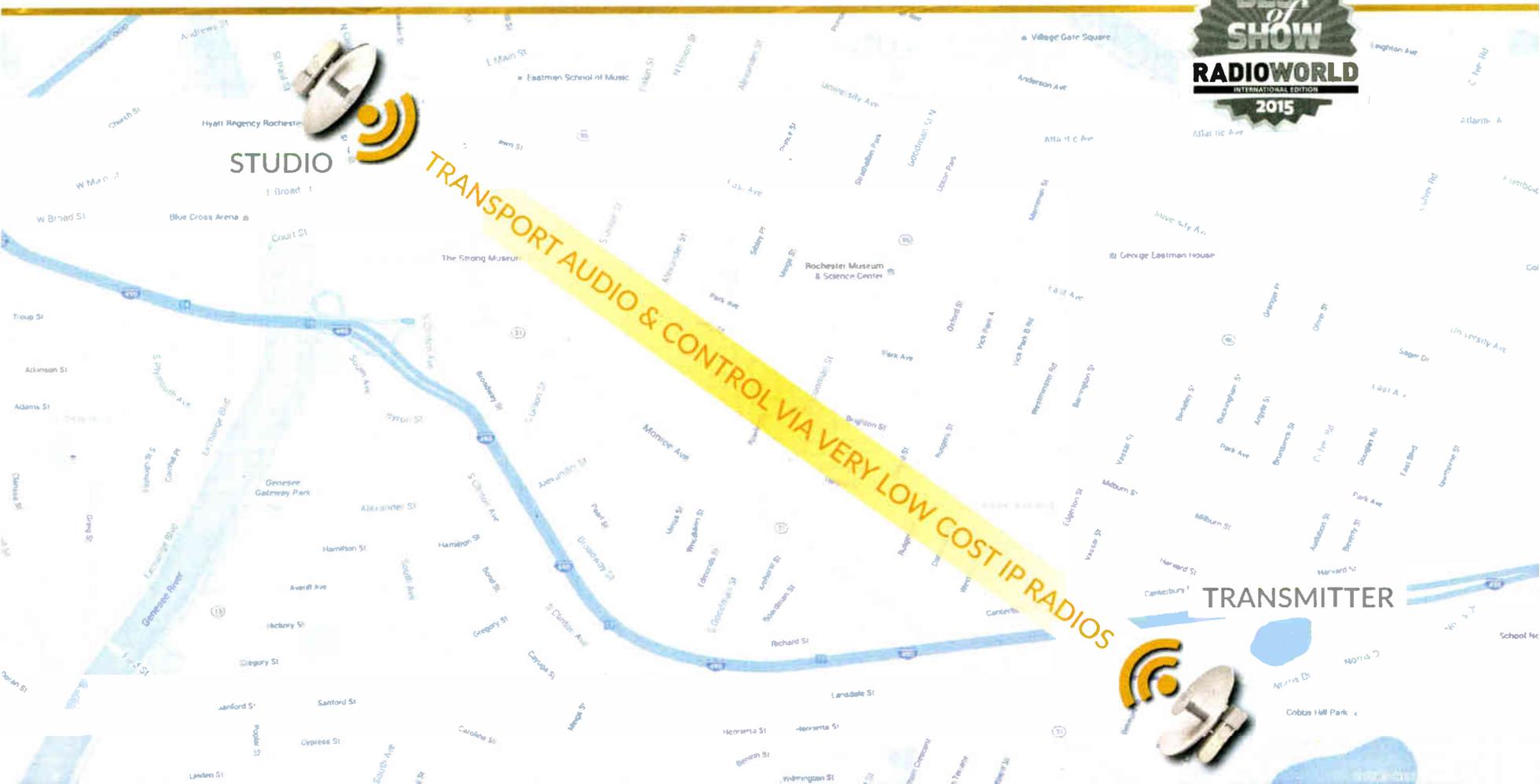




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Manage Your Translator Expectations

Realistic talk with Joe Davis, Chesapeake RF Consultants

TRANSLATORS

After years of proliferation, FM translators have become even more hotly sought after in recent months thanks to the recent AM order by the FCC. Radio World is asking industry consultants and other experts about this in a series of interviews.

Joseph M. Davis, P.E., is president and founder of Chesapeake RF Consultants LLC. A version of this story also appeared at radioworld.com.

RW: What business activity are you seeing as a result of this; how does it affect what you do?

Davis: While AM and FM radio broadcasters have been implementing FM translators like crazy for 5+ years now, the recent order provides additional flexibility for AM stations to acquire an FM translator where previously they were locked into a much smaller pool of candidate translators. Now, the first order of business is to see if a frequency is available at the desired transmitting location for a translator, and if so, then a distant translator can be acquired for the



Joe Davis

filing window. I'm getting calls from many stations to work through the frequency availability issues and develop prospective translator facilities.

RW: What goals are driving your broadcast clients as they pursue translator strategies?

Davis: Obviously there are struggling AM stations, many with little or no

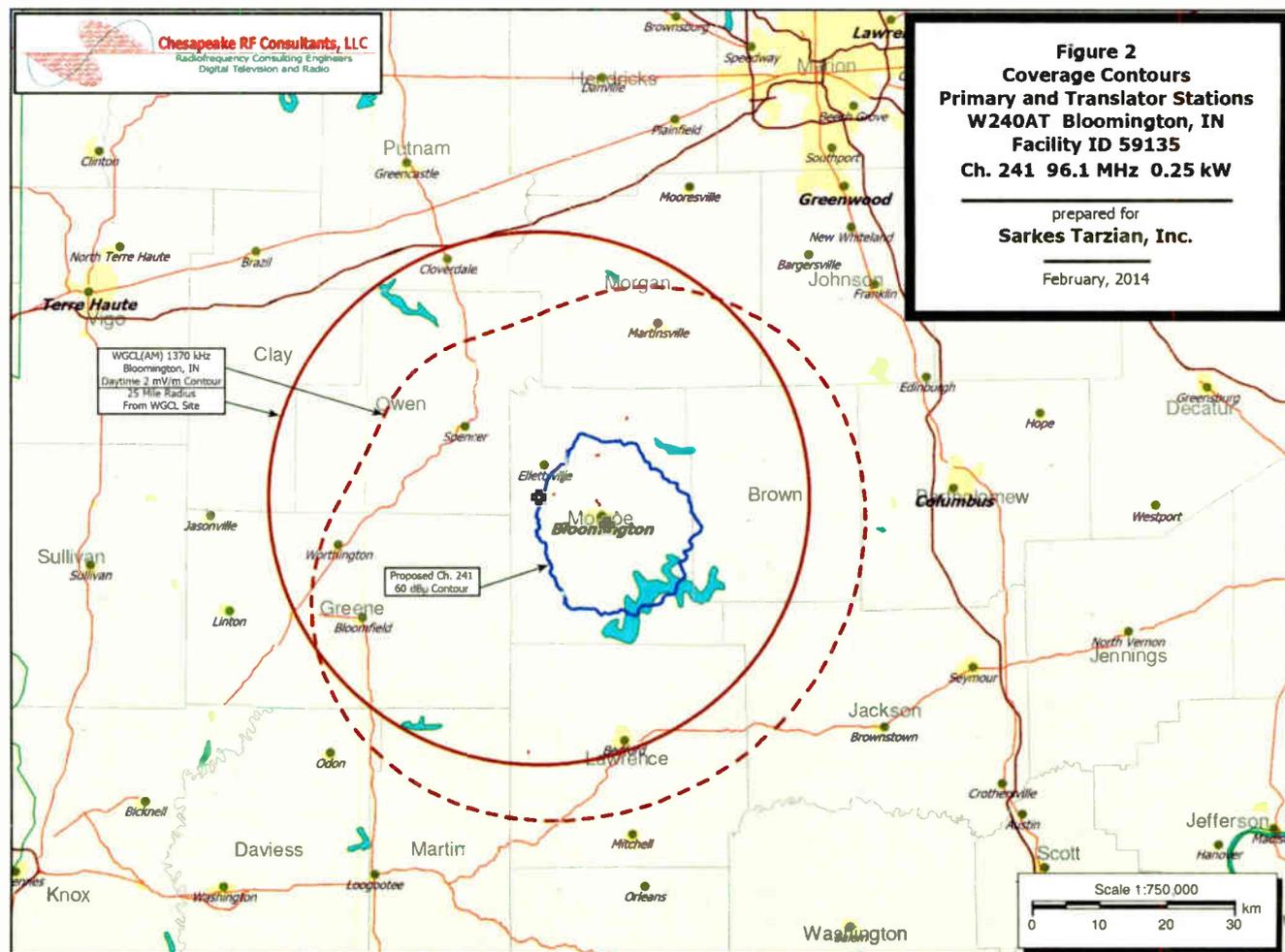
nighttime coverage, and they see this as an opportunity to put their signal where most of the listeners are (on FM) and be available 24/7. Some AM owners have reservations that this won't genuinely help AM listening but they figure that if an FM frequency is available they shouldn't ignore any opportunity to enhance their business.

RW: What technical concerns does this process raise, what technical issues should radio managers know about?

Davis: Two principal concerns:

Careful consideration should be given to selecting a frequency and implementing it to minimize the potential for actual interference to an existing station on the same or first-adjacent channel. The FCC will authorize a translator using their traditional coverage contour protection method, however actual coverage and interference can extend well beyond the contours. The FCC requires the translator licensee to address any actual interference to other stations which could render the planned translator facility useless or otherwise reduced. When planning a translator,

(continued on page 5)



A sample map shows an existing FM translator carrying an AM station. See text, page 5, for more.

Engineering Career Spanned Decades

Carl T. Jones, who died in January, was also a former president of AFCCE

BY JAMES O'NEAL

Carl T. Jones, a Washington, D.C., area-based consulting engineer, died Jan. 10 at a medical facility near his home in Solomons, Md., at age 92. He was past owner and president of the Carl T. Jones Corp.

Jones had worked in the broadcast consulting business since the 1940s and was an industry figure.

He began his career while a student at Catholic University in 1946, working part-time and during summers for John Barron Consulting Radio Engineers in

Jones retired in 1985, but continued his lifelong interest in broadcast engineering.

Washington. He began work with the Federal Communications Commission in 1949 after earning his professional engineering certificate, and was with that agency for some two years.

During that time, he was heavily involved in working out plans for VHF TV station channel reassignments which had become necessary due to co-chan-



Carl T. Jones, center, is shown in a Radio World photograph visiting the NAB Show floor in 2012. He was in the Kintronic Labs booth with Tom King, left, of Kintronic and with son Tom Jones, current president of Carl T. Jones Corp.

nel interference problems that developed during the television "boom" period after the end of World War II. (This interference situation had resulted in enactment of a four-year "freeze" in 1948 on the granting of new construction permits. The FCC reassigned broadcasting frequencies for many stations already on the air and eventually opened up UHF television spectrum to help alleviate the problem.)

During his FCC career, Jones was also involved in FCC hearings being

held to establish a color television broadcasting standard.

D.C. CONNECTIONS

Jones moved from the FCC in 1951 to the Federal Civil Defense Administration and was involved in site selection for a remotely-located facility that would serve as headquarters for certain branches of the U.S. government in the event of an enemy attack on Washington. As part of the work, he was responsible for the design of a multi-hop microwave

FROM THE EDITOR



As we neared completion of our work on this issue of Radio World, we learned about the death of Carl T. Jones. I asked our contributor James O'Neal to report on Jones' career. A version of his story appeared at radioworld.com.

— Paul McLane

system for connecting the site with the White House.

Jones' next career move occurred in 1953 when he left government employment to partner with a D.C. area engineering consultant, George Gautney, to form the firm of Gautney & Jones Communications Engineers. It was there that he became a recognized specialist in the field of directional antenna design, adjustment and licensing, as well as in the design of radio and television transmission systems.

After his partner's retirement in 1976, Jones headed up operations and the business was renamed Carl T. Jones Associates. (It later became the Carl T. Jones Corp.)

Jones retired in 1985, but continued his lifelong interest in broadcast engineering. His accomplishments include the design of the Washington Area Warning System, the design of a monitoring and reporting system for radiological threats to the public and design of the DIDS (Decision Information Distribution System) nationwide radio warning system.

He also owned and operated radio stations in Maryland and California, and was part-owner of a Las Vegas 50 kW AM station.

Jones served as an aviator in the U.S. Navy during World War II and saw combat at Guadalcanal and in the Marshall-Gilbert Island chains. He was a registered professional engineer in the District of Columbia, the Commonwealth of Virginia and the state of Nevada, and at the time of his death was a Life Member of the IEEE and a Member Emeritus of the Association of Federal Communications Consulting Engineers. He had also served as president of the AFCCE organization.

Jones is survived by daughters Sharon Lester and Donna Fabian, and a son, Carl T. "Tom" Jones, Jr., and their respective spouses. Survivors also include six grandchildren and a several great grandchildren. He was preceded in death by his wife of 67 years, Doris Frances Jones.

Memorial donations may be made in Carl's name to Our Lady Star of the Sea Catholic Church in Solomons, Md. and to the AFCCE scholarship fund.

More Radio, More Voices

Make Radio World part of your day every day. Visit our website for great Web-only Radio World content, including the following recent posts and stories:

"Even for Radio, CES Is About Video, Drones and Retro" — We asked Rich Redmond of GatesAir to give his broadcaster-oriented perspective on the show (though we particularly loved hearing about an alarm clock that wakes you up with smells of your choice). It's at radioworld.com/redmond.



"No Regrets: Longtime Audio Information Service Professional Retires" — Jennifer Nigro of the International Association of Audio Information Services relates the story of Art Hadley, producer/engineer at the Kansas Audio-Reader Network for 39 years. Go to radioworld.com/hadley.



"CRB Ruling Is 'Crushingly Bad News' for Microcasters" — Marvin Glass wrote, "The Internet has been one of the last level-playing fields left for small, mom and pop or 'hobbyist' type webcasters. That level playing field no longer exists for these very small webcasters and I've watched them close their stations by the hundreds over the last two weeks." See radioworld.com/glass.



"XAPPmedia: Interactive Audio Is Where It's At"

— What key trends will dominate the Internet audio sector this year? An interested observer is Pat Higbie, CEO and co-founder of XAPPmedia, a company that provides interactive audio services, including interactive audio advertising. See radioworld.com/xapp.



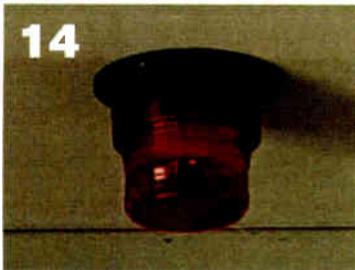
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interference modeling is recommended beyond reliance on the FCC's contour protection method.

Also, coverage expectations should be managed. At 250 watts maximum, a translator's service will typically be far reduced from that of a full-power FM station. While satisfactory reception in cars can be accomplished over a wide area, indoor reception (in home and businesses) will be limited to locations very near the translator site. As with any FM signal, more height results in better coverage; however that also increases the potential for actual interference to other stations.

RW: Do you worry about the FM band having too many translators? Why or why not?

Davis: No, not specifically translators, but rather my concern is for the industry in general with the continued encroachment by other services that compete with traditional radio.

RW: What other questions should we be asking on this topic?

Davis: Not an AM issue but you might query if the proliferation of "HD2" "HD3" translators have led to additional revenue for those stations.

NEWS

RW: Can you provide a visual graphic regarding any of your projects?

Davis: The sample map shown [page 3] is for an existing FM translator carrying an AM station (96.1 MHz translator at Bloomington, Ind., associated with WGCL 1370 kHz), showing the translator's coverage contour and FCC's limits. The FCC's fill-in limits for AM station translators require that

up to 40 miles where the AM 2 mV/m contour extends this far.

Joe Davis received a bachelor of science in electrical engineering technology from Old Dominion University in Norfolk, Va., and has worked for and served as a consultant to television and radio stations in engineering capacities, including transmitter and tower

While satisfactory reception in cars can be accomplished over a wide area, indoor reception ... will be limited to locations very near the translator site.

— Joe Davis

the FM 60 dBμ contour be contained within the lesser of the AM daytime 2 mV/m contour and a 25 mile radius from the AM site. That is, the FM contour cannot pass beyond either of these limits.

The FCC's recent AM order also contains an NPRM which considers relaxing the FM translator contour limit to ignore the AM 2 mV/m contour within the 25 mile radius and to allow

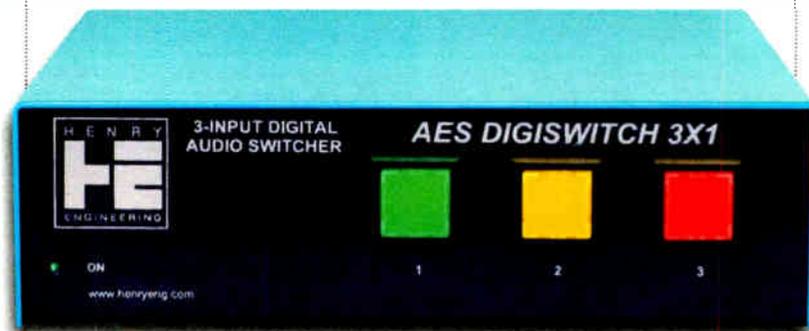
site relocation, facility upgrade, signal propagation, interference evaluation, FCC technical regulatory matters and in evaluation of human exposure to RF electromagnetic fields. He is a former president of the Association of Federal Communications Consulting Engineers and has served in other roles with AFCCE, IEEE, the National Society of Professional Engineers and the Society of Broadcast Engineers.

NEWS ROUNDUP

SPONSORSHIP ID: Cumulus will pay \$540,000 to settle a case with the FCC involving sponsorship identification in radio ads about a proposed project to run new power lines through New Hampshire. This resolves an investigation into whether WOKQ(FM) in Dover, N.H., violated sponsorship identification rules. It's also likely to get the attention of any broadcasters who air ads for advocacy programs, as a reminder to make sure a sponsor is clearly identified. Cumulus will also adopt a "robust" compliance plan at 195 stations.

CRB: The Copyright Royalty Board announced plans for several rate-setting proceedings that will affect performance rates paid to artists whose work is heard in public broadcasting, satellite radio and the distribution of CDs and albums. This follows the much-anticipated release of webcast royalty rates for 2016–2020 for other classes of streamers including most commercial U.S. radio stations.

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Stations Must Act Ahead of EAS Deadline

What you need to know to meet the FCC July 30 target

ALERTING

BY SUSAN ASHWORTH

A new year brought new deadlines and requirements for U.S. radio broadcasters in the realm of emergency alerting, including an important July 30 date.

A new set of rules and guidelines were adopted when the Federal Communications Commission released its Emergency Alert System Sixth Report and Order in July of last year. Among other things, it established a new national location code, a new EAS Test Reporting System and rules for visual EAS messages. It also formalized requirements for the national periodic test event code. The Report and Order on EAS testing becomes effective July 30.

To prep for the upcoming changes, the Federal Emergency Management Agency officially began rolling out use of the "000000" national location geocode on Jan. 1. The adoption of the six-zero national location code helps provide authorities with the ability to send an Emergency Alert Notification or National Periodic Test nationally, or to focus an alert into a regional level.

Recognizing that transitions like this take time, the code is simultaneously being used alongside the existing Washington geocode, the previous means of communicating a nationwide EAN. Creating this transitional window — in which any EAN will include both the all-zero geocode and the Washington geocode — gives broadcasters a period in which to update equipment or software to ensure that their EAS equipment complies by the July 30 deadline.

"This change simply assures that national-level EAS will not lose any functionality during the implementation period," said Al Kenyon, national test technical lead for FEMA's Integrated Public Alert and Warning System, or IPAWS. "Older, non-updated devices will still see what they expect in an EAN, and updated devices will see the All-US geocode and respond accordingly."

REGIONAL TESTS

On the testing front, FEMA has spearheaded a number of EAS tests over recent months in an effort to ensure that broadcasters are prepared.

Up next: a February regional test that will cover a wide swath of the East Coast and parts of the Midwest and Gulf Coast. The test is scheduled for Wednesday, Feb. 24 at 2:20 p.m. EST, and will include Alabama, Arkansas, Delaware, D.C., Florida, Georgia, Illi-

nois, Indiana, Iowa, Kansas, Louisiana, Maryland, Mississippi, Nebraska, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Puerto Rico, South Carolina, Texas, the U.S. Virgin Islands and Virginia.

The test will help participants confirm how systems will respond to an NPT. To get stations up to speed on what will be required in the Feb. 24 test, FEMA organized several non-technical and technical webinars. (For information about the Feb. 9 webinar on technical aspects, see tinyurl.com/rw-eas4.)

Recent tests of the nation's EAS system have proven successful. The most recent NPT test — sent on Nov. 17 — included the first bilingual alert message via EAS, with information blocks in English and Spanish. These test sequences were sent to stations in Wisconsin, Minnesota, Arizona, New Mexico, Utah and Nevada. According to test organizers, full-message text and voice-spoken audio messages were sent, received and broadcast by the participating test partner stations. Before that, a round of IPAWS tests on Sept. 16



This change simply assures that national-level EAS will not lose any functionality during the implementation period.

—Al Kenyon

tested the NPT code across six New England states.

Looking ahead to the July 30 deadline, EAS equipment manufacturers and broadcasters have begun the process of updating devices and ensuring their own awareness of the rule changes. Device manufacturers have begun to release software and firmware updates that will enable their devices to comply with the new set of EAS rules established by the Report and Order. According to one observer, EAS device manufacturers are at "varying points" in their efforts to distribute firmware and software updates necessary for full

compliance.

Radio World has found that several manufacturers are providing upgrades to existing equipment that will allow compliance with the new EAS rules, while others expected to announce new equipment soon.

Solutions like those from Gorman-Redlich, Digital Alert Systems, Sage Alerting Systems and Trilithic are capable of meeting the technical requirements of the Sixth Report and Order.

The DASDEC-11 emergency communications platform from Digital Alert Systems is programmed for both the "000000" and NPT code, the company said. Its EAS encoder/decoder was used successfully by a number of stations during the November multilingual EAS test.

"However, the FCC's latest Report and Order mandates some fundamental changes to how the NPT must be handled," said Edward Czarnecki, senior director of strategy and global government affairs for Digital Alert Systems/Monroe Electronics. These required changes will be included in a forthcoming version DASDEC 3.0 software update, he said.

Gorman-Redlich has upgraded its model EAS-1 system to meet the requirements, including accepting the six-zero location code as the national location code and including the NPT event code as a required event code by default. Units with certain devices are capable of handling these new requirements. "The V9.8 will handle the six-zero code," said Jim Gorman, president of Gorman-Redlich. "We can also keep the EAS log on the CAP unit so that a printer is no longer required."

The CAP-DEC 1 common alerting protocol standalone unit from Gorman-Redlich is able to translate received CAP alerts into EAS headers, which are transmitted by an EAS device. The system is a CAP-to-EAS converter unit that treats the 000000 location code as a wild-card location; when an alert is received with the all-zero code included in it, it marks it as "in area" and continues processing the alert as usual for transmission to the attached EAS device.

Sage Alerting Systems will update its firmware to allow Sage Digital ENDEC

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(continued from page 1)

We wondered how stations on the expanded band are faring these days. Is it a wasteland? Or perhaps an unseized opportunity? To find out, Radio World spoke with WNRP (1620 AM), KCJJ (1630 AM) and WMLB (1690 AM). All three broadcast in the expanded AM band using 10,000 watts during daytime and 1,000 watts at night.

THE THREE STATIONS

WNRP "NewsRadio1620" is a news/talk station based in Pensacola, Fla., along with its sister country music station CatCountry 98.7 FM. Through previous incarnations, call signs and ownerships, WNRP has been on the expanded AM band since 1998. WNRP moved its transmitter site across the state line from Alabama to Florida in 2002, and has been operating a news/talk format since 2007.

"Weekdays we are live and local 5 a.m. to 11 a.m. and 4 p.m. to 7 p.m.," said Dave Hoxeng, who owns and operates both stations with his wife Mary. "We have local newscasts twice an hour from 5 a.m. to 9:30 p.m."

"The Mighty 1630" KCJJ is a news/talk/sports comedy expanded band station. Located in Iowa City, Iowa, KCJJ 1630 covers eastern Iowa and western Illinois. KCJJ was on 1560 AM from 1977 until 1998 at 1,000 watts power.

"We moved to 1630 in 1998, and boosted our power ten-fold," said KCJJ General Manager Tom Suter. Moving into the sparsely-populated expanded band eliminated KCJJ's chances of

interfering with other AM stations even at much more power. "This made the move a no-brainer, even with the \$160,000 cost of a new AM transmitter factored in," said Suter.

AM 1690 WMLB "The Voice of The Arts" is based in Atlanta. WMLB describes its eclectic format as being "driven by the spirit of Atlanta" WMLB's programming includes a diverse music mix, astronomy, cultural information, public affairs and news from CBS News. WMLB launched on 1690 AM in 2003.

We conduct our own surveys, and use our survey data to attract local retailers as advertisers.

— Jeff Davis, WMLB

"We've done well on 1690, even though WMLB has not subscribed or taken part in either the Arbitron or Nielsen rating systems," said WMLB Vice President/General Manager Jeff Davis. "Instead, we conduct our own surveys, and use our survey data to attract local retailers as advertisers."

TECHNICAL REALITIES

All three of these stations saw broadcasting on the expanded AM band as a way to increase their transmission power, overall reach and potential audience size.



Andrew McKay works the mic at NewsRadio 1620 in Pensacola, Fla.

"The expanded band offered the promise of a better quality AM signal due to less interference at 1620, and we were excited when we launched in 2005," said WNRP's Hoxeng. Meanwhile, moving to the expanded band offered KCJJ the chance to boost its transmission power, while the new band gave WMLB a window into the crowded Atlanta radio market.

So what are the technical realities of being on the expanded band? Well, for WNRP, being on 1620 has proved to be a problem.

"The rising electrical noise floor in America really hurts our RF signal receivability," Hoxeng said. "Signal propagation [at 1620] is much worse than 550 kHz," he added. "The other challenge we have in this part of the country

is poor ground conductivity of <1 [millisiemens per meter], compared to 30 in parts of the Midwest. It would be great if FCC recognized this severe handicap in allowing AM broadcasters in poor conductivity areas to raise output power proportionally."

In contrast, WMLB hasn't experienced the problems reported by WNRP in the expanded AM band. When it comes to reaching their desired audience, transmitting on 1630 kHz has "performed as well as any AM station is going to perform," said Davis. Apparently WMLB's AM signals have been received up to 250 miles away from Atlanta on a regular basis. "Meanwhile, DXers who use extra-long antennas and sensitive receivers to capture distant AM

(continued on page 10)

EAS

(continued from page 6)

model 3644 users to comply with the rules. The software update is expected in February and will add 000000 support, said President Harold Price. ENDEC offers text-to-speech capabilities for English, French and Spanish, and is designed for single or clustered analog and HD Radio stations.

Likewise, the Legacy EAS systems and EASyCAP system from Trilithic are equipped to handle the all-zero geocode, said Adam Jones, EAS sales manager for Trilithic. "With Trilithic EAS products this is a simple IP-based upgrade," he said. "As far as configuration changes are concerned, our users only need to check mark the 'Enable National Location Code' in our software to be complaint."

It's unclear how many users of existing EAS gear, if any, will incur costs to comply.

"We haven't made any pricing decisions, including even if there would be a charge," Czarnecki said. "Version 3.0 will be, however, a very significant system upgrade. The FCC is mandating some truly fundamental changes to EAN and NPT behavior."

Customers running Trilithic will not have to pay anything to be in compliance with any of the new

rules and regulations, Jones said.

The question of possible costs to make this transition has raised the ire of some. "I support the use of the latest technology to notify the public concern emergencies. However, this could provide a financial hardship to low-power FM broadcasters," said John Broomall, co-founder of Christian Community Broadcasters, an organization that assists local community organizations in operating low-power FM stations. "LPFM stations are at the bottom of the broadcasting 'food chain.' Some only have one watt power, all are limited to 100 watts and as NCE broadcasters they cannot generate revenue by selling advertising."

In any event, Broomall is one broadcaster who plans to reach out to his local emergency operations center for contributions to any costs to upgrade his LPFM station's EAS system. As licensee of low-power FM station WPCG, he is also considering submitting an FCC waiver to request that the commission consider allowing new low-power stations to delay purchase of EAS equipment until all technical details in the Report and Order have been finalized.

Meanwhile state broadcast associations have been reminding members of the process. Radio World asked one large group, the Texas Association of Broadcasters, if it had received any complaints from among its 1,000 member stations about steps or costs

to upgrade. It had not, said Michael Schneider, vice president of legislative and regulatory affairs for TAB.

To prep its stations, TAB has periodically sent out updates to its members concerning EAS. "For most stations it's a matter of checking the station EAS unit to ensure it will recognize the national location and national periodic test codes," Schneider said. The association has informed its stations via weekly emails and a newsletter bulletin that Texas stations will be part of the February IPAWS test.

To ensure that the nation is keeping abreast of emergency alerting technologies across the board, the FCC has also addressed the nation's wireless emergency alert system. The commission released a notice of proposed rulemaking in November 2015 that proposes to improve the usefulness of the nation's wireless emergency alert system.

The NPRM is asking for industry comments on a string of proposals, including increasing the length and complexity of WEA messages, improving the geo-targeting of wireless emergency alerts and allowing for local WEA system testing. In the commission's November Open Meeting, Commissioner Jessica Rosenworcel pressed the industry to consider the power of activating FM chips in smartphones in an effort to strengthen emergency alerts.

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EXPANDED

(continued from page 8)

signals have reported receiving us in Lapland, Finland," Davis said.

KCJJ's Suter is delighted by the expanded band's reach. "I think it's been great," he said. "If we had to do it over again, we would." He said the money spent on a new AM transmitter to move from 1560 to 1630 "was well worth it."

As for KCJJ not being available on older car AM radios with a top AM frequency of 1610 kHz? "That was only really an issue when the expanded band was launched, and it has diminished in succeeding years," said Suter. "The expanded band has been a reality on car and portable radios now for long enough, that we no longer worry about this problem."

MARKET VIEWS AND PLANS

The expanded AM band has performed well enough for these three stations that they don't make a distinction between themselves and other AM broadcasters operating below 1610 kHz. That said, all three sources expressed concerns about the standing of AM versus FM in general.

"There is such a prejudice against AM and in favor of FM by younger listeners," said Davis. "And by younger, I mean listeners 50 years old and younger. The Boomers who grew up on the FM radio music revolution of the 1970s looked down on AM then, and still do now."

As a result, none of these broadcasters wants to see more stations added to the AM band (expanded or overall); whether under existing FCC rules or any new conditions that the commission

X-BAND AND REVITALIZATION

When the FCC issued rules for AM revitalization late last year, it also proposed changes that touch on the expanded band.

Most immediately, the commission said that there are 25 instances in which "migrating" stations still hold both standard- and expanded-band licenses, even though they were supposed to turn in one or the other after the first five years. "We see no justification for allowing licensee retention of high-interfering standard-band stations along with the expanded-band stations meant to replace them," the commission wrote, so it tentatively plans to force them to choose within 12 months of a planned order. It's taking comments on this.

The FCC then asked new questions. Should it open the expanded band to even more stations? Under what circumstances?

Some observers think the band is underused; some say the FCC should offer space on the band to applicants for new AM stations, or strictly to existing daytimers, or perhaps to owners who would operate the first permanent all-digital AM radio stations in the United States.

These ideas raise many questions. How would the auction filing work? How would major modifications and mutually exclusive applications be handled?

Stations in the expanded band are allotted on a minimum distance separation standard similar to FM stations,

may devise under its current AM rule-making process.

"AM's market share is already very small compared to FM," Davis said. "The last thing we need to do is add more players to fight over the AM listeners who remain."

In order to boost their own audiences, all three of these broadcasters are considering adding FM translators.

"We hope to find a way to gather more listeners with a FM translator, and

start making a profit in future years," said Hoxeng. They are also getting their content out to listeners via audio streaming and Android/iPhone apps — but not by HD Radio.

"Almost nobody has HD Radios, so there's no point broadcasting in this digital format," said Suter.

"If there were more HD Radio receivers in use, it might be worth the money to transmit in this format," echoed Davis. "But there aren't, so it isn't."

with the goal of promoting a higher-quality service, rather than using the contour-protection procedures used for standard-band AM stations that maximize the number of stations on each channel. Should that system remain in place? If not, should compliance with contour protection standards be limited to use of M3 ground conductivity for contour prediction, or should the FCC allow the use of measured ground conductivities in predicting contours?

The commission also wants to know if it should allow other classes and powers of stations, or whether it should authorize the same power (such as 10 kW day / 1 kW night) for any new expanded-band stations. And should it allow complex directional patterns or limit applications to non-directional and simple directional stations, those with no more than three towers?

Yet again, if the expanded band were to be used only for all-digital operations, the FCC wants to know how contour protections and allocation standards would work. But noting that testing of all-digital AM operations is still continuing, its staff added: "The absence of a technical record leads us to believe that it may be premature to discuss limiting the expanded band to all-digital operation; however we welcome comments that include technical data that would further inform us on this issue." Comments on MB Docket 13-249 are due March 21.

— Paul McLane

If there is a "happy ending" to this tale, it is that the three stations seem not to feel hampered by being on the expanded AM band itself. This doesn't mean that WNRP, KCJJ and WMLB aren't facing serious challenges; but these changes are based on their status as AM broadcasters in general, rather than lonely pioneers on a sparsely-populated end of the dial.

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

NEWSROUNDUP

STATION COUNT: At the end of 2015, according to the FCC, there were 6,701 commercial FM licenses, 4,095 educational FMs, 6,506 FM translators and boosters, and 1,433 low-power FM stations. That adds up to 18,735. Ten years ago, those categories totaled 13,573; by RW's reckoning, that's an increase in the gross number of U.S. FM signals over a decade of 38 percent, more than 5,000 more signals than occupied the band in 2005. While all FM categories saw growth — both last year and over 10 years — the greatest increases by percentage over a decade have come in educational FM, translators and LPFMs; and the number of LPFMs is now almost double that of two years ago. Meanwhile the number of stations on the AM band declined again slightly to 4,684.

FM CHIPS: The National Association of Broadcasters and National Public Radio reiterated support for the role of FM radio to provide life-saving information during times of crisis. Commenting in an FCC proceeding on improving wireless alerts, they urged the commission to work with wireless providers to activate radio chips in cellphones.

Proposed rules to strengthen the Wireless Emergency Alert service include an option to include embedded URLs in WEA messages; NAB and NPR cautioned that this proposal and others that rely on broadband connectivity could lead to traffic bottlenecks.

TFT: Office and factory assets of equipment manufacturer TFT were put up for auction in January. U.S. Auctions listed the assets as "abandoned property" and said the sale included modulation monitors, EAS equipment and RF equipment. Online photos of the facility also included test and manu-



facturing gear, components, racks and tools. TFT closed suddenly at the end of last August.

AOIP: The Audio Engineering Society published a new audio over IP standard called AES70 and released a report on the recently conducted AES67 interoperability Plugfest. AES Standards Manager Mark Yonge said AES70 complements the AES67 audio over IP networking standard published in 2013. "It covers quite comprehensively the control and monitoring of audio devices over a network." More coverage to come in Radio World.

MORE IP: Several companies joined the Alliance for IP Media Solutions including the Telos Alliance, Arista Networks, Cisco and EVS Broadcast Equipment. Other members include Lawo, Grass Valley, Imagine Communications and Snell Advanced Media.

JOHNSON PASSES: Jerry Johnson, a well-regarded media broker across the Midwest, died after a long illness at the age of 72. He had worked at WCCO(TV) in Minneapolis before founding his own brokerage firm Johnson Communications Properties, which he operated for 25 years. He led the Minneapolis-area office of Media Services Group beginning in 2007.

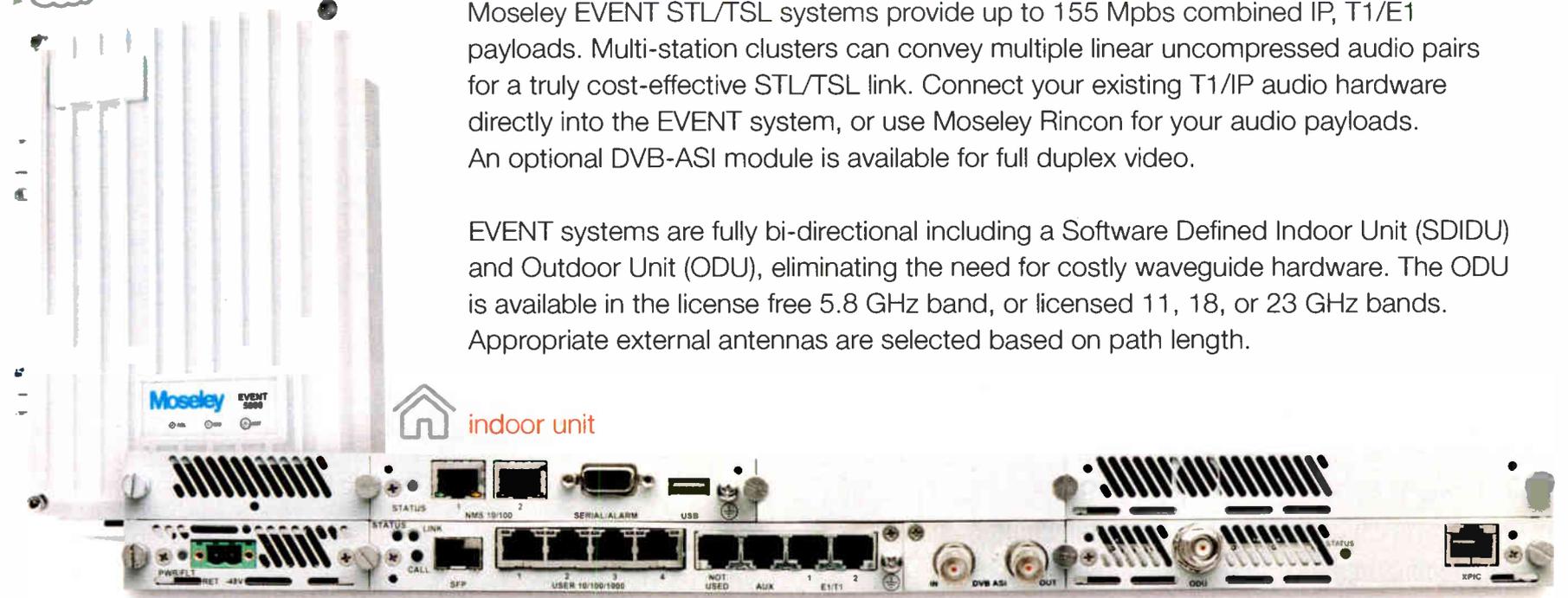
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EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz bands. Appropriate external antennas are selected based on path length.



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NATE

(continued from page 1)

will look to do, with a number of panels that will dive into a number of tower industry hot topics. The annual conference looks to be a “conduit of information and that resource to help [NATE members] and prepare them to diversify their company moving forward,” according to NATE President Todd Schlekeway.

While much of the event relates to wireless industry infrastructure, it also deals broadly with all aspects of tower erection, service and maintenance.

DRONES TAKING FLIGHT?

NATE Unite, which will take place in New Orleans from Feb. 22–25, has a range of panels and educational offerings to highlight what Schlekeway calls the “evolving nature of the industry.” Part of that evolving nature includes drones, the big buzz technology that may get people even more excited than hoverboards.

“Impact of Drones on the Wireless Infrastructure Industry” is an educational session that will focus on what drones can do for the tower industry. At the



Courtesy NATE

Institute for Trial Advocacy Training, and stakeholders on how the integration into our industry will work, with the [emphasis the] whole time, from NATE’s perspective, being safe integration.”

Safety, of course, is a primary goal of NATE, which is why it will also hold a session on the recently formed National Wireless Safety Alliance. Establishing itself as a standalone organization in

Emerging Technologies” comes to fruition over the next few years. Celentano, a senior consultant at telecommunications marketing consulting firm Skyline Marketing Group, and Smith, a senior editor at AGL Media Group, will go into detail about the next generation of wireless technology, 5G.

Compared to 4G/LTE, 5G is expected to offer higher speed connectivity, but also to function as an enabler of machine-to-machine communication or “m2m.” The big change for the tower industry, though, could be the fact that 5G won’t be reliant solely on towers.

The new 5G will see the implementation of access points and nodes at locations other than towers — according to Celentano and Smith, places like street lamps, bus stations or other low-level buildings. These sites will still require the skills of experience tower techni-



John Celentano, senior consultant at Skyline Marketing Group, will take part in the panel “5G and Other Emerging Technologies.”

cians, but perhaps under a different name.

“We’re going to see a lot of deployments much closer to the ground, but those skills, to be able to not only install the equipment but to test and verify and make sure it’s all working properly, are still going to be needed,” said Celentano.

Smith said, “In a sense, we’re going to have to stop calling them tower climbers and call them telecommunications technicians, because that is really what they are.”

Schlekeway concluded, “This industry continues to evolve and NATE is evolving with it and is

ahead of the curve when it comes to preparing our members and the industry at large to be diverse in terms of skill sets their workforce has to and the type of work that is going on.” He hopes to reaffirm that with these panels and more at NATE Unite.

In a sense, we’re going to have to stop calling them tower climbers and call them telecommunications technicians, because that is really what they are.

– Sharpe Smith

moment, a lot of it is more theory than actual practice, as regulation and the still developing technology offer more questions than answers, but excitement is palpable. “The drone technology is so new that we’re just trying to figure out what they can be used for; the ideas are floating out there,” said Todd Thorin, director of safety and training at Sioux Falls Tower and Communications, who will serve as one of the panelists.

Thorin says right now the use of drones in the tower industry is primarily limited to taking photos or videos, but he and others excitedly speculate that drones can one day be used for measuring data to produce analytics, or even specific tasks like changing a lightbulb on the tower.

All of this will be beholden to future regulations laid out by the Federal Aviation Administration, but Schlekeway says NATE isn’t taking a back seat on the possible future of drones in the industry. “We’re being proactive on that front, talking with officials from the FAA, the National

February 2015, the NWSA’s goal is to create a certification process for tower workers to prove their competency in their field and provide greater safety. The panel will feature Chuck Slagle, a retired Sprint executive who now serves as a consultant for the NWSA, and others on how the NWSA is developing its certification program and why.

As Slagle explains it, the NWSA is a separate entity from NATE; it will not look to train tower workers but to assure that those working in the industry know their craft, providing a greater sense of professionalism and safety for the industry. “There are certifications all over; certified safety professionals, there’s nurses, there’s all sorts of people,” said Slagle. “But never in this industry has there been a certification process.”

REDEFINING THE JOB

The NWSA may have to come up with more certification tests, however, if what John Celentano and Sharpe Smith plan to talk about in their panel “5G and Other

SHOW SAMPLER

NATE Welcome Reception at the Mercedes Benz Superdome Lounge
Feb. 22, 6:30–8:30 p.m.

NATE Keynote Luncheon
New Orleans Saints Coach Sean Payton
Feb. 24, Noon–2 p.m.

“Future of the Wireless Industry” panel
Feb. 23, 8–9:30 a.m.

“Creating the Wireless Workforce of the Future” panel
Feb. 24, 8–9 a.m.

Optional Training Courses — Available only to NATE members. Topics of these in-depth courses include OSHA training, PIM, distributed antenna systems and qualified rigging/signal person. Separate fee applies.

IF YOU GO

What: NATE Unite 2016

When: Feb. 22–25

Who: Members of the broadcast and telecommunications tower erection, service and maintenance industry

Where: Hilton New Orleans Riverside

How: www.natehome.com/annual-conference/nate-unite-2016/

How Much: Advance rates \$149 (member), \$449 (non-member) to Feb. 12



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Annotate Manuals, Supplement Memory

Strobe lights can help you detect on-air silence, too

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Reader Ihor Slabicky writes about a recent article by Mark Persons in *Radio World* ("Bench Techniques and Tools of the Trade," Dec. 16, 2015) that mentions marking up circuit diagrams in equipment manuals when you make changes, updates or upgrades to your gear.

It's a great idea. But there's another good reason to mark up your manuals. This is a tip that may save you a lot of frustration in the future: Annotate your manual with instructions for how to get into and out of the equipment. Knowing how to open and close that device can save time.

For example, which screws do you unscrew to remove the cover? Sometimes "extra" screws hold subassemblies in place and should not be removed. The notes could also include whether you'll need any specialized tools. Sometimes the sequence in which screws or bolts should be removed or tightened is important.

Notes and documentation of steps in the manual can save you time and effort when you have to get inside that equipment and can't recall how you did it last time. Given the reliability of broadcast equipment, it may have been a year ago or longer since the equipment was serviced.

Notes also help with mundane tasks. For example, twice a year Ihor adjusts several compression hose clamps. The process sounds simple, until you consider that the adjustment can be made using either a screwdriver or a socket wrench. The questions begin with which screwdriver — flat blade or Phillips? — and which size? What size socket? It turns out that, for Ihor's task, an 8 mm socket was ideal, so he added a note in the manual to "use 8 mm socket" next to the diagram showing the clamps.

That little note tells Ihor the right

tool to use for the job; the diagram tells him which clamps may need adjustment.

I remember a transmitter driver board that was held in place with a Phillips head bolt. The problem was that a very short or right-angled driver was needed

for access. In addition to marking the manual, we kept this special "stubby" screwdriver in the transmitter site desk drawer, along with a label identifying how it was used.

Noting component changes on the schematic, along with factory modi-

fications, is just as important. Years ago, an engineer showed me how he had enlarged and mounted an overall transmitter schematic on the wall, then covered it with a clear Mylar film. Using a grease pencil or Sharpie brand marker, he could add notes to the Mylar without damaging the original schematic.

So many facilities are clustered these days, and silence sensors are an absolute must. But a sonic alarm just adds to the off-air confusion, unless you quickly can identify the station in trouble.

Entercom San Francisco Staff Engineer Horace Wong solved the problem for his cluster by adding warning lights.

Horace has the advantage of all studios facing a long hallway. He added red strobe warning lights in the ceiling, outside each studio, as seen in Fig. 1. Since the installation, should the silence sensor trip, staff members just look for the flashing strobe light.

Frank Hertel of Newman-Keys Consulting frequently finds interesting products on the Web. In Frank's travels, he has noticed a lot of transmitter sites with old rotary telephones still hanging on the wall. Some new phone terminal

**It also gives you
the capability to
dial * and #.**

equipment doesn't work with rotary dial phones, nor recognize the pulse dial output from some older remote control systems still in use. Only DTMF touch tones are recognized.

RotaTone converts your rotary dial telephone into a touchtone telephone, without adding any buttons. It also gives you the capability to dial * and #. With this technology, you can do your phone banking or access voicemail services using your rotary dial phone. You will also now have "last number redial" and you can store seven phone numbers you regularly use.

Head to www.rotatone.co.uk for more information. In the U.S., to order the module, the URL is www.oldphonerworks.com.

Steve Tuzeneu is a staff engineer at the Bible Broadcasting Network in Charlotte, N.C. Instead of using jars or pill bottles to hold hardware while

(continued on page 19)



Fig. 1: Red strobe lights are tied to each studio's silence sensor.



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| 610—Internet Radio Monitor | 636—NOAA Weather Receiver |
| 632—FM/HD Radio Monitor | 703—RDS Encoder |



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Produces a consistent, spectrally-balanced sound regardless of density variations in incoming source material. Essential for different media formats.	Specialized automatic level and spectral management algorithms provide a wide but extremely stable 'on-air' stereo image.	Circumvents bass-related distortion. Increased depth, feel, and clarity of bass impact without affecting mid and high frequency content.	Mitigates market and terrain-specific multipath behavior, reducing the problem of multipath-triggered receiver-induced stereo blend.	A single AES/EBU cable between the processor and a current solid-state FM transmitter carries the digital baseband signal for exceptionally clean sound.	Control the FM-55 and stream its audio to and from anywhere in the WheatNet-IP audio network.

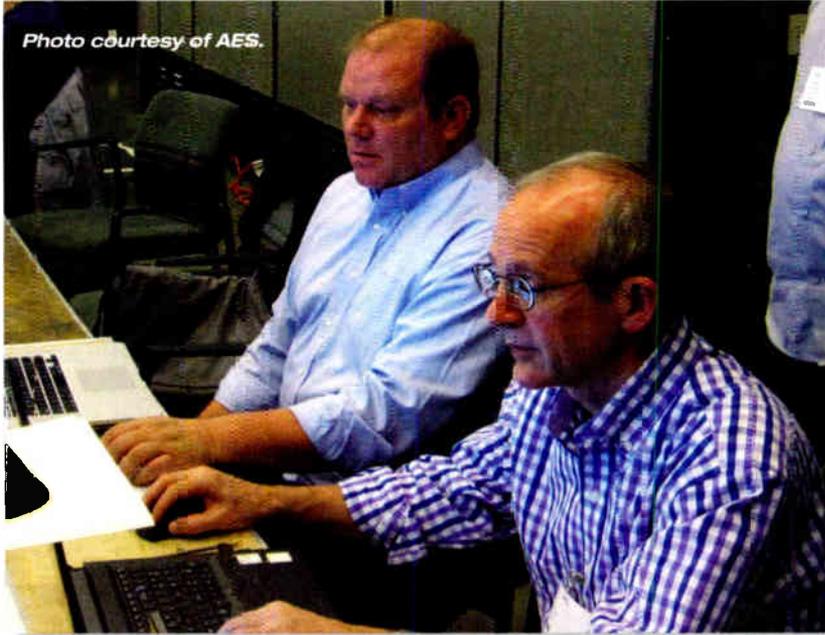


Photo courtesy of AES.

Wheat Goes To Washington For AES67 Plugfest

Wheatstone's engineers arrived at NPR's headquarters in Washington, D.C in November with a WheatNet-IP audio network to participate in the second AES67 plugfest. This plugfest was a follow up to the AES67 system compatibility testing conducted in Munich last year, and provided for further testing on multicast as well as unicast streaming.

AES67 requires support for both multicast and unicast streaming, the former of which needs the Session Initiation Protocol (SIP) for connection management. A number of products participating in the plugfest support unicast and SIP, including our WheatNet-IP audio network.

Thirteen products were tested, with AES67 implementations varying from software on a PC to hardware-based FPGA solutions.

According to a preliminary AES report summing up the plugfest, "Although these tests involved a growing number of devices compared to the previous plugfest, a majority of unicast streams interoperated successfully." However, because SIP interoperability was not achieved in some cases, the report suggests that an SIP technical overview and recommendation be published prior to subsequent AES67 plugfests in order to ensure the best possible conditions for SIP interoperability.

Multicast interoperability was also thoroughly tested during the plugfest, and according to the preliminary report, "most combinations (94%) were successful. Many of the receivers were able to interoperate despite some conformance issues."

The plugfest took place in November to confirm the interoperability of various products according to the AES67 standard that was first published in 2013 and revised in 2015. AES67 requires interoperability with linear PCM audio coding, a sampling frequency of 48 kHz, 16 or 24 bits-per-sample, 1 to 8 audio channels (2-channel stereo presumed to dominate), and a packet time of 1 ms.

The next plugfest is expected in 2016 in the U.K.

For more IP Audio News: INN31.wheatstone.com

IP Audio, Par For Australian Open Course

By **George Biagioni**

George Biagioni is IT Director for Crocmedia, an independent syndicator of sports content located in Victoria, Australia.

We recently returned from the 2015 Australian Open Golf Tournament, where my crew and I spent the better part of a week making the rounds and reporting live to spectators there as well as to listeners tuning in to sports radio station, SEN, in Melbourne and SportFM 9.13 in Perth. This marks the second year for Australian Open Radio, a temporary low-power station that Golf Australia contracted my company to set up in order to bring fans closer to the action. This special-event broadcast presented some unique challenges, and therefore required a most interesting mixture of technology to reach the ears at the tournament as well as those listening elsewhere.



To learn how we made it all work using 4G iPhone 6s with Report-IT, Teline Genie distribution, a 5W transmitter, and Wheatstone IP audio networking, audio processing and IP console...

...go to INN31.wheatstone.com



Your Question Answered

Q: What are the benefits of multiband voice processing?

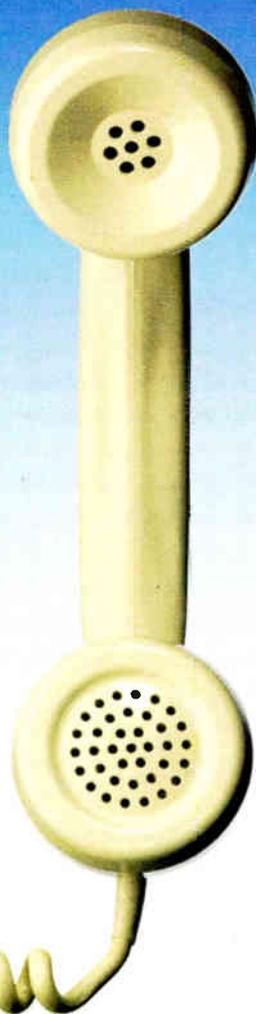
A. Multiband processing on voice can help in many different ways. It can help voice cut through in audio challenged media like AM and low bitrate streams. It can also smooth out differences in voice textures between multiple hosts using the same studio/microphone. With news talk formats moving towards higher quality mediums like FM and FM-HD channels, the tailoring of your talent's audio using multiband mic processing can help increase TSL. Finally, multiband voice processing helps your jock cut through when talking over loud CHR and rock recordings.

For more IP Audio News: INN31.wheatstone.com



The Case of the Mystery Ringing

One engineer remembers his quest for a quiet network line



iStockphoto/PLAINVIEW

FIRSTPERSON

BY READ BURGAN

John Holt's article on "The Radio Network Sound" (Radio World Engineering Extra, Dec. 9, 2015) reminded me of my trials with network service in the hinterlands.

When NPR inaugurated its network service in 1972, WGGL(FM) in Houghton, Mich., was a charter member. As the station manager, I was thrilled when I received a phone call from NPR's engineering department saying that they were ordering up a Class A line for us.

My enthusiasm was dampened when a subsequent call informed me that all that AT&T Long Lines could deliver was a Class C line, for the time being. The specifications for a Class C line were 200–3,500 Hz, barely better than the frequency response of an acoustic 78 RPM record.

It turned out that "for the time being" meant until the inauguration of the new satellite feed in 1980.

From day one, the line was characterized by a ringing on the trailing edge of the sound. Over the course of several years, I would call our local AT&T tech support; an obliging George Thurner would listen to my complaints, run a test of the line and report back that the line met all of its specifications.

A few years passed. One day the ringing was worse than normal. I called George to register my frustration. "Read," George said, "we've tested the line repeatedly from Houghton to Marquette, and it always meets its specs."

"Marquette?!" I asked with a rising inflection in my voice. "You mean you haven't tested the line beyond Marquette?" Marquette was only 100 miles away; that left another 1,000 miles of line to go bad.

"WNMU in Marquette uses the same line as you from Marquette back to Washington, and they've

never reported a problem, so there's no sense in testing it beyond that point."

As I hung up the phone, I had to admit that George had a point. At the same time, a gnawing doubt coupled with a growing question troubled me: Could the line, in fact, be bad *beyond* Marquette?

Finally I posed the question to Jim Lienau, our engineer. Jim had a bachelor's of science degree in electrical engineering from our university, and he was worth his weight in gold as an engineer. I trusted his judgement.

TAKE MATTERS IN YOUR OWN HANDS

"Jim, how would you like to take a ride to Marquette?" I then explained my theory: AT&T had repeatedly tested the line as far as Marquette and could never find a problem but at the same time the line always sounded crappy. Since WNMU shared engineers with the university's TV station, it stood to reason that they had checked the line, and while one would expect that they would find a problem, how else could we explain our line's problem? It *had* to be bad on the other side of Marquette.

The only way to find out would be for us to go there with equipment in hand and do our own test. We could call and ask them to do the test, but assuming that they were doing that on a regular basis, as good engineering practice dictated, they were either missing something or ... my theory was dead wrong and the line was fine beyond Marquette.

Jim agreed to the proposal.

First we checked the NPR schedule to identify when they would be running a frequency test. On the appointed day, we set off on the two hour drive to Marquette. Our plan was to arrive about a half hour early — time enough to explain our mission and set up our test equipment.

As we stood at the door to the WNMU studios, my resolve wavered. What if the line tested fine? I would be exceedingly embarrassed. Mentally, I practiced my very best "*Mea culpa!*" At the same time, we had come too far and I had waited too long to solve

(continued on page 19)

PEOPLE NEWS



Lee Hammer

Cumulus Media

was promoted to operations manager for San Francisco

Doug Limerick
ABC News Radio

announced his retirement

Hilda García
Univision Digital

has been appointed VP of digital local media

Liana Huth

Entercom Communications

selected as VP of programming innovation



Jeff Jury

DTS

named new general manager for automotive and HD Radio

Tiffany Moore

The Consumer Technology Association

tapped for vice president of congressional affairs

Matt Wellner

Marketron

will replace Chief Financial Officer Walt Denekas

National Association of Tower Erectors

reelected to the NATE board of directors:

John Paul Jones, president of Tower & Turbine Technologies LLC in Cedar Park, Texas

Bryan Lee, president of Lee Antenna & Line Service Inc. in Springtown, Pa.

Jimmy Miller, president of MillerCo Inc. in Gulfport, Miss.

Don Train, president of Train's Towers Inc. in Haddon Heights, N.J.,



Alessandro Travaglini

Minnetonka Audio

added as product manager for its research and development group

Send information to radioworld@nbmedia.com with *People News* in the subject field.

WORKBENCH

(continued from page 14)

disassembling equipment, he uses the plastic compartmentalized tray shown in Fig. 2. Before putting the parts in a compartment, Steve adds a slip of paper first. The paper tells him where the screw or parts came from.

An added benefit is that he can close the lid, keeping all the screws and parts from getting knocked off the workbench or mixed up.

We received a comment from Roberta X regarding the Milwaukee inspection tool featured in our Nov. 2 column.

This lighted camera, mounted on the end of a cable umbilical, permits peering into tight spaces. Roberta suggests that a regular smartphone can also be used as an inspection camera for some

(continued from page 18)

the problem of the ringing network line.

I don't know what the good folks at WNMU thought when they heard our request, but they graciously agreed. With the equipment in place, I stood nervously with tiny beads of perspiration on my forehead as Jim began to take his readings.

When it was over, you could have heard a pin drop. I gulped, almost afraid to hear the result.

"The line *doesn't* meet specifications," Jim said quietly.

I could hardly believe my ears! My hunch had been right.

Only then did a WNMU engineer volunteer, "We've never run a frequency test of the line. It always sounded so good, that we assumed it met specs."

That made perfect sense. As a Class A line, the slight imperfections were scarcely noticeable. But when converted to a Class C line, it created the ringing that we were hearing.

As we left, I had one more request: "Please call your local AT&T tech support and report that your line doesn't meet specifications." Then we headed home to wait.

Two days later I received a call from George. "We found a bad amplifier in Escanaba." Escanaba — just 50 miles on the other side of Marquette.

I walked to our control room and put the network line in cue, and after all of those years, the ringing was gone. It was, in fact, a dead ringer.

Radio World welcomes your stories about the time you solved a problem or overcame a technical obstacle. Email Emily Reigart at ereigart@nbmedia.com.

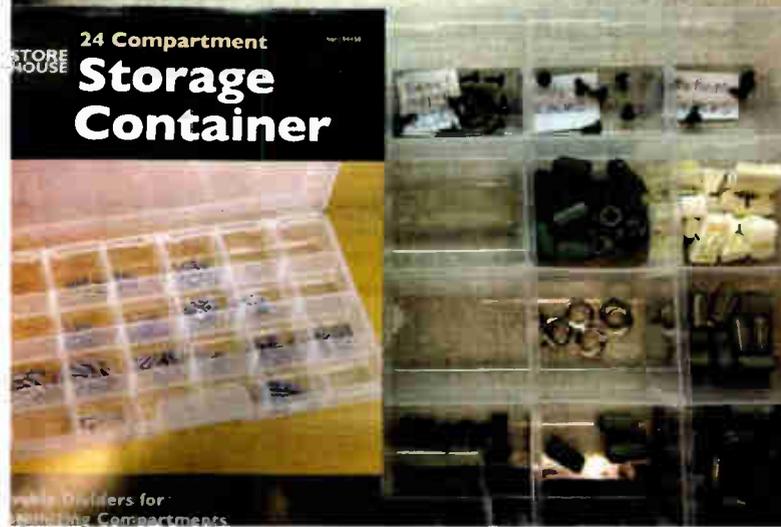


Fig. 2: A compartmentalized plastic case with a lid keeps parts secure.

tight spots. Whether you are using the flashlight app to illuminate your work, or using the camera to peer between circuit boards in a card cage, under computer floors or in dropped ceilings and wiring ducts, a smartphone serves as a "remote eyeball" available in your pocket.

Contribute to Workbench. You'll help your 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 is a past recipient of the SBE's Educator of the Year Award.

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Join the Loyalty Club

Listener loyalty is still everything when it comes to radio

I admit it. I cheat on my favorite websites. Although I look at them daily, I am not loyal to any given brand and instinctively look for other sites to entertain and inform me.

Yes, my smartphone is so cool that I have trouble putting it down. Swiping up, down and sideways on new responsive websites has also given me the attention span of a five-year-old. My loyalty of a few years ago, when I might have spent up to five minutes on one website, is probably now more like one minute. As it is, I've gone from six page views per visit to two — three if the material gets me to go down a rabbit hole. While this may be bad news for radio station websites, it's excellent news for our core product: broadcasting to the public.

When it comes to time spent with the media, radio kills. Even millennials — the group one would guess isn't that into radio — still spend a lot of time with us. According to the RAB's December 2015 report, "Radio reaches 88.2 percent of all persons age 12-24 each week; they spend almost nine and three-quarters hours weekly tuned in to radio."

How do you maintain or even grow your individual dominance? Offer value every day with great localized programming — and if you want to be number one? *You must create loyalty.*

ON-AIR TALENT'S ROLE

The long-term plan *must* include retaining your very best talent. DJs, talk show hosts and news anchors who have been on your station for years with significant ratings have something other hosts don't have: listener loyalty.

People have a habit of listening to established shows because they consistently deliver on expectations. While this statement seems ridiculously obvious, I have witnessed first-hand on half a dozen occasions when management murders a legacy morning show, thinking that what a town needs is something "new and exciting."

The listener loyalty club is an oldie but goodie. Here are the approaches of three different stations. All have specific, professionally designed Web pages and offer fun, interactive features to motivate listeners to tune in and also to visit the sites regularly.

Without research unearthing overwhelmingly negative impressions and deteriorating ratings to back up this "feeling," dumping a long-running show is the most risky move a station can make while remaining in the same format. Instead of encouraging station loyalty, dumping a legacy show tells core listeners that you don't care about them. (If you need recent evidence, look at a debacle in Washington, D.C., where a morning show was dumped after 24 years; when ratings tanked, the show and the old brand both were reinstated.)

LISTENER INTERACTION

How can you show listeners that you care and that you deserve their loyalty?

Every point of interaction they have with your station should give them a positive feeling. Every social media message, smartphone text or phone call needs a response.

Ideally, you should try to handle these contact points one-to-one. If that's just not practical based on a lack of staffing or interns, it's okay to send an automated response, as long as the answer is friendly.

PROMO POWER

Mark Lapidus



The most effective approach is to select a vendor with a solid online interface that works on an earned point system. Participants use their points to "buy" tickets and station merchandise as well as discounts on items, CDs and more. Naturally, you'll use air time to promote the club, peppered with real audio from members who talk about the benefits they've received by participating.

Paid, dark-posted advertising on Facebook could be very useful in adding members to the club.

(Note: Remember that your organic traffic on Facebook is nearly dead, so your posts are not reaching many people. I wrote about the death of organic reach in the Sept. 10, 2014 issue, "Our

Whenever your station hosts events, listeners will interact with every staff member you have in attendance. Don't assume that your staffers know how to represent you to the public. Discourage your people from bunching up in a group and talking shop. They are *there* to mingle — to meet and make listeners feel welcome so that they feel like part of the excitement.

JOIN THE CLUB

While loyal listener clubs may seem passé to some, I remain a huge fan. The primary arguments against them are cost and maintenance. For more mature stations, I recommend prioritizing funding a club over a marketing campaign.

Free FB Ride Is (Nearly) Over." I still see stations spending a lot of effort posting content. Aside from answering questions posed to you through your page, you should think of Facebook strictly as an advertising medium.)

Community involvement is also vital to creating loyalty. From promoting charity events, large and small, to having your staff members volunteer at key public service entities, you can make your mark over time.

Whenever you discuss ratings and revenue, consider adding a third point: loyalty.

The author is president of Lapidus Media. Contact him at marklapidus@verizon.net.

"Sunday Down South" Is a Dream Fulfilled



From left in the WSM fishbowl: Kevin Anderson of "The Opry Warmup Show," Mike Terry of "Afternoons on WSM," and Danny Boyles of "Sunday Down South."

At historic Nashville station, Danny Boyles shares gospel music with a country twist

AIR TALENT

BY KEN DEUTSCH

"I grew up listening to WSM(AM) from Nashville, and it was always a dream of mine to someday work there."

So said Danny Boyles, 61, host of "Sunday Down South."

"I've worked at several radio stations through the years but could never visualize anything higher than the highest, and that is WSM."

And now Boyles is living that dream. His country/gospel/bluegrass show is heard each week on WSM, which is also the home of the "Grand Ole Opry." If you don't happen to live in any of the six states blanketed by WSM's 50,000-watt signal, one can listen at www.wsmonline.com/shows/sunday-down-south.

PERSISTENCE PAYS

Boyles was raised in Arkansas and at an early age was captivated by the voices that came out of his radio. When he got a little older he had several small-market stints behind the mic in Arkansas and Louisiana before he moved to Nashville, Tenn., to work in the music field and to get closer to his goal of working at WSM.

"I applied to work at WSM several times through the years," said Boyles. "Finally in July of 2007, WSM General

Manager Chris Kulick hired me part time to do fill-in work.

"That was fine, but I always wanted to host a show that would feature traditional country artists singing gospel music because I knew the audience would love it. For two years I kept asking our then-Program Director Joe

Limardi to give me a chance; and in the spring of 2009, he agreed to let me do an hour on Sunday mornings at 9. He just told me, 'We'll see what happens.'"

Back in 1940, WSM had originated a show that ran sporadically over the NBC radio network called "Sunday Down South." That was the name Boyles appropriated for his dream program.

"I started off my first show with a tune by Hank Williams, the granddaddy of country music, singing 'Can't You

Hear the Blessed Savior Calling You?', which was recorded in 1946, right in WSM's Studio D," he told Radio World.

"That first week the response was overwhelming. The next day Joe called me in and said he couldn't believe how it had taken off, and asked if I would I like to add a second hour. A couple weeks later he asked me to make it three hours, and so we have been on from 9 until noon (Central Time) ever since."

Boyles plays gospel from the WSM music library and material from his own substantial vinyl and CD collections.

"I have talked to many country artists, and a lot of them grew up singing gospel in their churches," he said. "It's a good marriage, country and gospel. We have beautiful facilities here at WSM with room to have artists come in and sing live when their schedules allow. There are a lot of musicians in Nashville, in fact every time you shake a tree one falls out."

WSM, branded "The Legend," is in the Gaylord Opryland Resort and Convention Center and features a fishbowl-style studio that allows passersby to view the air talent.

THE DREAM, PART TWO

"I have always looked up to a lot of the artists I play, and now some of these guys like Sonny Osborne of the Osborne Brothers have actually called me on the studio's private line. He said, 'Hey, we love your show and what you're doing is great.' Back when Charlie Louvin was alive, he called several times and was always encouraging. Buddy Miller has been an inspiration in Americana music and he called to thank me for playing

(continued on page 23)



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Entune and Enform Connect Drivers

We test drive Toyota and Lexus vehicles' infotainment systems

CONNECTED CARS

BY PAUL KAMINSKI

One in a series of articles intended to familiarize readers with the range of automotive infotainment platforms now on the market.

Toyota's tag line is "Let's Go Places." Its Entune telematics system ("Enform" in Lexus models) helps owners stay informed and connected as they carry out that invitation.

I had a chance to listen to both systems in action when I tested Toyota's perennial bestseller, the Camry in XSE trim level, and also the Lexus NX200t.

Entune first appeared on the 2012 Toyota Prius V. The system uses the data plan from a connected smartphone



Connected cars and crossovers from Toyota and Lexus.

Photo by Paul Kaminski

to power the apps in dash (Pandora, for example). At first there were teething pains, but as the system rolled out over the full line of Toyota's cars, crossovers and trucks, early glitches were solved.

The Entune system occupies the complete audio display center stack in the dashboard, and it controls (depending on

the trim level) AM/FM/CD, USB port, aux port, Bluetooth, voice recognition, satellite radio, HD Radio (on certain models), navigation (at extra cost), premium branded audio, applications and traffic and weather data services. Entune is accessed via steering wheel controls, physical buttons on the multimedia face-

plate, touchscreen controls and voice recognition.

"With our Entune App Suite product, Bluetooth technology and the driver's smartphone, the vehicle can be connected to the outside world in terms of popular mobile applications such as Pandora and Yelp," said Anthony Novak, a product education specialist with Toyota.

"This allows the driver to use these applications via the vehicle's voice recognition system, steering wheel controls, touchscreen display, and audio system and speakers. By offering this range of controls, the driver has a variety of ways to access content in the vehicle based on their preferences."

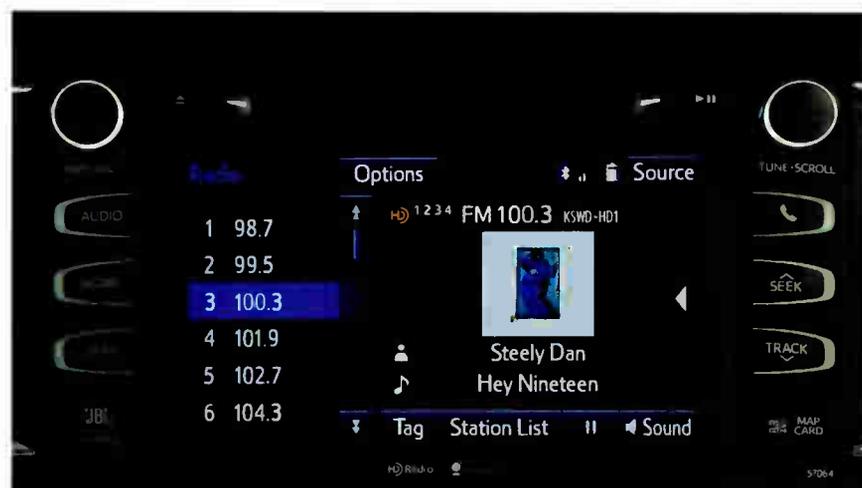
HD RADIO

The Entune and Enform systems have options for HD Radio reception.

"HD Radio is not standard equipment on Toyota but is offered on many of our Entune systems," Novak said. "HD Radio with traffic and weather data services is available on all Toyota models equipped with Entune Audio Plus, Entune Premium Audio and Entune Premium JBL Audio. In addition, Yaris [Toyota's sub-



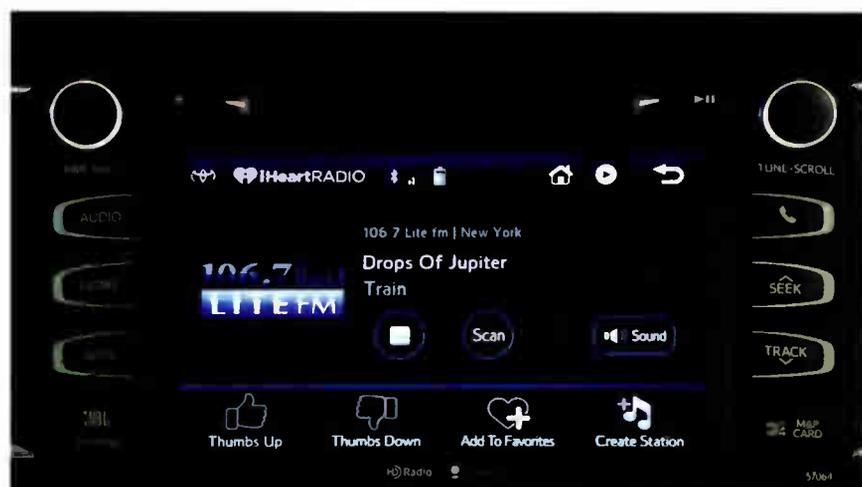
Dial position still matters: With Toyota's Entune system, users can tune to their favorite station by saying the dial position.



Here's how a station broadcasting in HD Radio appears on the Toyota Entune FM radio screen.

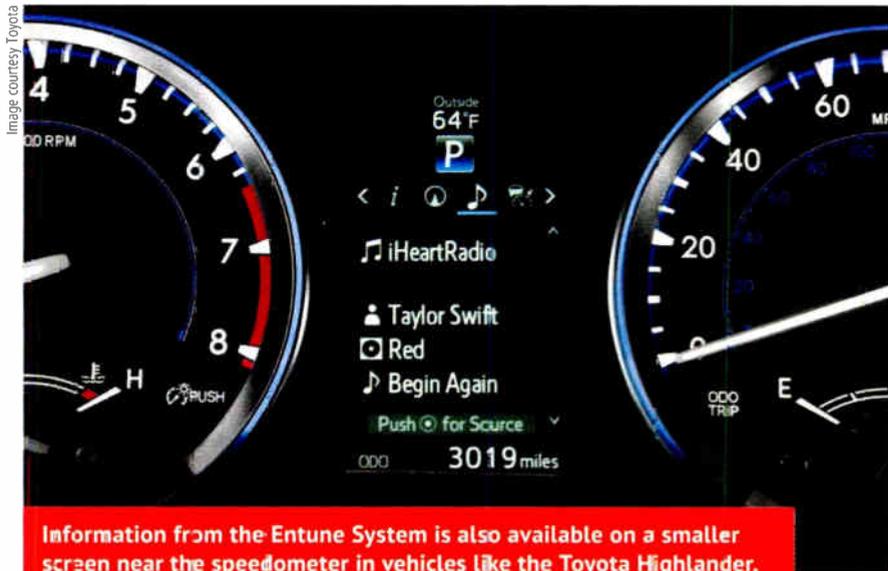


The XM Satellite radio screen.



The iHeart Radio app, as it appears on the Toyota Entune Connected Car system.

Images courtesy Toyota



Information from the Entune System is also available on a smaller screen near the speedometer in vehicles like the Toyota Highlander.

compact) Entune Audio is equipped with audio-only HD Radio” (meaning traffic and weather data services are not included on Yaris Entune Audio).

The Lexus NX200t I tested was equipped with HD Radio capability. The Enform and Entune systems share a common platform, differentiated by color schemes. The Lexus Enform system will usually get new apps delivered first.

The accompanying screen shots of the Entune system feature a typical unit installed in a 2015 Toyota Highlander.

The audio and telematics system interface in modern vehicles will never be like the simple, pushbutton AM-FM radio that likely graced the dash of your first car. Your cell phone today is nothing like the first one you used, either.

CUSTOMIZATION

That said, Toyota’s Entune system, for me, is one of the easier systems to customize to my listening tastes. The combination of manual knob controls and touchscreen menus is intuitive enough that in most cases I can do what I want with the system (station presets, tone

controls, enabling HD Radio reception, etc.) by making my way through the menus. Yes, that does take patience.

The Entune and Enform systems have a lot going on, and it does take quality time to learn the system intricacies and fine-tune it for driver convenience and safety. As of now, the systems aren’t set up to work with Android Auto or Apple Car Play, and the data connection is dependent on the data connection of a smartphone. There are plenty of YouTube videos about the system setup; but nothing beats sitting down with the owner’s manual and programming it step by step.

Which brings me to a suggestion.

The complexity of programming and fine-tuning connected car systems has caused some auto dealer groups to assign people on a full- or part-time basis to do nothing but program those systems for new owners.

So if your station broadcasts multiple HD Radio streams, your ongoing advertising client service for such an auto dealer might include identifying the person who does this and suggesting that

Indeed this article was suggested to Radio World by a listener who currently resides in Seattle.

The 90-year history of WSM is documented in a book called “The Air Castle of the South, the Making of WSM and Music City” by Craig Havighurst, a writer who also blogs about the Nashville music scene at <http://chavighurst.tumblr.com>.

At www.wsonline.com the historic station sells a variety of country music-themed CDs, apparel, tote bags, bumper stickers and even an official WSM guitar pick.

Ken Deutsch says his biggest dream in radio was not to get fired — but that as anyone who has a few sets of call letters on his or her résumé can attest, it’s a hard dream to realize.

they program one of your station’s HD channels in the demo cars and show how to get to the radio controls as part of their demo or delivery process.

Absent that, station managers should try to get to auto dealer association meetings to explain the case for HD Radio, explain its capabilities and limitations, and suggest why taking time to program the connected car systems is a win for the dealer and (a win) for the station. Even if you don’t air HD Radio, your station may benefit by reaching out to car dealers in this way.

I’ve seen multiple generations of tele-

matics systems in the past few years in the test cars I drive every week. From that experience base, I can say Toyota’s Entune (and the Lexus Enform) are among the easiest to use. They have apps I can appreciate and the ability to control by voice, knobs and touchscreen.

Paul Kaminski is a long-time Radio World contributor and columnist and is the host of msrpk.com’s syndicated “Radio-Road-Test.” Tweet to him on Twitter (@msrpk_com); like Radio-Road-Test on Facebook (facebook.com/radioroadtest); and look for him on Periscope and SoundCloud (radioroadtest).

Three Radio Careers for the Next Generation

The broadcast industry is full of opportunities

CONTINUING ED

BY DICK TAYLOR

Many high school students soon will begin thinking about their futures and what career they would most like to pursue.

The U.S. Bureau of Labor Statistics' Occupational Outlook Handbook reported on Dec. 17, 2015, that "employment of media and communication occupations is projected to grow 4 percent from 2014 to 2024, which will result in about 27,400 new jobs."

At the 2015 annual meeting of the Association of National Advertisers Masters of Marketing Conference in Orlando, Fla., attendees learned that when it comes to adults 18+, radio reaches 93 percent of them every week. That's more than TV, more than smartphones, more than PCs and more than tablets. Radio is America's number one mass reach medium.

However, the devil is always in the details.



Working with one of my students, I conducted a research project with the Kentucky Broadcast Association and its 300 member stations. One of our goals was to understand how the jobs landscape for radio was changing. We looked at how things were five years ago, how they are today and where KBA broadcasters felt their employment

needs would be in five years.

Three radio jobs stood out for being in demand in the years ahead.

IN-DEMAND RADIO JOBS

Sales: The job most in demand will come as no surprise, I'm sure. Radio has a never-ending need for trained, professional sales people. Since I started in radio, it seems, a desire to hire good sales people has always been on the lips of general managers and sales managers. For colleges, this represents an opportunity to offer more courses in this area for their broadcast majors. Radio stations have never had more products to sell. Beyond commercial air time, sponsorships and events, the amount of content that can be sponsored online has mushroomed.

Internet content creators: A second job that is growing in demand across the radio industry is for people who can create original content for radio station websites. Not cut-and-paste artists who "borrow" others' website content and repurpose it, but innovators who can act as a combination journalist/advertising/public relations specialist and populate radio station websites with engaging, compelling original content that is of interest to people in the station's service area.

RF broadcast engineers: Not that it has ever been easy to find great radio engineers, but the talent pool has changed. Consolidation chased a lot of them out of the business; others became consulting engineers to groups of radio stations. Computers and digital put new demands on radio engineers to learn new technologies or leave. Many who stayed or went into private consulting are now reaching the age of retirement.

ENTRY-LEVEL EDUCATION

The Bureau of Labor Statistics lists the entry-level educational quali-

cations for various media jobs from announcers, to news reporters, to sales and management positions.

Radio stations today typically require a bachelor's degree in programs such as communication, broadcasting or journalism. College broadcasting programs offer courses such as voice and diction to help students improve their vocal qualities. In addition, these programs prepare students to work with computer and audio equipment and software used at radio studios, says BLS. (Qualifications for highly technical jobs may differ, as Radio World has explored in its pages, but the opportunities are many.)

Since I started in radio, it seems, a desire to hire good sales people has always been on the lips of general managers and sales managers.

The BLS goes on to say many employers expect applicants to have some basic skills prior to employment and these skills are typically gained from a college degree program in addition to working on the college radio station and in internships.

IMPORTANT QUALITIES

Today's radio broadcaster needs to have computer skills, experience with editing software and other broadcast-related devices, interpersonal skills in dealing with people both on and off the air, persistence in landing their first job and advancing in this very competitive industry, research skills in show or sales prep in order to be knowledgeable and deliver top performance, speaking, writing and presentation skills are critical to be successful in today's radio world.

In my meetings with broadcasters about what they want my students to know when they consider hiring them, the answer is always the same *everything!*

In my next article I will share tips on how to get your first radio job.

Dick Taylor is a Certified Radio and Digital Marketing Consultant and assistant professor of broadcasting at Western Kentucky University in Bowling Green, Ky. He joined the faculty of its School of Journalism and Broadcasting after a 42-year career in radio. He is director of the KBA WKU Radio Talent Institute and is on the board of the New Jersey Broadcasters Association.

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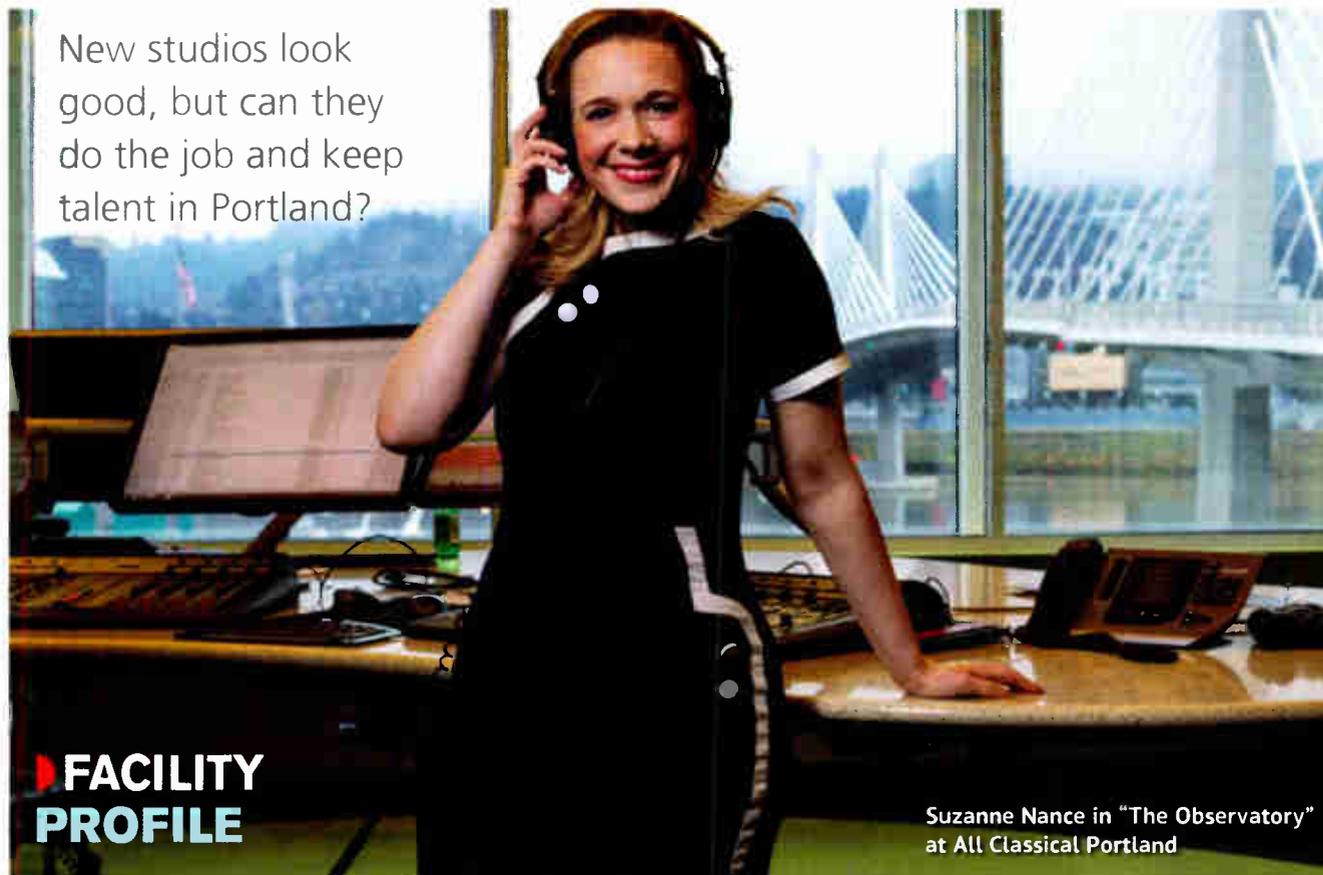
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All Classical Portland: Studio With a View

New studios look good, but can they do the job and keep talent in Portland?



Jonathan House

Suzanne Nance in "The Observatory" at All Classical Portland

FACILITY PROFILE

BY CHRISTOPHER SPRINGMANN

Changes were overdue at All Classical Portland when Jack Allen arrived in mid-2008, hired by the board of nonprofit, listener-supported 89.9 KQAC(FM).

The president and CEO of the public station said, "When I got here, I pulled the BBC news, jettisoned nationally-

syndicated [legacy] programming like 'Pipedreams,' 'From the Top' and 'St. Paul Sunday' and initiated development of rich, local content."

These additions included "The Score," a now-syndicated show featuring symphonic movie soundtracks and their composers; and "On Deck With Young Musicians," clearly an Allen favor-

ite. "It's killer. I love it!" Could those "Young Musicians" be part of a future bench of Portland talent? "Why not?"

Allen also persuaded his board it was time to move out of their cozy digs at Portland's Benson Polytechnic High School into something larger — like the 12,800 sq. ft. former television station in a waterfront building owned by their

cultural arts partner, the Portland Opera. He believed that world-class facilities combined with Portland's appealing well-educated and youthful demographics could help attract scarce on-air talent who shared his vision.

The remodeling ran \$2.5 million (they moved in mid-2014) while All Classical's yearly budget for the facility and staff of 23 is \$3.5 million, 93 percent of which is paid by listeners, most of whom are in the local community.

All Classical Portland Vice President of Technology Larry Holtz laid out some of the move. "In our previous studio building we converted to Axia consoles, so we brought that equipment and expanded in the new building."

He explained: "The on-air studio uses three Axia Element control surfaces — 12 channels to the left of the announcer, 12 channels to the right, providing a center area for mics, keyboards and paper copy. The third four-channel Axia Element is for the co-host. In our large performance control room is a 24-channel Element. The other studios have 12-channel Axia Radius consoles, including two office/studio rooms with the consoles on Ergotron swing arms." Feeding the lot is an array of Axia XNodes for distribution audio and control along with an Axia studio intercom system.

NEW BLOOD

Allen had his ears on Suzanne Nance for years via online streaming as she moved through the on-air, radio programming and TV production ranks at Maine Public Broadcasting Network and Chicago's WFMT Network. She started her career at WHYI Philadelphia.

(continued on page 26)

ON AIR LIGHTS: Wall and Desk Top Models



OAL-101B



OAL-101G



OAL-101O



OAL-101Y



OAL-101W



OAL-101R

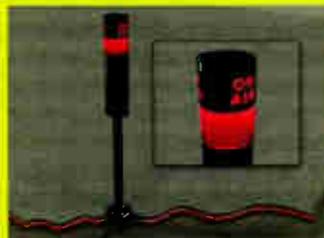
-12 Volt DC

- 30 mA

- Custom text optional at no extra cost

- LED Colors Available:

blue, green, orange, yellow, white, red



DT-OAL-RR



3LB-RRR



3LB-RYG

-24 Volt AC or DC

- 30 mA



Studio Items Inc.
www.studioitems.com

STUDIO SESSIONS

PORTLAND

(continued from page 25)

He made his pitch to Nance in mid-2015, flying her out to Portland for the talk-and-tour. "Here's our philosophy of community service, our vision for the future ... and by the way, Suzanne, here's your stunning new studio. Do you like the view?" The new main studio is perched overlooking the Willamette River, nicknamed "The Observatory."

Nance joined All Classical Portland in September 2015 as program director.

She hosts the four-hour afternoon drive-time program at All Classical from what is best described as a ship's bridge. Nance commands a 12-foot-wide custom granite production table that rotates 359 degrees, with a panoramic view of

Our goal for the upcoming fiscal year is to focus improving our backup and redundancy of all systems. Yes, like most stations, we have pretty good backups, but we're bringing it to the next level with more auto failover of Internet WAN, broadcast automation, and so many systems at our six terrestrial broadcast transmitter plants. In the studio building, we're augmenting our stage lighting, microphones and acoustical treatment in our live performance studio."

Allen knows that All Classical Portland can't sit still. Change is constant and people move on. Unlike sports teams, there's typically no "bench" of radio talent who have trained with the station's stars. Oh, sure, *someone* can always *fill-in* but that doesn't solve the bigger long-term problem, especially in

The new main studio is perched overlooking the Willamette River, nicknamed "The Observatory."

Tilikum Crossing, the Willamette River and an awesome Portland skyline. A live "Tili-Cam" captures Nance's unique view of the river and skyline, as well as an audio feed for an increasingly important online and mobile audience.

It's quite a performance, as Nance, also a singer, obviously relishes the stage. She's turned-out impeccably, gliding smoothly along the table, leaning in like a conductor, gesturing passionately to an unseen audience, tweaking the Axia Radius' faders, her eye on the waveforms. Nance is unencumbered by a traditional boom-mounted mic, preferring the freedom of a DPA 4066-B omnidirectional headset microphone favored by musical theater talent.

The studio signal is processed by a Wheatstone Vorsis M2 dual voice processor. Holtz says of the unit, "The M2 provides intelligent multi-band compression designed specifically for microphones, producing consistent equalization for all our announcers, greatly reducing issues with boominess and excessive sibilance."

Holtz says that All Classical Portland isn't done, yet: "We just completed building our final studio, Production B.

a tough niche like classical. Allen is determined to avoid that eventuality with a plan — actually, several big plans, for developing, hiring and mentoring new talent, leadership and management succession, plus adding an HD2 and Internet channel as a designated sandbox, laboratory and boot camp.

Tracking and wooing talent, not just from radio, has been a consistent pattern in Allen's career. "At KMFA(FM) in Austin [2003–2008], I hired a New York Times writer, with no previous radio experience but smart as a whip, authentic voice and a person who really connected with the audience," said Allen. "I wooed a jazz DJ from Austin's KUT(FM), an amazing singer-songwriter who loved classical," added Allen. "She had a niche role at KUT. At KMFA she became what we call the anchor voice at that station; and she's still holding down the midday slot."

He plans to do more of the same in Portland. Allen's succession strategy plans are clearly moving forward, and include Nance, who is scheduled to become vice president of programming, eventually replacing John Burk, who currently follows her as host in the early-evening program slot. Nance also mentors colleagues at other stations and is on all the Facebook classical chats.

In Allen's office an ancient Ampex reel-to-reel machine sits next to an even older instrument, his chess set.

"The chess game is not only about the next move, but about the exponential variations that go forward," Allen reflected. "When you stretch the brain, the strategy and vision muscles involved with high level chess, it starts to apply

KQAC EQUIPMENT

All Classical Portland's Vice President of Technology Larry Holtz provided the following list of equipment used at the station.

Announcer microphones: DPA4066-B condenser headset mic

Mic processors: Wheatstone Vorsis M2

Headphones: Sony MDR7506

Audio consoles: Axia Element and Axia Radius

Studio furniture: Custom 359-degree rotating control room desk, Forecast Freeform Shaped Sit with elevation motor in production studios

Studio lighting: Dimmable LED strip lighting and ceiling fixtures

Additional lights: MIKA Litt

Studio doors and windows: IAC

Record and playout system: ENCO DAD running on an Axia Livewire network

Audio distribution: Axia Livewire XNodes — AES, analog, mic and GPIO

Studio monitoring: KRK Systems VXT-6, KRK12S subwoofers

Studio telephones: Axia VS system with VSet6 phones

Clocks: ESE ES-185U GPS master clock/NTP time server, BRG Precision POE digital and analog clocks

EAS: Sage Digital ENDEC with Digital Alert Systems R198 four-unit AES switch

Studio remote control: Davicom MicroMAC

Studio & technical operations center UPS: APC Symmetra SY80K80F 80 KVA three-phase

Technical operations center racks: Middle Atlantic WMRK-4548

Technical operations center rack power distribution: APC AP-7930 PDU, IP control per individual outlet

Technical operations center Ethernet switching: Cisco WS-C3750X stacked 1G core switches, Netgear GS748TP 10G edge switches, CAT-6A shielded cabling

Streaming services: Custom servers running Orban Opticodec-PC with Optimod-PC 1101 audio cards

Audio logging: Axia iProfiler

Audio and data storage and backup: Dell iSCSI servers with various QNAP TS-EC1679 RAID10 NAS

RDS and HDText: Broadcast Electronics TRE software on custom server

STL: 11 GHz and 18 GHz Cambium PTP-800 radios with dual-pol antennas transporting uncompressed AOIP

STL audio transport: APT IP codecs with SureStream technology

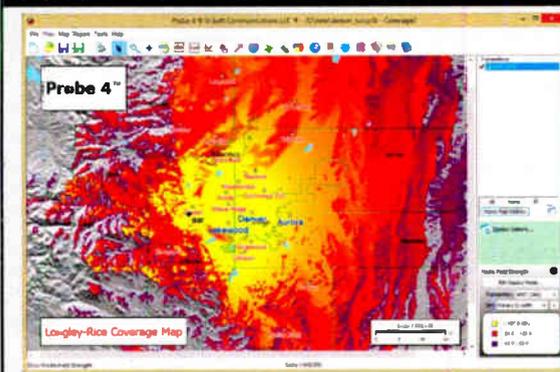
to everything. The challenge at All Classical Portland is to reverse engineer the big dream to what we're going to do today. It gives a sense of security to those who work here because they know we've got a game plan, that they are valued and have a role in the future

we all want. Our team is about long-term strategy, necessarily, but willing to make short-term tactical adjustments to the plan, as needed."

Christopher Springmann is chief storytelling officer for www.onthepathproductions.com.



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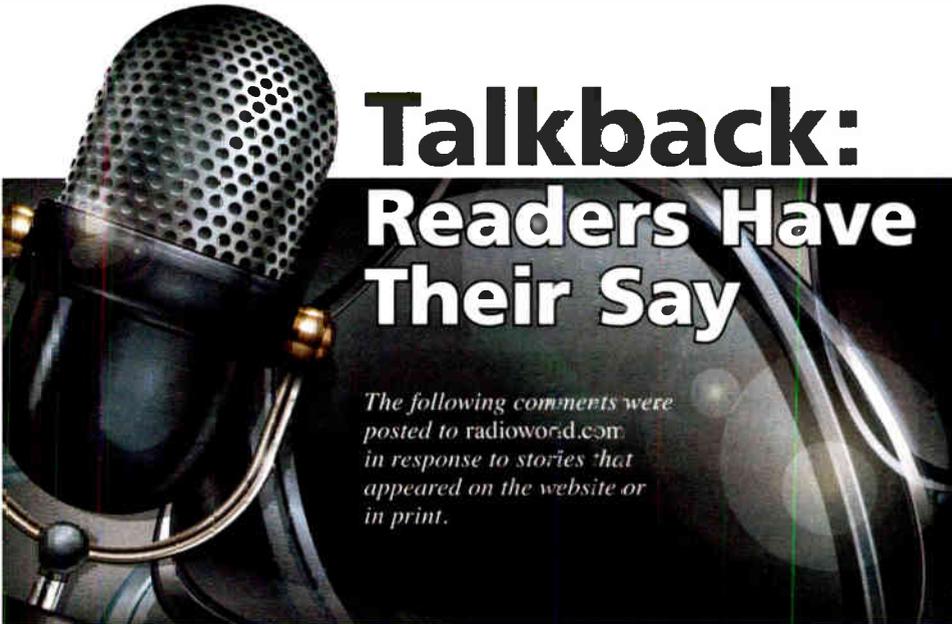
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Talkback: Readers Have Their Say

The following comments were posted to radioworld.com in response to stories that appeared on the website or in print.

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ROYALTIES

"CRB Ruling Is 'Crushingly Bad News' for Microcasters" (Radio World online, Dec. 15, 2015)

Part of the problem, unfortunately, lies with the end user listeners, and it's a problem that in my experience goes back close to 20 years. There has long been a prevailing attitude that any Web-based content should be free to the user, and there are few (if any) types of content where this attitude has flourished more than online "radio." Perhaps this is the fault of the streamers themselves ... by positioning themselves as "radio stations" they have equated their service to that of broadcasters.

AM

"Our 'Last Best Chance' to Revitalize AM" (PW, Jan. 6)

If they're not tackling things like noisy switching power supplies, dimmers and other various hash generators, they've left out what I think is the critical improvement needed.



iStockphoto/sh.unl

PIRACY

"Enforcement Bureau Accuses Three of Being Pirates" (Radio World online, Jan. 13)

If only the FCC would pursue government offenders like metro transit in the Seattle area, whose newer electric trackless trolley buses decimate the AM band.

DRONES

"Drone Flight Still Challenged by FAA" (Radio World online, Dec. 14, 2015)

There should definitely be an exemption that allows tall tower owners the use of drones for tower inspections. It's really common sense: the only danger to aircraft posed by a drone flying next to the tower is the tower itself.



iStockphoto/Alexandr Dubovitskiy

TRANSLATORS

"Translator Talk With Joe Davis, Chesapeake RF Consultants" (Radio World online, Jan. 8)

The AM station's primary focus should be their city of license and whatever improvement an AM station makes, their city of license should come first Unless an AM station can make a showing that their city of license is outside the 25 mile radius, then the shorter of the 2 mV/m or 25-mile radius rule should stay in place for fill-in translators.

In a small market, it makes sense to concentrate on the local community. In a larger market, this is naive and factually incorrect on several levels. If I own an AM station licensed to a suburb, I may very well be 30 miles from my target city, yet I may have a 2 mV contour that covers the main community and more. Thus, by an arbitrary ruling, I currently cannot cover my population center with an FM signal. How is that fair? If I cover a city with my service contour, why shouldn't I be able to provide FM service within that contour? An FM fill-in has no such restrictions, so my 100 kW HD2 and HD3 competitors are sucking up the translators for 75 miles around. I'm now a second class citizen because I'm an AM. Further, if I am a Class B station, I might have 25 kW of daytime coverage that extends for 50 miles, but nighttime might be only 250 W and both day and night are likely directional.

EDUCATION

"Five Questions: Ronald Wittebols" (Radio World online, Jan. 11)

High school and college stations are the training ground for the future people who will lead our industry.

READER'S FORUM

AM REVITALIZATION

I thoroughly enjoyed, if that's the best word choice, the excellent article on "Our Last Best Chance to Revitalize AM," in your Jan. 6 issue.

The one missing piece of this discussion is on the receiving end. AM tuners in many current generation receivers are, in a word (and here the word choice *is* correct), *terrible!* Go back and pull out a radio from the '70s or earlier and they will almost always prove superior to today's radios. That's, again using a single word choice, unacceptable! What to do? The industry can't force manufacturers to build better AM tuners but it can certainly speak up until it's heard.

Another point of contention is the FCC language on just about anything electronic that it cannot generate harmful RF noise. Does anyone remember the last time that was enforced? Didn't think so!

The bottom line is broadcasters, working together with the FCC, are working to find ways to increase their transmitter power, location and FM translators where possible.

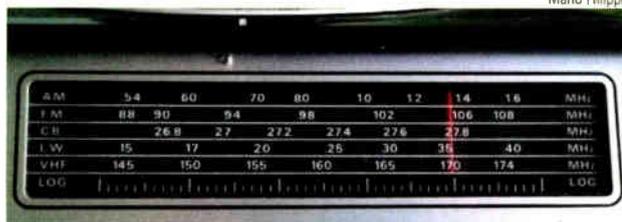
Let's not forget the receiver end of that discussion.

*Bill Wertz
President
Wertz Media
Seattle*

CORRECTION

In the Jan. 6 article "RDF Radios: Nautical Gems of the Past," we incorrectly stated that the Ray Jefferson Model 630 is a four-band radio. It is a five-band radio.

Mario Filippi



MARTI

Nice job on the Jan. 6 RW piece about George Marti. One of the stations where I worked as C.E. had a Marti M-30B like the one in the photo, but also an older one with no model number. It was either a first generation or a prototype of the M-300 unit. Its cabinet was the same size and shape, made from aluminum painted gray, and had a much larger meter with the meter cover external to the case (sticking out instead of recessed). Otherwise, the schematic, tube compliment, etc. was nearly the same. That used a peculiar PA tube as well.

We ran those units every weekend, right up until 2009. I must have had both of those transmitter on my bench a dozen times over my 20-year tenure at that station. Almost every problem we had with those was operator-related and had nothing to do with the equipment. The fan in the lid was the most failure-prone part of the unit.

Ah, those were the days when broadcast equipment was built by real men, for professional broadcast use! Broadcast equipment was held to a higher standard than what was available to the general public. These days, we make radio happen with a bunch of equipment that is no more reliable than the consumer-grade rubbish found at any Best Buy. George Marti really put out reliable stuff, even if it did look a bit primitive.

*Paul Shinn
Chief Engineer
KVML(AM)/KKBN(FM)/KZSQ(FM)
Clarke Broadcasting
Sonora, Calif.*



istockphoto/4SRPM

UNDERSTANDING WAVES

Regarding "Digital Deciphered" Dec. 16, 2015 issue:

"The waves themselves are known as Hertzian Waves, in honor ..." it seems that Jim is getting electromagnetic waves confused with air pressure variations that our ears respond to. Ears do not respond to electromagnetic radiation.

Still on page 18, "... energy at frequencies just above 50,000 Hz becomes so energetic that electrons jump off the wires ..." This is just so wrong. It is not how electromagnetic radiation is generated.

*Noel Maginnity
Carterton, New Zealand*

Jim Withers' reponse:

I would ask the reader to forgive my "shorthand." Since the focus of the article was about the differences in analog waves and digital pulses, I did not adequately explain the differences between sound waves and waves of the electromagnetic spectrum.

WRITE TO RW

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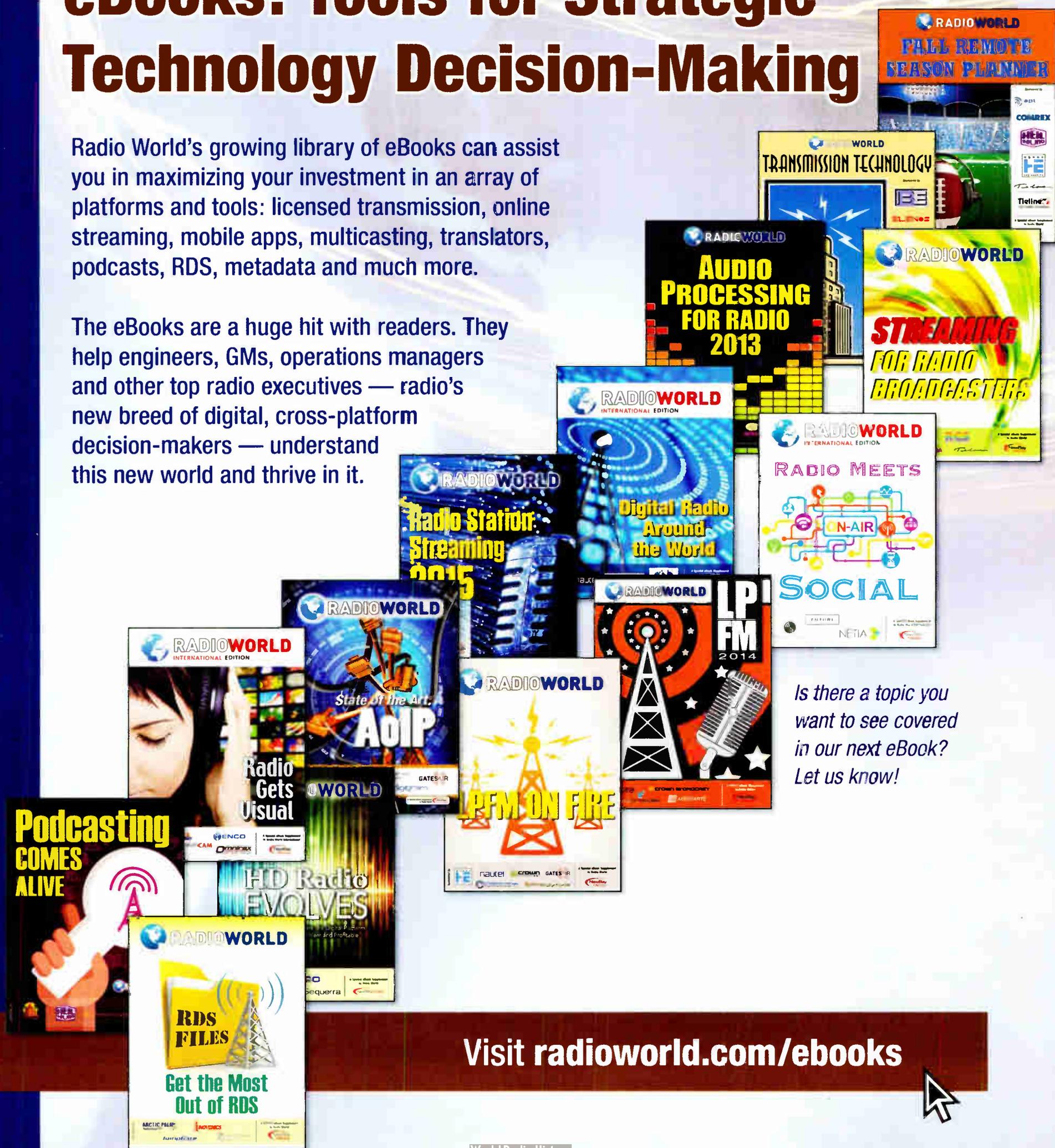
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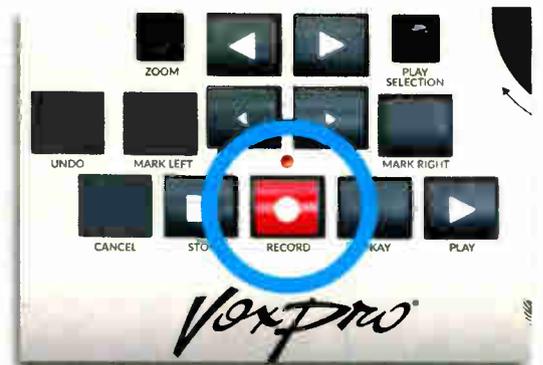
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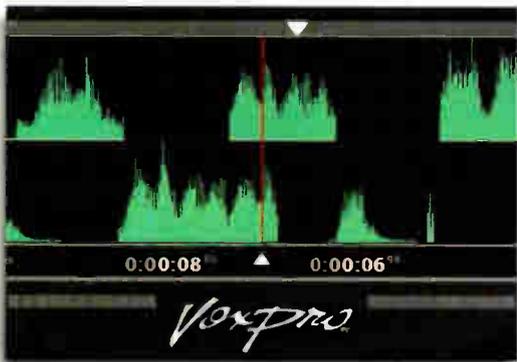
You're doing your morning show when there's a caller on the line.



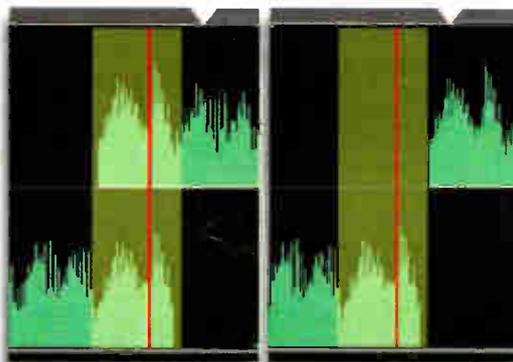
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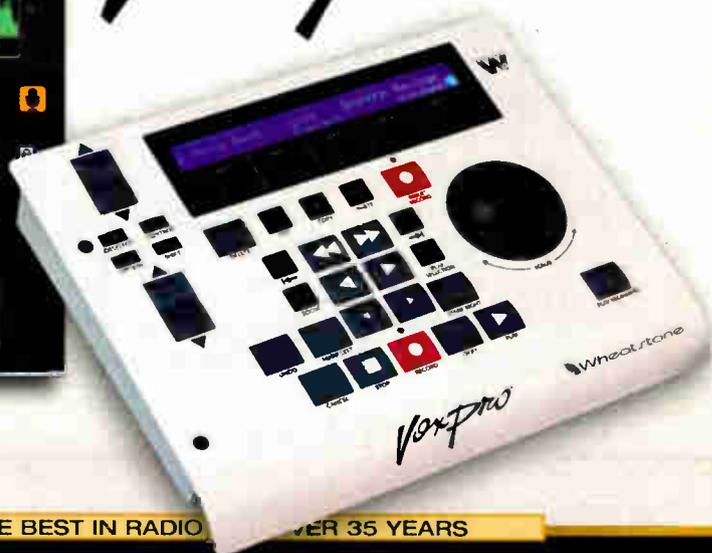


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