was an overview of the Nebraska Sate EAS Plan — in its current form and in the pending new plan — presented by Rod Zeigler, chairman of Nebraska's State emergency Communications Committee. The afternoon's closing speaker was none other than John Bisset of Telos Alliance, author of Radio World's Workbench column, with his on the conversion from analog to AoIP and what AES67 means to engineers. All in all, it was a well-received series of presentations.

### WITH THE VENDORS

As always, workshop attendees made time in the morning and afternoon to visit with the vendors in our convention exhibitor area.

This commitment to spending time with vendor reps is a critical component of every NBA convention.



NBA engineers are interested in the latest technology and understand the importance of visiting with our exhibitors. The exhibitors appreciate their relationships with engineers and station owners in Nebraska. For the NBA, having these exhibitors onsite greatly enhances the quality and value of our annual convention.

There seems to be a mutual understanding that what Nebraska may lack in terms of number of stations compared to more populous states, it more than makes up for in the sincerity of the relationships that have been established with station personnel.

One first-time NBA exhibitor told me that they enjoyed our convention especially because our attendees allowed for longer, more meaningful conversations and relationship building.

While it was fun to see this many engineers gathering so much information in the span of one day, I was particularly impressed by the variety of backgrounds and employment of those in attendance. We saw the full gamut — engineers from TV and radio, engineers from larger "brand name" companies and from smaller independent operators, a few contractors and recent retirees, representing commercial and noncommercial licensees alike.

The spotlight on engineers also made its way into our 47th Annual NBA Hall of Fame banquet, where long-time Assistant Chief Engineer Mike Gann of Omaha's KMTV was inducted as our 100th HoF member. Our other HOF inductees were Roger Moody of KLVN(TV) Lincoln and Dave Dent Otradovskiy of KVSH(AM) Valentine.

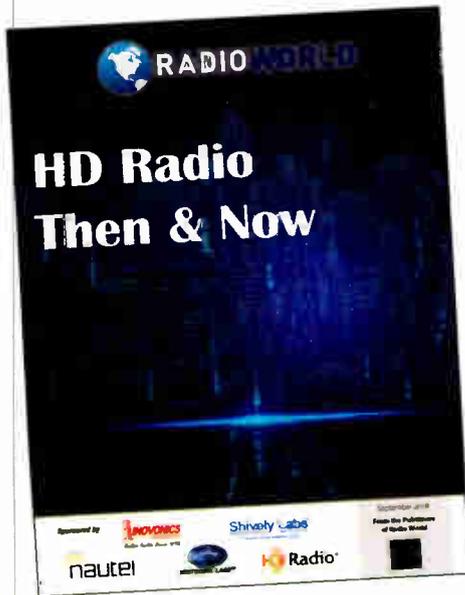
On the whole, Nebraska has more independent operators than large-scale companies, and greater geography between population centers. As such, our members have a greater reliance on qualified, continuously educated engineers. The NBA is grateful for our partnership with SBE Chapter 74 and the Ennes Workshop, and we look forward to planning the engineering sessions for our 85th Annual Convention, Aug. 13-14, 2019, in Omaha.

Radio World welcomes activity news and issue commentaries from state broadcast associations. Write to radioworld@futurenet.com.

Watch a video from Rod Zeigler's presentation about Nebraska's 2018 state EAS plan at www.ne-eas.org.

# All-Digital AM Radio Starts Here

Kolesar interview is featured in latest Radio World eBook



Radio World's free eBook series has been a huge hit. In our newest edition, just published, one of the highlights is an interview with Dave Kolesar. He's the engineer at Hubbard Radio who turned off the analog signal of AM radio station WWFD in Frederick, Md.,

for a year to broadcast in all-digital rather than the hybrid mode of IBOC.

A sampling of info that emerged from our conversation:

- The project grew out of a collaborative effort between the station and Xperi Corp. Also involved are NAB Pilot,

in-vehicle AM experience," including better sound quality and more display features.

- Kolesar is unusual in being both a transmitter engineer and program director. "I have been fortunate enough to have been given an HD sub-channel to pro-

## Hubbard thinks all-digital opens the door to a new audience for the station.

Kintronic Labs and Cavell, Mertz & Associates.

- Given well-documented issues facing analog AM — poor sensitivity, technical upkeep, quality of receivers and narrow audio bandwidth — Hubbard thinks all-digital opens the door to a new audience for the station and is an opportunity for "an enhanced

gram as a music channel called The Gamut," he told me. "Over the course of its expansion it also encompassed WWFD. As a result, I had effective control of this little AM radio station, and it was building up an audience. We were going to get a translator for it, and most of the audience would, predictably, migrate over to the FM translator. This gave me the idea, 'Whoa, our

## FROM THE EDITOR



Paul McLane

analog audience is going to be parked on our FM signal. Why not try to do something with the AM, which has a much larger footprint than the translator? Why don't we try to make the AM competitive as well in the long term? Then you could use your FM translator to promote the idea: 'Hey, as soon as the translator fades out, come back to the AM with your HD Radio and get another 40, 50, 60 miles of listening.'"

- He notes that about 20 percent of vehicles in the Washington area have HD Radio. "As a music station on AM, I would rather take my chances with that 20 percent than try to keep convincing people to give music on analog AM a try. Because it's just not working."
- He acknowledges that some listeners have been disappointed, when their analog AM signal disappeared, but said he's also gotten a lot of positive feedback. "Listeners have also asked

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**C4**

(continued from page 1)

the FCC pursues a rulemaking and eventually adopts it.

What the FCC decides will depend, in part, on what the commission heard from the radio industry this summer. The FCC C4 proposal, which would allow eligible Class A FM radio stations to upgrade from 6,000 to 12,000 watts, drew more than 135 comments and of those "over 100 small broadcasters have commented in favor," according to Matt Wesolowski of SSR Communications, who prompted the FCC NOI on C4 in the first place with a petition in 2014. Other commenters suggest slight changes to the proposal.

SSR estimates 210 Class A FM stations could easily be upgraded using the proposed procedures and another 10 Class A FM CP's could be eligible.

It's clear from comments filed with the FCC that the lines being drawn on both sides are deep and arguments passionate.

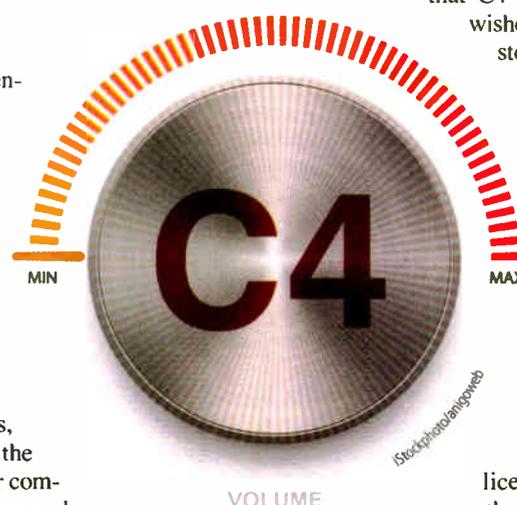
If the FCC opens a C4 FM rulemaking, it will do so against the wishes of the National Association of Broadcasters. The group is on record as being against the idea and says such a change would bring additional interference to the band following the rapid expansion of FM translators.

The NAB and others in the industry have also expressed concern about another part of the NOI, a triggering system that could result in Class A stations with under-maximum facilities being involuntarily reclassified.

In reply comments to the C4 NOI, NAB wrote, "Both proposals should be dismissed because they will reduce the technical integrity of the FM band at a time when broadcasters already face interference that hinders service and their ability to compete in an increasingly crowded audio marketplace."

It's not clear if FCC Chairman Pai is as eager as he once appeared to be to move the football down the field for C4. He sparked the hopes for the creation of the new class with comments he made at the 2016 Radio Show in Nashville, Tenn.

Pai, a commissioner, but not yet chairman at the time, said



that C4 was an idea worth considering, and he wished the commission would take the next step in the administrative process and issue a Notice of Proposed Rulemaking.

**RURAL SUPPORT BASE**

A Radio World review of C4 comments shows broad support for the idea from FM stations in rural and small towns. Many of the comments are from existing Class A stations hopeful about upgrading facilities and taking advantage of the new radio service. Most urge the FCC to consider the proposal seriously without delay.

"KZYQ(FM) is a Class A FM facility licensed to a very small rural community in southeast Arkansas. While we serve thousands of acres of farmland, people are scarce. Enabling us to increase our power would improve our service to the nearby communities of Lake Village, Ark.; Dermott, Ark.; McGehee, Ark.; and Greenville, Miss." wrote Larry Fuss, president of Contemporary Communications, which owns KZYQ.

**THE COMMUNITY SERVICE ANGLE**

The most popular phrase found in many of the pro comments was an ability to "better serve the community" with a bigger signal.

Vernon Floyd, owner of Circuit Broadcasting Company, commented, "WJMG is the Class A station in our group, and listeners regularly call the station asking if there is a way we could increase our coverage. This is the exact opportunity that we have needed for so long.

"Circuit Broadcasting Company is one of several 100-percent African-American owned broadcast companies in Mississippi, but one of the only such companies with multiple stations. As such, I can say with confidence that our stations will benefit from this proposal."

The Multicultural Media, Telecom and Internet Council, which was a co-petitioner of the FM Class C4 proposal in 2014, supports the current C4 proposal and points to the num-

(continued on page 6)

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**C4***(continued from page 5)*

ber of minorities among Class A licensees as a reason the commission should move forward.

"In MMTC's experience, doubling the stations' power would add considerably to the stations' asset values, thereby facilitating the licensees' ability to attract investors, qualify for loans, and ultimately to be sold at competitive prices if the owner seeks to gravitate her station portfolio into larger markets," it commented.

Guaranty Media President/CEO Flynn Foster told the FCC that small broadcasters, like his three Class A radio stations in Louisiana, need the relief C4 would bring.

"Our broadcasting company has been family owned in Baton Rouge since 1964. Our commitment to our community has never been stronger, and we wake up every day with a servant's heart. We have won numerous awards for our efforts and continue to serve listeners during hurricanes, (too many to name), and civic crises (too many to name) and much more," Foster wrote.

Numerous commenters mentioned the desirability of improved coverage area, including Mark Jones of Lendsi Radio LLC, owner of WVBG(FM) in Redwood, Miss.

The C4 proposal "would help the coverage of our station. We are in a very hilly terrain. Our station is the only locally owned media in our area, and we provide local news, weather, public service announcements, broadcast public high school football," Jones wrote. "We also do one of Vicksburg's biggest local events, the Christmas Caroling Contest, which draws thousands and awards over \$10,000 each year to local school choirs and individuals."

**BIG BROADCASTERS CHIME IN**

Big and small broadcast groups have weighed in with opinions on C4, including iHeartMedia, which did not oppose the FM Class C4 part of the proceeding. But Beasley Media Group agreed with the NAB's assertion that creation of C4 FM would result in "further congestion of the FM band and an increased risk of interference to FM translator stations" in particular.

NAB said in its comments that the

"SSR proposal could be especially problematic for FM translators, which are a critical component of radio service."

NAB continued, "As a secondary service, translators are not entitled to interference protection to or from primary full power FM station, such as a new Class C4 station."

Educational Media Foundation offered "cautious support" of a Class C4 radio service but does not support further liberalization of the rules to allow for the creation of more short-spaced radio stations.

EMF, which holds licenses for 300 full-power noncommercial educational radio stations along with a similar number of FM translators, notes, "there will be some disruption to FM translators, so the FCC must provide such translators with as much flexibility as possible to relocate to new channels or otherwise address any interference which is created."

Low-power FM advocate REC Networks believes certain parts of the country with limited FM service would benefit from a power upgrade, even though it notes "there is a large number of Class A stations currently operating well under maximum facilities due to various reasons."

REC Networks describes Class A as a "catch-all" service class and questions "how many Class A FM stations will be able to upgrade because of the nature of some Class A stations as well as the expense and logistics behind converting to directional facilities, especially for smaller and minority-owned stations."

REC continues, "To reduce the impacts of the Class C4 service class on the LPFM service, REC is proposing that LPFM stations be permitted to protect Class C4 at the same co- and first-adjacent channel distances as LPFM stations protect Class A stations. This can be done in complete statutory compliance with the Local Community Radio Act."

Wesolowski, the original petitioner to the FCC for the C4 radio service, told Radio World last month (Sept. 26 issue) that, while the NAB claims the proposal could be problematic for FM translators, "beyond some simple statements of conjecture to that effect, no hard data, case study, or evidence of any type is to be found to support that notion."

**HD RADIO***(continued from page 4)*

technical questions about it; they're very interested in how it works, and people have noted how digital AM behaves differently than analog AM in terms of reception and buffering. These are some of the effects we're hoping to quantify."

- "The big benefit of course is the wow factor when it comes to the sound quality. In the MA3 mode you get 40 kilobits per second of bandwidth in core and enhanced mode, 20 kbps in core only mode. That's the size of the data pipe."
- "The risk of course is you are turning off your existing analog audience. That's why I've viewed the translator concept as a very good intermediate step to AM revitalization."

To find out what's in his air chain and to read about other considerations came into play, find the article at [radioworld.com/resource-center](http://radioworld.com/resource-center).

Also in the eBook, we dive into recent data from Xperi about HD Radio deployment. How many receivers are in the market? How many cars are shipping with HD Radio? Which cities have the highest penetration?

**NEWSWATCH****ELECTION STILL BIG FACTOR IN PUBLIC RADIO**

The 2016 U.S. election is still a strong driver of increased public radio listening, particularly among women and millennials.

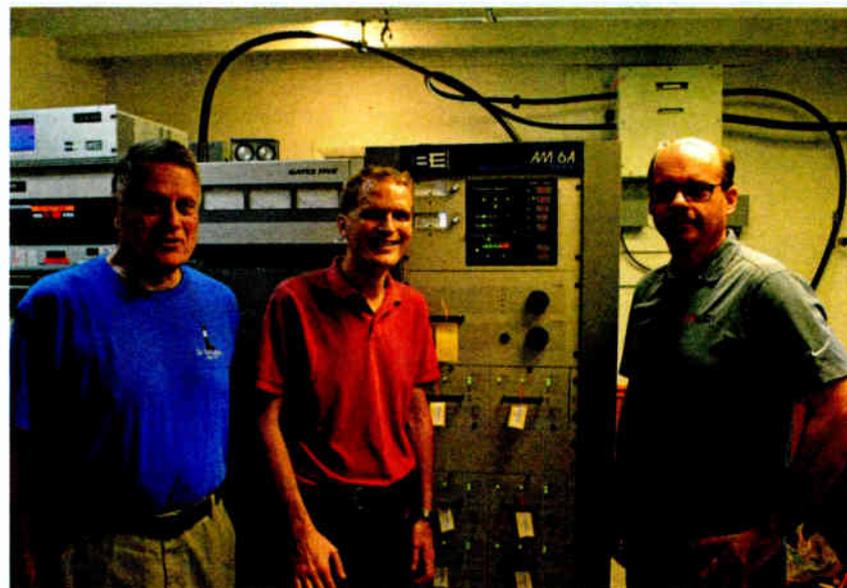
That's one finding of the latest Public Radio Techsurvey, released by Jacobs Media in conjunction with the Public Radio Program Directors Association. The survey gathered info from 22,000 public radio listeners from 53 participating stations.

It also found that ownership of smart speakers has risen sharply, up to 20 percent from 12 percent just one year ago; and that a fifth of smart speaker owners say they are listening to AM/FM radio stations more since getting the device.

Also, the survey found that podcasts remain robust. "Given public radio's dominance in the space, it's not surprising that more than one-third (35 percent) listen to podcasts/on-demand audio weekly or more often, led in large part by millennials (68 percent) and news/talk partisans (40 percent).

FM radio leads the list of most important new car features, followed by Bluetooth and an aux jack to connect smartphones.

The average age of respondents was just shy of 60 years. About 17 percent of the overall respondents were age 44 or younger.



Shown in a photo from our eBook story are Tom Casey, Hubbard Radio's operations manager in Frederick, Md.; Dave Kolesar, Hubbard senior broadcast engineer; and Mike Raide, Xperi senior manager of broadcast engineering.

And the eBook features a white paper from Jeff Welton of Nautel, reviewing the evolution of the IBOC system used in the United States, and addressing what he calls six myths about HD Radio implementations.

We are fast approaching our 50th eBook since launching the series. Upcoming topics include trends in transmitter design, the state of digital radio globally, and an update on audio over IP standards.

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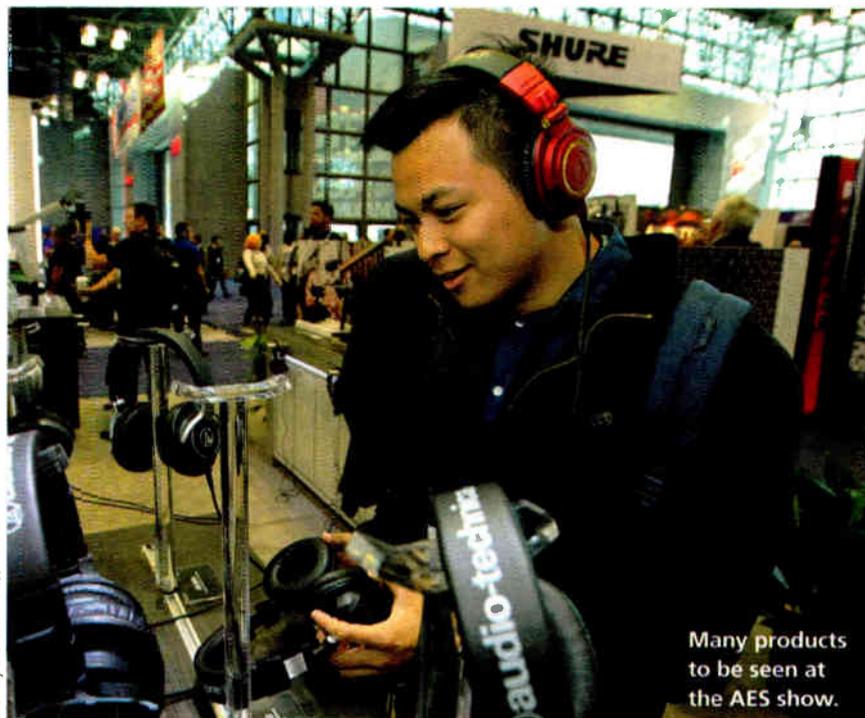
### WEDNESDAY

Timely, to say the least, is the Wednesday session "Broadcasting in Emergency Situations: It Can Happen to You ... Because It Happened to Us." Bonneville International's Jason Ornellas and Emmis Broadcasting's Alex Roman recount their experiences with extreme weather.

For those wanting to branch out in the growing IP audio world, Yamaha's veteran digital audio network specialist Patrick Killianey will provide something of an IP Audio Network 101 with "Network Fundamentals for Audio Engineers."

For those wanting to join the podcasting parade there will be a pair of podcasting sessions, "Podcast Production Roundtable," led by NPR's Rob Byers; and at the end of the day, "Podcast Production."

Courtesy Graham Kirk/AES



Many products to be seen at the AES show.



### IF YOU GO

**What:** AES New York 2018

**Where:** Jacob K. Javits Convention Center

**When:** Oct. 17–20, 2018

**How:** [www.aes.org/events/145/](http://www.aes.org/events/145/)

**How Much:** Four-day all-access, \$620 member/\$755 nonmember; various packages available. Single-day all-access, \$230 member/\$285 nonmember. Exhibits Plus badge, \$50–75

### DISASTER PREPAREDNESS

Jason Ornellas, market chief engineer for Bonneville Sacramento, has been up close and personal with events most engineers may never encounter. He'll be a panelist for Wednesday's "Broadcasting in Emergency Situations: 'It Can Happen to You ... Because It Happened to Us'" session starting at 9 a.m.

**Radio World:** What is your session's purpose?

**Jason Ornellas:** Describing what it was like for us broadcast engineers during emergency situations like Hurricane Sandy, Harvey as well as the recent California wildfires. Our stories are first-person, as we were the ones on the front line helping and maintain our broadcast operations in which our community and listeners needed us the most and how we handled it.

**RW:** What might be a good takeaway for radio engineers?

**Ornellas:** Radio engineers are known for their tips and tricks to maintain and keep a station on the air in an



emergency or not. It's what we do. This session will cover how we prepped for these events, what we went through during and how we recovered. This is our story, featuring the folks who had their boots on the ground during these emergency disaster situations.

**RW:** Radio engineers at the AES Show have many tempting sessions and events to attend

— why should they choose to attend the session that you are participating in?

**Ornellas:** This session hits home. It is definitely not about the newest trend in technology or about the latest AES standard or about virtual studios, but it is about real-world scenarios. For those of us radio engineers, Mother Nature and natural disasters definitely keep us on our toes when our broadcast operation is in line with its path of destruction. This will give you an idea how to prepare, what to think about that you may not have and build backup facilities since it has happened to us, it could happen to you.

### THURSDAY

Leading off, familiar faces can be seen at the session "Techniques for Success With AoIP Technology." Kirk Harnack moderates a panel made up of Andreas Hildebrand, Gary Kline, Greg Shay, Kent Terry and Christopher Tobin.

Patrick Killianey will continue his IP audio tutorials with "Optimizing Networks for Media."

Dave Bialik, organizer of the Broadcast & Online Delivery track, takes on a topic of growing importance in "Standardizing Streaming Audio Descriptive Metadata."

Bialik returns for "Loudness for Streaming," with panelists Thomas Lund, Frank Foti, John Kean, Mike Smith, Robert Bleidt and Sam Sousa. He says they'll be discussing "loudness and processing concerns — trying to find the good levels for mobile while taking into account PCs and smart speakers."

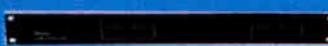
He adds they'll also look at "trying to deal with injected material and whether can metadata reliably control loudness levels." They'll address the question, "Why does a radio station stream have to sound the same as the air product?" in addition to mulling AES loudness recommendations for streaming.

Taking advantage of the New York location, veteran journalist and RW contributor Scott Fybus heads up a look at "Modern Transmission Facilities." His panel will include Jim Leifer of tower company American Tower, John Lyons of Durst Broadcasting and Shane O'Donoghue of the Empire State Building.

### FRIDAY

The NAB's David Layer heads up "The Future of Mobile Audio Delivery to the Consumer — Home &

(continued on page 12)

 <p><b>Studio Items Inc.</b></p>   <p>Mic Booms On-Air Lights Speaker Mounts <a href="http://www.studioitems.com">www.studioitems.com</a></p>	<p><b>TORPEY TIME</b> (The Good Time People)</p>   <p>Clocks Up/Down Timers <a href="http://www.ram68.com">www.ram68.com</a></p>	<p><b>Dixon Systems</b></p>   <p>News Mixers Line Matchers USB Audio Codecs <a href="http://www.ram68.com">www.ram68.com</a></p>	<p><b>RAM Systems</b></p>    <p>Broadcast Furniture Systems Integration Sound Absorption Panels <a href="http://www.ram68.com">www.ram68.com</a></p>
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# More than Just an IP Codec

## Introducing Record and Playback on the ViA



The screenshot shows the ViA mobile application interface. At the top, it displays the time 'Jul 3 3:12 am' and signal strength indicators. The main menu includes 'Record', 'Manage Recordings', and 'Record Mix'. A track titled 'Track Record0042.mp3' is shown with a duration of '00:01:29' and 'Space Remaining 14.6 GiB'. A 'Switch to Playback' button is visible. Below the screenshot is a circular graphic divided into three segments: a green top segment labeled 'Stream', a red bottom-left segment labeled 'Record', and a blue bottom-right segment labeled 'Playback'. A central music note icon is overlaid on the circle.

### Record

- Select & record any input, return audio or file playback
- Stream, Record & Play simultaneously
- Record to SD card
- View & manage recordings

### Playback

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- Route file playback to any output or record media
- Offline Cue monitoring

# ((ViA))

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## IP AUDIO

The busiest man at the AES Show may very well be ALC NetworX technology evangelist Andreas Hildebrand, an expert on IP audio networking technology.



Andreas Hildebrand

**Radio World:** How many sessions are you a panelist on?

**Andreas Hildebrand:** I am participating in three sessions as panelist and will run two further sessions as

a presenter/host. Most sessions are touching on topics related to AES67 and the new SMPTE ST2110 standard. While some sessions are explaining some technological fundamentals, others are more centered around practical experience or discuss the impact of these standards on the wider industry. While all of these are sessions hosted by the AES conference, I will

have at least four more presentations on the AES AoIP Pavilion stage, which is co-hosted by AIMS (Alliance for IP Media Solutions) and is located on the show floor, thus being accessible to all participants (no extra conference pass required).

**RW:** IP networking and AES67 are hot topics at the show and in the radio broadcast industry. Radio engineers attending the show have many tempting sessions and their time at the show is limited. Can you recommend one session you are involved in that they

should make time for?

**Hildebrand:** For radio engineers who are looking for a more general overview on the standards scene and its potential impact, I recommend they attend session NA06 — "Interoperability Standards for IP Media Networking" [Friday, 9 a.m.] where Kevin Gross (the "father" of Cobranet and AES67) and Mike Cronk, chairman of AIMS will join me on the panel.

Those who are looking for more practical advice may be interested in B05 — "Techniques for Success with AoIP Technology" [Thursday, 9 a.m.] run by my good friend Kirk Harnack from Telos Alliance, or they should consider attending NA08 — "Real World AES67" [Friday 1:30 p.m.] which provides insight in and tips and lessons learned from recent projects. This session is also supported by EBU, the European Broadcasting Union.

And, finally, more technically-oriented engineers may want to look for deep insights into underlying technologies by attending NA05 — "AES67/ST2110 Technical: Synchronization and Redundancy" [Thursday, 4:15 p.m.]. Don't forget to check the schedule of the AES AoIP Pavilion stage, which features a lot of topics around networking at shorter presentation time; 30 minutes per session.

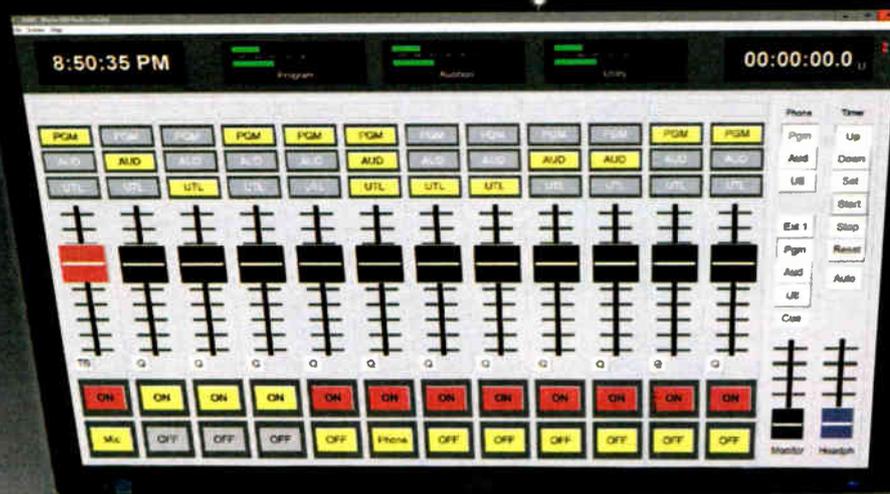
**RW:** What is the latest on the IP audio or digital audio front that radio engineers should be aware of?

**Hildebrand:** While audio networking and AES67 are around for quite some time now, engineers should be aware of the new SMPTE ST2110 standards. While SMPTE at first glance sounds more oriented towards the needs of the TV industry, audio is of course an essential part of their production environment. Luckily, SMPTE has chosen AES67 as their foundation for the audio transport within ST2110, yet subtle differences exist.

Furthermore, while AES67 touches on linear PCM audio only, ST2110-31 defines bit-transparent transport for AES3 signals (including transport of AES/EBU metadata bits as well as any nonlinear audio format which can be transported across an AES3 line, i.e. Dolby E).

Another activity to watch is the Networked Media Open Specifications work conducted by Advanced Media Workflow Alliance, which covers functionalities required for full production system operations beyond what is being defined in AES67 or ST2110 (i.e. discovery and registration of devices and sources, connection management, network management, security etc.). The emerging keyword to watch for is "Full Stack" implementation.

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## TRANSMISSION FACILITIES

Scott Fybus will head up a session looking at high-profile transmission facilities in New York. "Modern Transmission Facilities" takes place on Thursday, starting at 4:30 p.m.

**Radio World:** What is your session and what should attendees expect?

**Scott Fybus:** In "Modern Transmission Facilities" we'll be discussing the state of the art when it comes to broadcast transmission systems and the facilities that house them.

**RW:** Who's joining you?



**Scott Fybus**

**Fybus:** The people in charge of the three big multi-user skyscraper facilities in New York — Shane O'Donoghue from the Empire State Building and John Lyons of the Durst Organization, which runs 1 World Trade Center and 4 Times Square. And Jim Leifer from American Tower, one of the biggest commercial tower leasing companies in the country.

**RW:** The location of the show provides you with a great opportunity.

**Fybus:** New York City is a unique place for broadcasting with all kinds of interesting challenges and expenses. But the lessons New

York's broadcasters have learned extend to smaller markets, too. There's so much to learn from Shane and John about how to make facilities resilient and efficient.

**RW:** AES Show attendees are very busy and have many sessions to choose from. Why should they devote time to your session?

**Fybus:** This facet of broadcast engineering is going through tremendous change right now. The TV repack is forcing many FM stations to find auxiliary facilities or rebuild existing sites. After decades of using almost exclusively air-cooled transmitters, FM broadcasters are beginning to embrace liquid-cooled designs. STL technology is changing, too. Keeping on top of all these changes can be challenging, which is why attendees need to hear from these top experts in the business.

## AES 2018

(continued from page 8)

Mobile," which promises to be a broadcast futurist's favorite or most feared session.

Following a bit more in the traditional radio scheme is an intriguing-sounding session, "Building a Modern Broadcast Facility in a 152-Year Old Building." Jimmy Buff and Kale Kaposhilin of WKNY(FM) will explain their work in turning an historic six-sided building into a radio studio. Well-known studio designer John Storyk has been commissioned for the job and he will also be on hand.

Another interesting session will require leaving the convention center. "80th Anniversary of The Mercury Theater's 'War of the Worlds'" will feature historical context from Frank Beacham along with select reenactments with Sue Zizza, David Shinn, the HEAR Now

Festival and Voicescapes Audio Theater. There will also be excerpts from newly remastered recordings of the original broadcast and more. The event is hosted by New York Public Radio.

### OTHER ITEMS

There will be equipment-building workshops on Thursday and Friday, with special interest on Saturday, which might be more appropriately called "Workshop Saturday." The Boston section of the AES is overseer for this effort.

There will also be a surfeit of star recording engineers/producers at sessions and events including Bob Ludwig, Al Schmitt, Danny Kortchmar, Ed Cherney, George Massenburg, Chuck Ainley, Frank Filipetti and Elliot Scheiner. Speaker design guru John Meyer will deliver the Richard C. Heyser lecture. For history buffs looks at Dolby Labs, Shure and Bell Labs top the offerings.

On Saturday, SBE certification tests are offered.



Courtesy Graham Kirk/AES

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# Try Cloning Your Computers to Save Time

It sounds futuristic, but the technology is easy and available now

## WORKBENCH

by John Bisset

Email Workbench tips to johnbisset@gmail.com

Hal Kneller, engineering consultant with Solmart Media, writes that he has maintained a *clone* (not an image) of all the hard drives in critical systems at the radio stations he consults over the last few years. This way, when there is a crash, there is an instantly bootable drive to slip in. Once that is all done, Hal re-clones the drive to make sure there is a good backup.

Fig. 1 shows a completed clone, ready to go to work.

Of course, Hal refreshes the clones at least once every six months to make sure the computers are reasonably current. This procedure saves reloading programs and redoing a lot of configuration.

On a very frequent basis, data backup is necessary, otherwise the drive will not contain the latest data files. Plus you'll notice there are clones for the NexGen automation system.

Although the on-air systems use RAID Mirror (two drives) and are immune to a single drive failure, they are not immune to human error or some type of virus or anything that could cause the disks not to be able to be used.

Thus, the clone sets up the stations for quick recovery. Although Hal never had a drive crash in the on-air systems, several of the other systems, such as the streaming computer and production computers (which do not use RAID) have had disk crashes. One hosed itself upon a Windows 10 update, but the clone rescued Hal from a lot of work.

The program Hal uses, and which has been very reliable, is free. It's EasUS Data Recovery Wizard v. 12 (current version): <https://www.easeus.com/datarecoverywizard/free-data-recovery-software.htm>.

The company, of course, will try to sell you upgrades; but the free version works just fine, Hal says.



Fig. 1: A picture of one of Hal Kneller's cloned hard drives, ready to go to work!

Hal also has several other of their utilities he finds handy for adjusting, creating or deleting partitions. One such tool allows you to take a Windows bootable disk to another computer with different hardware. Hal has used this when upgrading computers and it saves reloading everything — especially when you are dealing with the complications of a program automation system with lots and lots of configurations.

There are other such utilities on the market, free or paid. Hal just happened on this some years ago and has been happy with its performance.

From Montana's Wolfram Engineering, Gregory Muir comments on the simple temperature sensor circuit provided by Steve Minshall and Cris Alexander of Crawford Broadcasting (RW Sept. 15 issue).

Greg wanted to mention that there are also many solid-state temperature sensors in IC form that have voltage outputs calibrated to the temperature being measured. These devices are in use in many transmitter products to measure internal cabinet, stack exhaust or heat sink temperatures.

Many of the devices are in a simple little epoxy three-lead transistor case and ask for +5 volts and ground in order to operate. The output is on the third lead.

A nice summary of many — but not all — relevant devices can be found

on Wikipedia (search for “list of temperature sensors”). Otherwise, one can check many of the major websites of the manufacturers who make these devices, also listed on the Wikipedia page.

Most of the devices are calibrated in millivolts per degree centigrade, and range from around 10 mV per degree C upwards to volts per degree. Measurement temperature range can extend from subzero to more heat than one chooses to see at a transmitter site. If voltage range is a problem, a simple single-supply op-amp solution can be used to boost the voltage output to what is needed by the remote control.

What's most attractive about these sensors is not only their calibrated outputs, but also their price. Some start in the \$1.50 range!

Mark Voris, director of engineering for Spirit Catholic Radio's cluster in Nebraska, sent in Fig. 2. It shows one

(continued on page 16)

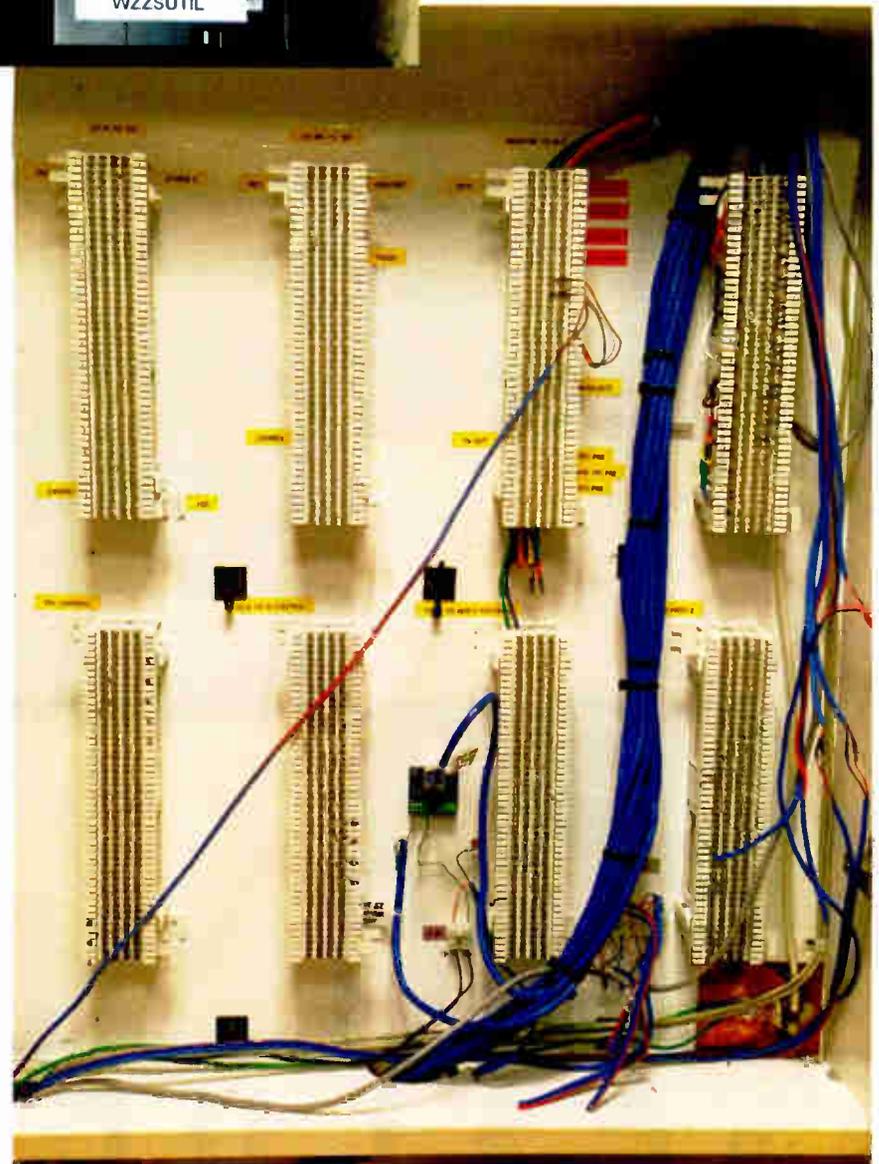


Fig. 2: The end of an era — AoIP cleans out the terminal room.

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# Rick Levy Remembered as “Quiet Genius”

Colleagues share memories of an engineer and friend who did “what must be done”

## NEWSMAKER

BY EMILY M. REIGART

Longtime broadcast engineer Rick Levy, co-founder of Broadcast Signal Lab, died in August at the age of 81.

A Boston Globe obituary (<https://tinyurl.com/ybv7zrxnd>) called him a friend of the broadcast community. SCMS Northeast Regional Sales Manager Jim Peck said Levy was “a consultant, designer and quiet genius for decades in the greater Boston/New England area.”

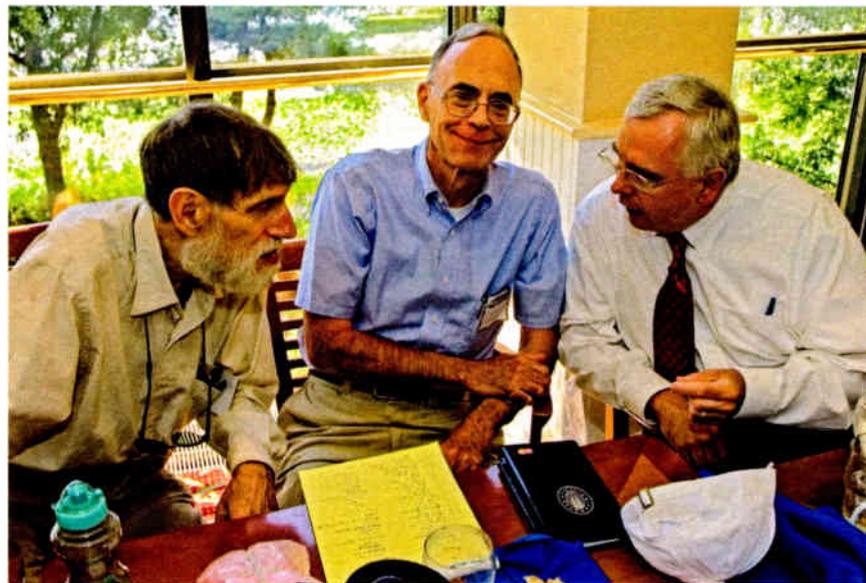
We share remembrances from some of his friends and colleagues.

Richard J. Levy was born in Brooklyn, N.Y., in 1937 and moved to Cambridge, Mass., to attend Harvard College in 1953. He studied astronomy, was a Westinghouse Science Scholar and graduated in 1958, but remained in the greater Boston area, according to a biography provided at his funeral.

Grady Moates, owner of Loud and Clean Broadcast Science and director of engineering for WUMB(FM), spoke at the funeral service. Moates said he and Levy “met” in 1980 — via “a file drawer full of monthly frequency measurement reports,” all signed by Levy and all meticulous.

He and Levy became further acquainted when Moates worked on

the tower site for WDLW(AM), and he discovered “solid-state tower light flashers at each tower,” all handmade by Levy, along with a diagram. Moates says the flashers stood the test of time;



Rick Levy, Lew Collins and John Bisset (from left) in 2006 at one of the quarterly engineers' lunches Levy organized.

two decades later, they were still working when the station moved to a new tower site.

“Designing custom equipment that lasted forever, and saved stations lots of money, kicked my respect for Rick up yet another notch,” Moates said.

Moseley Broadcast Broadcast Sales Manager Bill Gould said that, while working for Northeast Broadcast Lab in 1977, he was “contracted to build studios at WLYN in Lynn, Mass., where Rick was chief engineer.” Gould remembers Levy as curious and involved during the process. “Every time I looked up from inside the console, there was

“saw the difficulty a station can create for others by stepping over its assigned frequency boundaries and realized that those stations risk FCC problems, as well as reputation problems.”

BSL offers services for AM, FM and television stations, and according to the pamphlet, Levy offered “regular signal measurement to give [broadcasters]

**His focus was not only on precision engineering through services provided by Broadcast Signal Lab, but also on building community.**

— Grady Moates

peace of mind as well as the freedom from FCC action.”

He and Maxson eventually parted ways, and Dave Peabody joined Levy at BSL, and they “spent hours keeping up with technology to ensure their instrumentation is the best in class to vanquish competitors and keep their clients’ confidence that their stations are operating as accurately as possible,” according to the short biography.

“Rick was your best friend when

(continued on page 18)

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## WORKBENCH

(continued from page 14)

of his termination cabinets *after* his AoIP studio installation. Gone are most of the punch blocks and multi-pair wire.

Mark can fill you in on some of the other benefits AoIP has brought to his station network. You can reach him at [Mark@kvss.com](mailto:Mark@kvss.com).

Dan Slentz writes that anyone who has ever used “community” headsets in a studio can’t help but notice how “nasty” they can get.

Dan stopped using community headsets years ago, but for the germophobic engineer or PD who has no alternative, or for studios which have frequent guests using shared headphones, here’s a clever item Dan stumbled upon: disposable earmuff-style

headphone covers.

Linhuipad 12cm Replacement Non-woven Sanitary Headphone Covers come in a 100-piece package. They are available for less than \$15 from AliExpress ([www.aliexpress.com](http://www.aliexpress.com)). Enter “Linhuipad sanitary headphone covers” in the search box.

At less than 20 cents a pop, they are a good and inexpensive investment.

Contribute to Workbench. You’ll fellow engineers and qualify for SBE recertification credit. Send Workbench tips and high-resolution photos to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com). Fax to (603) 472-4944.

Author John Bisset has spent 48 years in the broadcasting industry and is still learning. He handles Western U.S. radio sales for the Telos Alliance.

He is SBE certified and is a past recipient of the SBE’s Educator of the Year Award.

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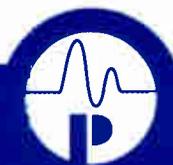
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World Radio History

# LEVY

(continued from page 16)

you needed to make sure your signal was legal and robust," Moates said. "Rick was a very smart engineer. His understanding of the minutiae of radio signals and how to measure and adjust them is legendary."

Levy shared his knowledge with Radio World readers through Workbench tips numerous times throughout the years.

Additionally, he knew and valued the camaraderie of fellow broadcast engineers, so through BSL, Levy organized quarterly luncheons that brought together the technically minded to share "latest experiences, concerns, war stories, advice and data for informal discussion, sympathetic sharing, commiseration and shoptalk," according to Gould.

Moates said, "His focus was not only on precision engineering through services provided by Broadcast Signal Lab, but also on building community."

"The Boston area radio engineering community has become legendary for the cooperative, friendly group that we have become, and it is largely due to the BSL quarterly Radio Engineering Luncheons that Rick continued for more than a decade."

## MORE THAN AN ENGINEER

The funeral highlighted not only Levy's love of his work but his interest in astronomy, Gilbert & Sullivan, distance running, Judaism, jokes and more.

Moates says Levy was "a golden-eared audiophile, with a collection of top-notch high-fidelity equipment. Having Rick tell you your radio station sounded good was high praise indeed, and he was always helpful when he noticed something amiss in a station's sound, giving us a friendly heads-up."

Moates said the Brother Sun song "What Must Be Done" by Greg Greenway reminds him of his friend:

*Some people do what must be done.  
They see the hole in the fabric that  
must be sewn.*

*They see the way blockaded and they  
roll back the stone.*

*They see the day beyond the horizon  
and they do what must be done.*

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Courtesy Bill Gould

Bill Gould writes, "Here is one of my favorite pictures of Rick Levy, center, taken at FIM Day outside the Marriott Newton/Boston after the Boston Radio Engineers Luncheon Nov. 10, 2011. Engineers were encouraged that day to bring their field intensity meters for an informal comparison calibration. As you can imagine, the bellman was quite curious, so we told him it was air pollution monitoring. Also pictured are Rob Landry, Carol and Lew Collins and Ed Perry."

## FM RADIO RETURNS TO ONE WORLD TRADE CENTER

In September, an FM signal began broadcasts from One World Trade Center, joining a few TV signals in airing from that new building in lower Manhattan.

According to technology company GeoBroadcast Solutions, translator owner Rahul Walia contracted GBS to find spectrum in the lucrative New York market. The companies ended up moving Walia's translator W284BW — which rebroadcasts the HD2 channel of WPAT(FM) in Paterson, N.J., on 104.7 MHz, reportedly with an ethnic format — from Perth Amboy to the



### WTC rooftop.

GBS is leasing the subchannel. Consultant Bert Goldman was quoted saying that 104.7 FM "can now reach listeners in areas of the city and metropolitan area that would simply not have been possible to reach from central New Jersey."

Walia owns two other translators in New Jersey and was expected to begin airing a new format on the translator shortly.

GBS noted that WSPK(FM) in Poughkeepsie airs at 104.7 but said its geotargeting approach to the system design would avoid interference.

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World Radio History

# Is There Life After Radio?

Your skills can be put to use in another industry — *if you put yourself out there*

## 21<sup>ST</sup> CENTURY PD by Dave Beasing

It's a fork in the road that many career radio people face: After a change in their station's format or management, should they stay in the radio business? Or apply their skills somewhere else?

For most, radio has always been more than just a job, so the decision can be difficult.

"Radio feels like a second home, and your coworkers become family," says Mike Sherry, a former producer at Los Angeles rock stations KLOS(FM) and "100.3 The Sound" KKLQ(FM).

When "Darla Thomas" Gerdes left radio, she immediately missed the camaraderie, along with the perks. "Not many jobs send you to concerts, fly you to showcases and let you meet celebrities."

As a former programmer of sta-

tions in Tucson, Omaha, Seattle and Charlotte, what Gerdes doesn't miss is the pressure. "As staffs have been cut, employees are doing twice the work, with pressure to cut costs even more and maintain ratings. That leads to burnout."

For Gerdes, working out at a gym called "Burn Boot Camp" helped relieve the stress. "It's for women only, empowering members to take control of their lives. We all support and encourage each other."

She loves the concept so much that she plans to own her own franchise. "I'm in negotiations with a location in Bucks County, Pa., and hope to open early next year."

Radio's staff reductions can have an unexpected benefit to those left behind. "I was doing the jobs of three people," says Sherry, "so when I began my new position, I realized just how efficient my work habits had become." In addition to



Darla Thomas Gerdes found stress relief — and a new career — at the gym.

being full-time for food blog company Hungry Girl. Sherry still does some side work for radio syndicator Compass Media. For Hungry Girl, he's the producer/co-host of a podcast called "Chew The Right Thing."

"You could say I'm the utility infielder," says Sherry, "the 'go to guy' when something needs to be done."

"The startup world is the perfect place for someone who can do so many things," according to Eric Holmes, talent manager for a new Medicare sales company in Long Beach, Calif. Prior to his current career recruiting and hiring for startups, he worked at radio stations in Columbus, New York City, Los Angeles and for consulting firm Jacobs Media.

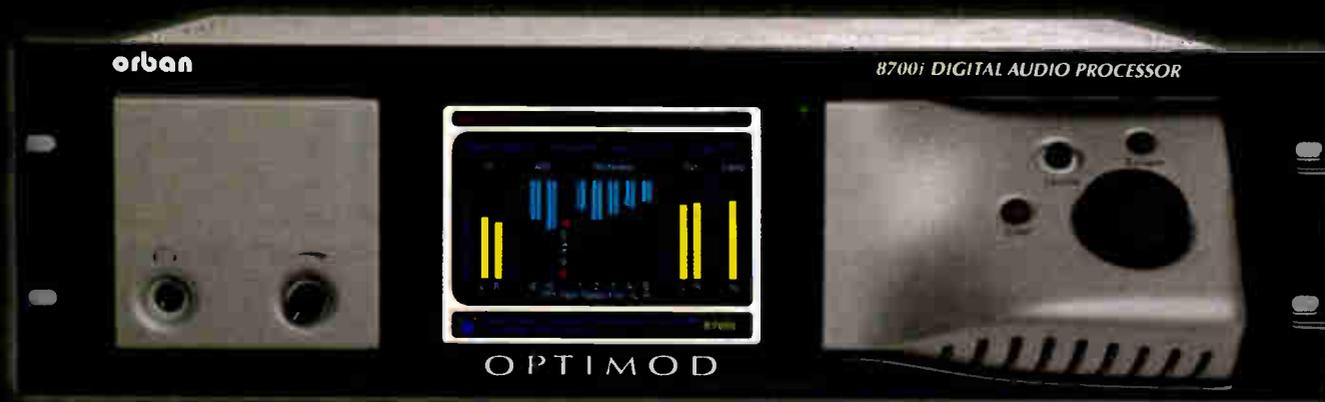
"The hardest part of interviewing for a job outside radio was actually getting the interview," says Kelly Hammer.



Eric Holmes thought he'd be in radio for the rest of his life.

(continued on page 22)

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# SKILLS

(continued from page 20)

After 27 years in Salt Lake City area radio, Hammer says, "It was difficult for potential employers to grasp that what we do in radio is really marketing — for our stations and our clients."

He credits his new employer, tech startup PDQ.com, with "understanding that I would not only bring experience with audio, but I'd be doing similar work to radio. I identify a market segment, then create compelling content targeted at them."

Holmes warns, "Radio's job titles



Mike Sherry now produces and hosts podcasts.

and jargon are useless anywhere else."

He recommends taking some discreet liberties with your résumé. For example, "If you're a program director who — among other things, directs a station's marketing efforts — apply for a marketing position by saying you're a 'marketing director.' You are, even if it doesn't say that on your business card. The person who's hiring receives hundreds of résumés and isn't going to take the time to figure out what a radio program director does."

Then, if you get the interview, "The coolness factor of your past career can help break the ice. People like talking about radio, but you have to steer the conversation toward how your skills

are relevant to their company," says Holmes.

Of course, there is another option. You could start your own company like Rob "Blaze" Brooks.

"I stepped out to do my own thing." He's proud to have discovered and nurtured so many radio talents during



Longtime Reno program director Rob "Blaze" Brooks opened his own business.

your market."

Like many, after his first taste in college, Holmes thought he would always be in radio. "It's a cool job you can brag about to your friends. But I'm glad I opened my eyes to other opportunities. After talking to so many listeners and celebs, I know I can handle any conversation, and I doubled my salary within a few years."

"Looking back, I wish that I had had more confidence when I was in radio," says Gerdes. "Now I know just how much my abilities translate to 'the real world.' You really can change your path. It's possible. You just have to believe in yourself!"

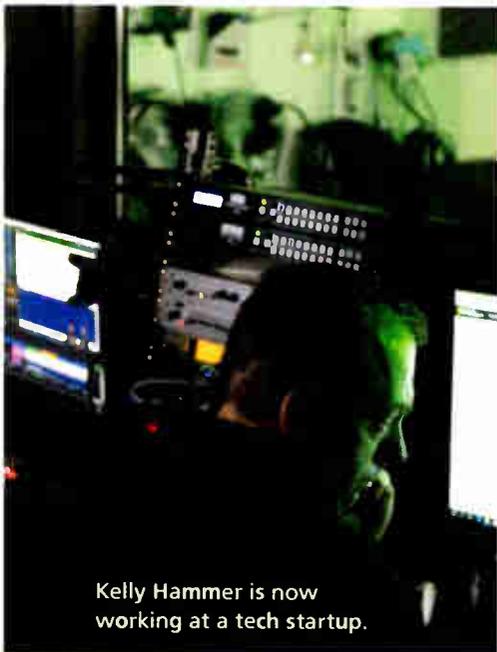
After 9 1/2 years as the creator of L.A.'s 100.3 The Sound, Dave Beasing has launched SoundThatBrands.com, the company that co-produces the popular "Inside Trader Joe's" podcast with fellow radio veteran Steve Goldstein.

**"Not many jobs send you to concerts, fly you to showcases and let you meet celebrities."**

— Darla Thomas Gerdes

his decades at KRZQ and KTHX in Reno. As the founder of 4808 North Inc., he's still identifying and hiring talent, now for entertainment venues like Eldorado Resorts, the Carson Valley Inn and others.

"Agents are lot like record people, but it's even more competitive," says Brooks. "Ticket sales and getting listeners, they're similar. You have to know



Kelly Hammer is now working at a tech startup.

## ♥ RADIO DOING GOOD Helping Others Is in Radio's Blood

BY MARK LAPIDUS

While blood does get old, collecting it never does. For 34 years, KSHE in St. Louis has been hosting and promoting blood drives. In July, KSHE convinced 2,376 donors to roll up their sleeves, providing 2,194 red cells. All donors received a KSHE Summer Blood Drive T-shirt and were entered into a drawing for free tickets to see Foo Fighters.

In June, Beasley Broadcast Group's WMGK in Philly raised \$143,000 for local vets during the annual John DeBella Radiothon. Their online auction included items for the who's who of classic rock artists, including The Eagles, Fleetwood Mac, Jimmy Buffet, Billy Joel and Ozzy Osbourne. Over the span of 10 years, WMGK has raised over \$1 million for veterans.

United Way of St. Joseph County, Mich., was the recipient of \$104,000, thanks to Swick Broadcasting's WBET(FM) in Sturgis. The 18-hour radio marathon featured local officials and community business people as guest disc jockeys.

Are you willing to give your staff the day off to do good work? Beasley Broadcast Group of Fayetteville, N.C., did just that for their Beasley Best Day of Caring event, partnered with the Fayetteville Area Habitat for Humanity's B Street Revitalization Project.

"Being able to show that we are truly a part of the neighborhood and care enough to clean up, interact, and connect is important," said VP Erika Beasley.

Country stars continue to show big hearts. iHeartMedia Chicago's BIG 95.5 hooked up with country star Jason Aldean to raise over \$32,000 for Susan G. Komen for Breast Cancer research.



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# Visiting NPR's Home on the Other Coast

NPR West gets an overhaul for the digital age

## FACILITY PROFILE

BY DOUG IRWIN

NPR is a nearly ubiquitous programming source for public radio stations around the United States and the most well-known. It also has a well-deserved reputation amongst radio professionals as a standard bearer: Its systems are designed and built with an overarching plan using state-of-the-art technology. If you listen to "Morning Edition," then you've likely heard "... and this is David Greene, in Culver City, Calif." To go to that source, we'll look at NPR West, its flagship in Culver City.

### SOME HISTORICAL BACKGROUND

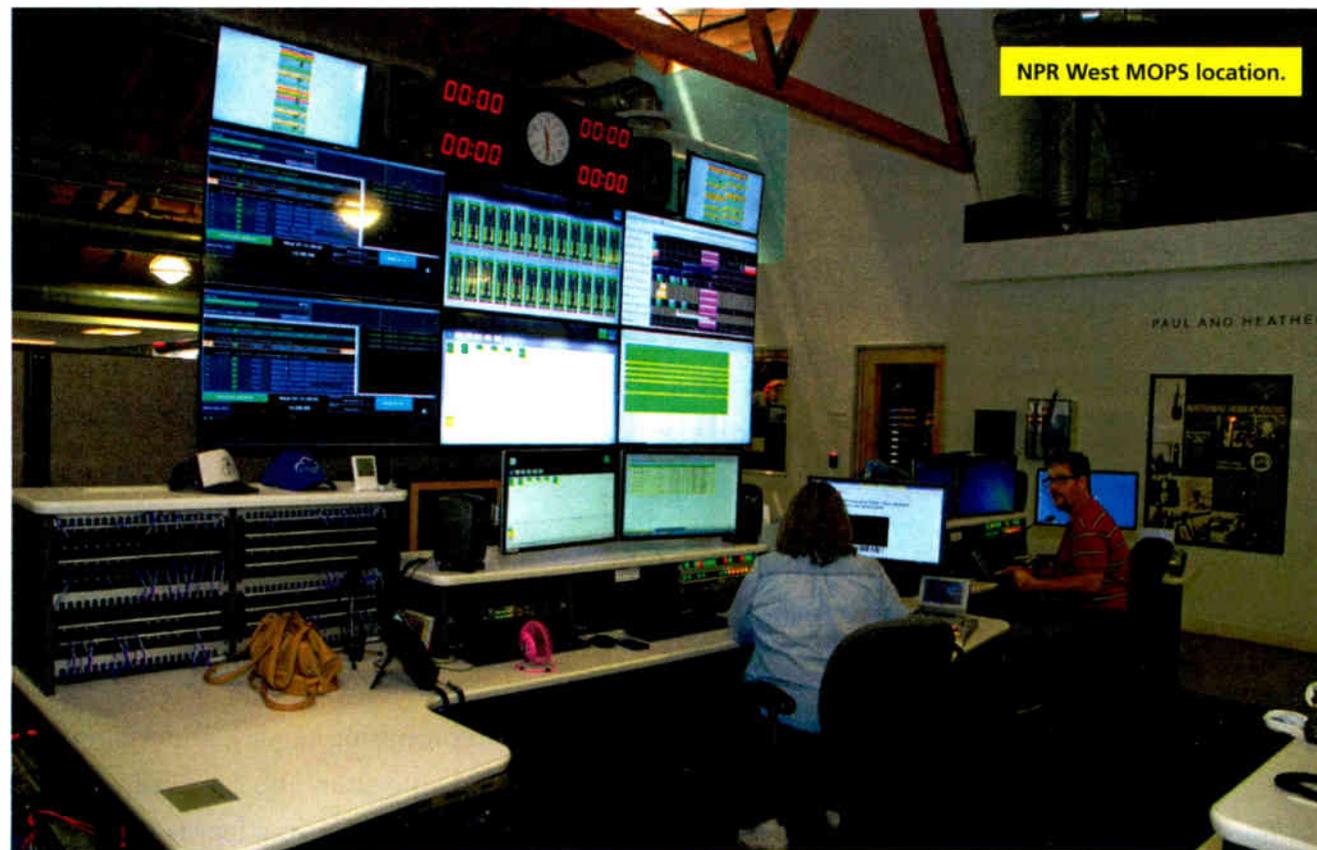
After President Lyndon Johnson signed the Public Broadcasting Act in 1967, the Corporation for Public Broadcasting was created, and Congress called upon it to encourage "the growth and development of noncommercial radio" and to develop "programming that will be responsive to the interests of the people," according to NPR's own history notes. The CPB introduced technical and professional standards to improve what were then mainly small stations, and soon the CPB and individual stations saw the need for a national radio service to bring Johnson's vision to life.

NPR was incorporated on Feb. 26, 1970, by 90 charter stations, to provide national news programming. In April 1971, NPR took to the air with live coverage of the Senate hearings on the war in Vietnam; a month later it debuted its first weekday newsmagazine, "All Things Considered." "Morning Edition" launched in 1979, "signaling that the network was becoming an all-day news service."

In researching this article, I had the pleasure of speaking to several members of the technical staff of NPR, including Shawn Fox, senior director of audio engineering for NPR.

"Up until the year 2000 or so, National Public Radio had all of its eggs in only one basket, and that was our headquarters facility," said Fox, referring to its Washington base. "We had small, little locations — just single studios in New York and a small bureau in Los Angeles and a small bureau in

Chicago. And at that time, what we realized was those were just basic one-studio production facilities and that we needed a much larger presence on the West Coast."



Chicago. And at that time, what we realized was those were just basic one-studio production facilities and that we needed a much larger presence on the West Coast."

Concurrently, NPR management decided that their overall technical plant needed a robust disaster recovery site, as well as the ability to generate and disseminate original programming from California.

The Sept. 11, 2001 tragedy was a catalyst that made NPR complete their plans.

"We knew that being in the Washington, D.C. region and having no robust disaster recovery facility really put our listeners and our member stations at risk," said Fox. "And that was really brought home because on 9/11, from the roof of our building, we could see the smoke rising from the Pentagon, and at the time, as we now know, the other plane that went down in Pennsylvania

### THE ORIGINAL FACILITY

The building chosen to house NPR West has some interesting history of its own.

Desilu Productions' studios produced many of the television shows that baby-boomers remember fondly — including

"Star Trek" and "Mission: Impossible." The building in Culver City that houses NPR West once served as prop storage and, after Desilu moved on, was used by a furniture manufacturer.

"This city is fond of having a building show its heritage," said Norb Gallery, the production manager for NPR West, when I asked about the remnant sheet-metal chimneys that still exist along the building walls outdoors. "And previous to our ownership, it was a company called Digital Planet, which was a video web content company."

Fox told me NPR Engineering went through the design-and-build process and opened NPR West in November 2002, just in time for the election.

"The platform that we used specifically on the audio production side was Klotz. They were an emerging technology — an emerging digital technology that gave us a lot of the flexibility that we were looking for."

### NPR WEST GETS A REFRESH

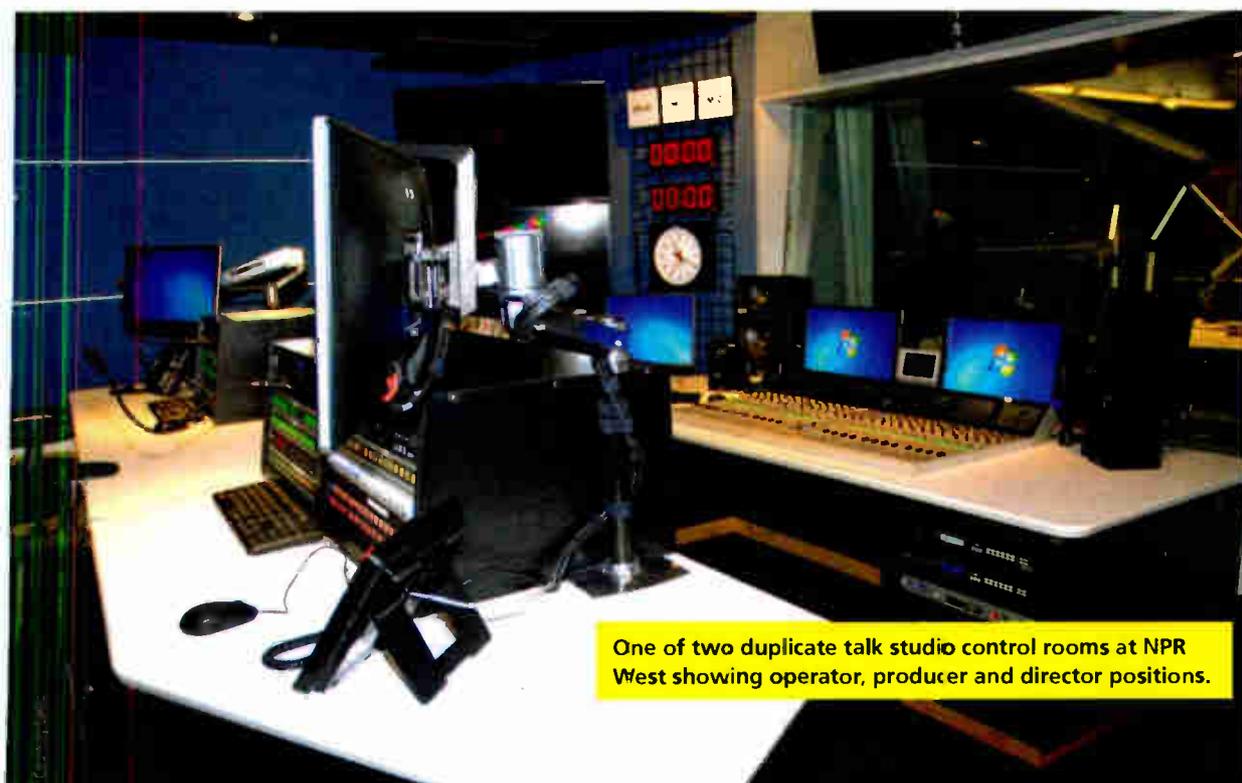
About a dozen years later the broadcast plant at NPR West was showing signs of age and was in need of an update. "Over the course of many years Klotz's market share had decreased, and it was a bit more difficult to get support," said Fox. "As we were projecting out, we saw that we were getting to end of life. We were seeing maintenance issues and it was time for a complete refresh. The technology had changed. Our workflows had changed."

In 2013, NPR completed a complete rebuild and move of its Washington headquarters. "Obviously a much larger facility, but we had gone through a very detailed selection process on what platform we were going to use here in D.C. with a whole bunch of requirements," Fox said.

Ultimately, the digital audio network/production system for the headquarters was built around equipment from Lawo; when it came time to rebuild Culver City, the choice in router systems was the same.

"When we got to California, one of our core requirements was that we could do a better job here in D.C. supplementing our L.A. staff in terms of support, in terms of the technology, as opposed to having competing platforms out there. It just made a lot of sense to be able to stay on the same platform across the entire organization, and across all facilities," said Fox.





One of two duplicate talk studio control rooms at NPR West showing operator, producer and director positions.

NPR Engineering wanted to make sure that it had a system that was expandable, to accommodate growth at NPR West; and it wanted to make sure that its content producers, if they happened to move from Washington to Los Angeles or vice-versa, would already be familiar with equipment.

"Content producers wouldn't have to learn a different system. They wouldn't have to learn a different technology. They wouldn't have to learn a different platform. So by making it very similar to what we had already built out here in D.C., we were able to achieve those goals," said Fox. "And of course, disaster recovery was always there and always in the background, and we always try to build in at least a 10 to 15 percent future expansion where disaster recovery might fit in."

**THE LAWO SYSTEM AT NPR WEST**

The heart of the NPR West system is a fully-redundant Lawo Nova 73 router and DSP engine. "All the audio flows through here and almost every single path is redundant," said Herbert Lemcke, president of Lawo North America, whom I met on-site in Culver City. "There is no single point of failure in the whole infrastructure down to a four-channel I/O card."

The studio facility of NPR West consists of several large talk studio and control room combinations; smaller studios used for various production functions; smaller rooms used for light duty production functions; and the MOPS area, which oversees the operation of the plant.

In addition to Studios B and C, which are the larger control room/talk studio combinations, the

*(continued on page 26)*

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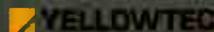
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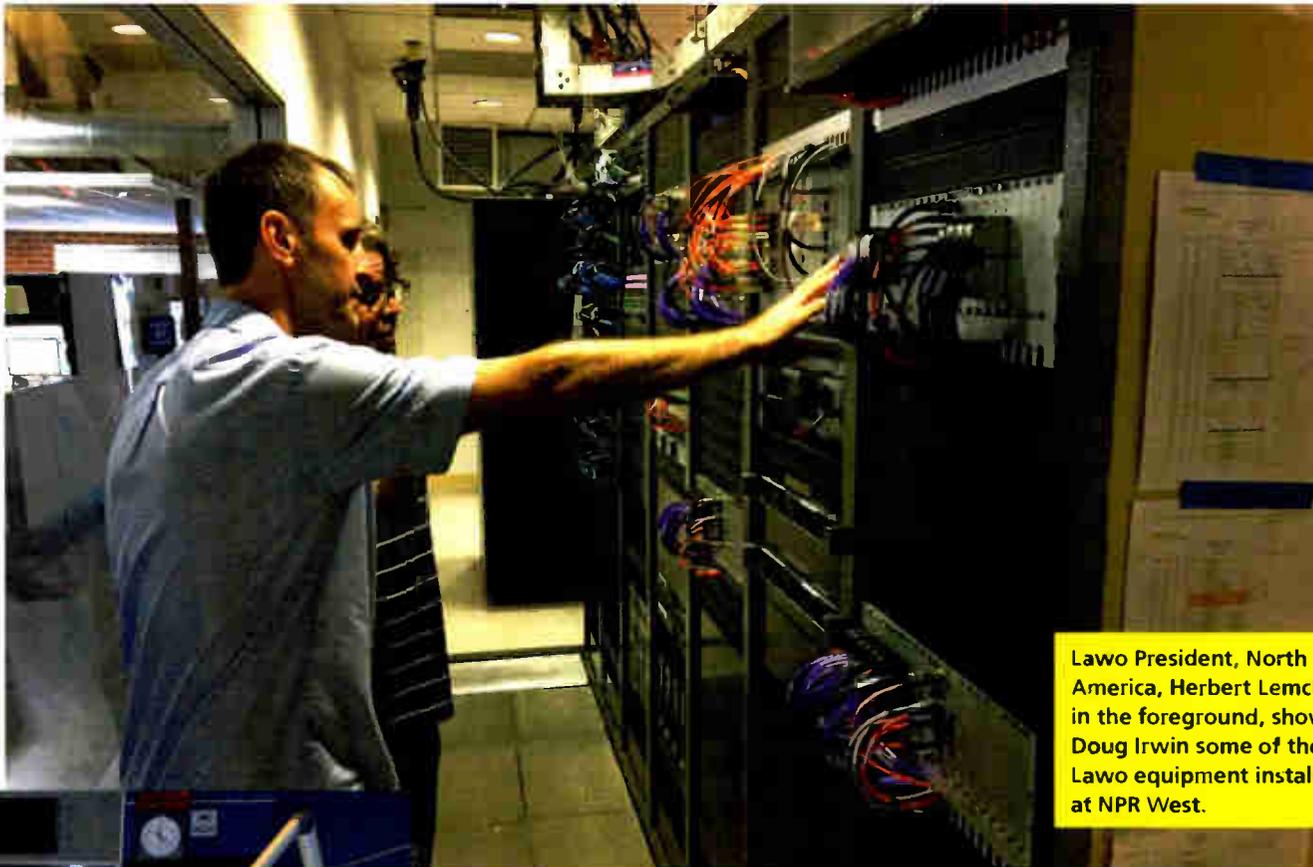
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# NPR WEST

(continued from page 25)

studio complex includes the SOPS (self-operated) complex, which consists of four rooms.

“It’s basically two self-op control rooms, and two self-op studios.” said Lemcke. “They can work in a number of setups: The simplest one is four independent studios, each of which has an eight-fader crystal control surface. Then there are many use cases in which the inside room becomes the control room and the outside becomes the studio. There is also a use case where the two control rooms on the inside work together and are connected together where one becomes the studio, a complete studio space, to the other control room. There are four or five different combined modes of those four rooms



Photos: courtesy Lawo

**Lawo President, North America, Herbert Lemcke, in the foreground, shows Doug Irwin some of the Lawo equipment installed at NPR West.**



**The talent positions in one of two identical talk studios at NPR West.**

together. In Washington, there are five of these complexes, and here we have one of them. But from its functionality, it’s the same.”

Another key area of interest in NPR is the MOPS location, which is a centralized monitoring point for everything that is going on in the facility. “The MOPS area is designed with the same functionality and the same layout and workflows as in Washington,” Lemcke told me. “Under normal circumstances this is a production facility tightly integrated with the Washington production facility for co-productions and remote productions. It also serves as a complete disaster recovery facility where, within

half a day basically, all the co-production can be completely moved over to this facility [from Washington].

“In the MOPS area, we also have a couple of consoles and that is a little bit unusual. They are mainly used to assist those personnel in the five small productions ‘booths’ that are here, so that if somebody just doesn’t have the right skillset to work something directly themselves — or they need help — these consoles can basically take over the functionality of the console in the room and it can be completely remoted from here,” he said.

Referring to the MOPS monitor photo: The large middle screen shows up to 24 of 48 busses, which allow staff to look at program streams that are produced by NPR and distributed to the member stations. “It’s the visual interface to an automatic monitoring facility and it has a control system underlying to react on failure,” said Lemcke. “So for example, it shows you here some channels in red. There is signal failure — there’s silence. A silence alarm then can trigger many automated reactions such as the activation a redundant play-out machine.

“On the bottom right side we have a monitor for the automation system, the line scheduler which is managing all the routing — all the timed, scheduled

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routing and lots of the individual one-off set ups, plus management of all the codecs, and playout machines. That's the heart of the system," Lemcke elaborated.

#### SIGNAL DISTRIBUTION

Currently, NPR West sends and receives program audio via Washington and elsewhere making use of a large number of MUSICAM Prima LT codecs. However, that means of communication is soon to change. Shawn Fox explained another reason to use Lawo in Culver City was so that the two ends could send linear audio back and forth via AoIP, since the system supports use the Ravenna protocol.

"We knew our lives would be a lot easier and we could transition AoIP." Speaking to us in July, he said the team hoped to transition by the end of the year, if not sooner.

I asked about the bandwidth requirement for the Culver City to Washington connection in the updated system. "We have 500 Mbps at the moment, it's probably going to have to go a little bit higher than that," said Norb Gallery.

"Depending on bandwidth, we might expand it even to support a 'dash 7,' seamless protection switching, so following the SMPTE 2022-7 standard," said Lemcke. "That's a little bit down the road, but that would give, basically, resilience in the network infrastructure against individual packet loss that might occur along the way from LA to Washington."

I also noted a satellite uplink dish on the roof of NPR West and asked Fox about it. "There's a long history with that satellite dish," said Fox. "Because we knew we needed to strengthen the disaster recovery functionality, we had to be able to uplink from Culver City. We do use the downlink functions to record a lot of our programming and do a lot of monitoring, but the uplink side of it is there just for disaster recovery.

"If Washington was a smoking hole in the ground and the PRSS' network operation center went down they have a robust backup facility in Saint Paul, Minn. — but we still would be dead in the water. We needed to be able to uplink," said Fox.

NPR West staff test the uplink once per month, making sure it's operational all the time, and programming is always routed to it. "If I have to call in the middle of the night to my guys in California and say 'flip the switch,' they can do that and get us up on the air."

#### CULVER CITY PLAYS ITS ROLE

"Culver City has been a great partner for NPR West — I want to stress that," said Fox. "We probably wouldn't have been so successful in that location all these years if it was not for Culver City.



Courtesy Lawo

Operator view of Lawo Sapphire console.

They wanted to make sure that Culver City was represented somewhere on our airways — so when you actually listen to some of our programming, especially on 'Morning Edition,' we like to say 'from Culver City.' If we have David Greene there, we want people to know we are in California. We far exceed their requirements," Fox said.

Coming next: American General Media in Bakersfield, Calif., rebuilds after a fire.

Radio World is looking for recent technical facilities and projects to feature. Email [radioworld@futurenet.com](mailto:radioworld@futurenet.com).

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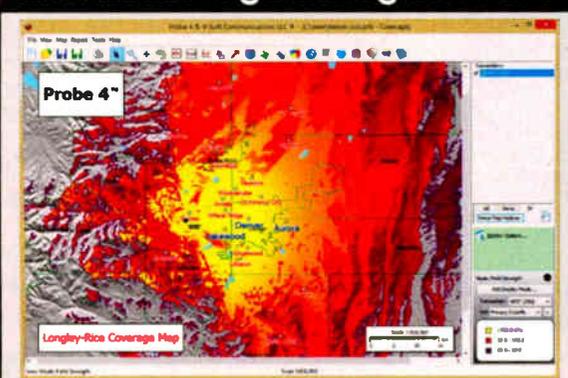


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Wanted: real plate reverb. abgrun@gmail.com.

## MICROPHONES/HEADPHONES/SPEAKERS/AMPS

### WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condi-

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tion. Contact Bill Cook, 719-684-6010.

### WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

## MISCELLANEOUS

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and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

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; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

### WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

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

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 wom-

en'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 KSF 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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### WANT TO BUY

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Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

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

Standard Short-tune series. Bill Cook, 719-684-6010.

(2) LPFM radio stations for sale, located in the NW part of central Florida on the gulf coast, covers the county, get out of the cold weather, come to Florida, call or write for particulars, 352-613-2289 or email boceey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.

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10KW	1999	Harris Z10CD, Solid State
10 KW	1998	Nautel FM10, Solid State, single phase
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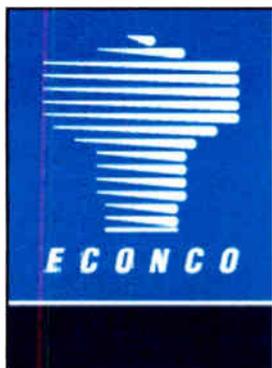
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21	Moseley Associates	<a href="http://www.moseleysb.com">www.moseleysb.com</a>
6, 14, 18, 24, 26, 30	Nautel Ltd.	<a href="http://www.nautel.com">www.nautel.com</a>
23	Omnia - The Telos Alliance	<a href="http://www.telosalliance.com/omnia">www.telosalliance.com/omnia</a>
20	Orban	<a href="http://www.orban.com">www.orban.com</a>
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READER'S FORUM



REAL RADIO

Paul, I just had to send an "attaboy" for the preface you wrote for "The Radio Station" (republished in the June 20 issue).

Radio, despite its various corporate sins, has survived as the default medium in America, and we need to recognize that fact.

But I have to disagree with your definition of what radio is. Radio is, and always has been, local. I'm talking local people (primarily) creating audio content for their neighbors. All these other audio sources are not radio. They only wish they were that popular and ubiquitous!

To the extent that corporate radio isn't local, it isn't radio. It's a grey area they're living in now, and they're having big problems with their business model. After the bankruptcies of the biggest players, one wonders how long they can maintain the fiction.

We could certainly use new blood, especially in engineering, but it has to make career sense to these young folks. I don't know if it does or not. That's a "them" thing. But to us old farts, radio has always been endlessly fascinating and frustrating — a reason to get up every day and try harder.

Gary O. Keener  
Owner

Keener Technical Services  
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RADIO FIRST RESPONDERS

I totally agree with the views Ron Ziegler expressed in his commentary ("Yes, Broadcasters Are First Responders, Volunteer Fireman Argues," RW June 20) that we need to be able to apply for First Responder status in all 52 of our states and territories.

My backing for credentialing to let us help during public emergencies has become clear and strong over my career.

Having spent 27 years between 1975 and 2002 in Los Angeles at All News KFWB, there were several times where my job description crossed the line into emergency response. The civil unrest after the Rodney King verdict and the Northridge Earthquake come to mind. You can read the details when I write my book.

Through years of meetings with civilian and sworn emergency managers that started out in the pre-EAS days when EBS was still with us, I learned a lot about their professions that run the spectrum from planning to response geared to turning bad situations to better and faster favorable outcomes.

Probably the best lesson I learned in Los Angeles is the vital importance of communicating timely and accurate information to a public at risk using all available means and methods. Good and timely emergency public information can help to not only get to those better outcomes, but also prevent the spread of inaccurate information and rumors that can lead to making disasters worse. Radio and TV are the only sources for long form information that can best tell the story of an emergency, not to mention radio and television may be up and running when the Internet goes down!

Since becoming a contract engineer and moving to Ventura County, the best support I can lend to Ron's commentary is what happened late in the evening of Dec. 4, 2017, when the Thomas Fire began its path of destruction that put it in the record books as the largest wildfire to date in recorded California history.

Broadcast engineering contractors often acquire equipment most of our clients do not have. I own an 85 kW three-



driven by gale force blowtorch winds. My generator powered the client's emergency news coverage for 32 hours, until utility power was restored. As far as I know, they were the only radio broadcast voice on the air with accurate information.

There easily could be roadblocks on my route with police or sheriffs blocking my route. Luckily, there were none that night.

True, many of us have talked our way through police or fire lines to keep stations on the air, but why take a chance?

I must also mention that part of the reasoning for issuing disaster response credentialing is to make sure that, when you are let through a barricade, you are properly trained and have appropriate protective equipment. With such training and equipment, you are less likely to become part of the emergency yourself and are viewed quite differently by law enforcement and firefighters who do not want untrained and ill-equipped people around who will make their jobs more difficult.

Broadcasting was added to the national list of critical infrastructures after its long and continuing role in disaster communications when power and internet fails or when short form warning systems cannot tell the whole emergency story. Some states already have effective credentialing programs for broadcast engineers; all should.

Richard Rudman  
Remote Possibilities  
Santa Paula, Calif.

CORRECTION

A photo printed on page 10 of the Sept. 26 issue was incorrectly identified as taking place at a past Wisconsin Broadcasters Clinic. The photo actually shows engineers after a luncheon in Boston. Learn more about that meeting and its founder on page 16 of this issue.

HOW TO

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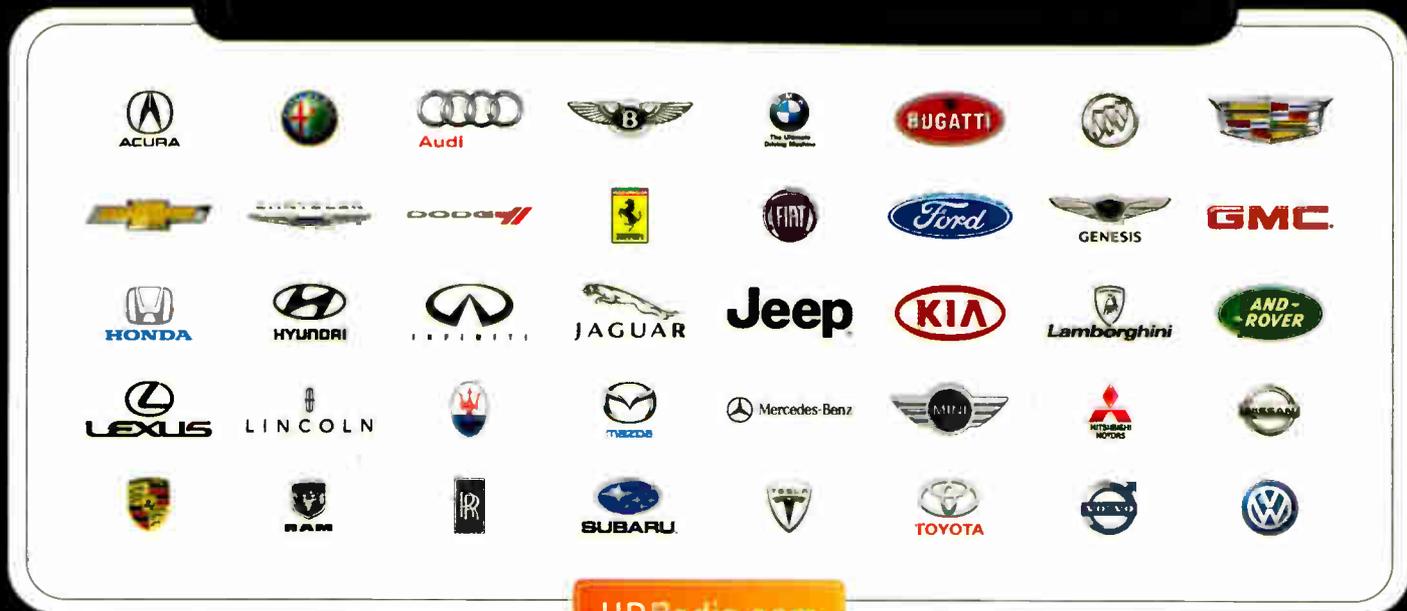
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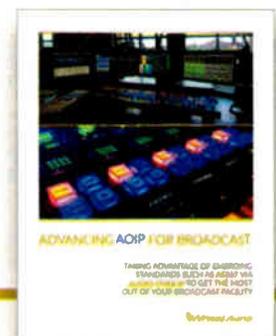
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