

RADIO WORLD

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Tech Makes a Splash

We kick off our **2015 Summer of Products** coverage on Page 14!

Ready for Liftoff: WHCP Hits the Airwaves

Independence Day brings a new FM signal to Cambridge, Md.

LPFM

BY MIKE STARLING

This is the third in a series about creation of low-power radio station WHCP in Cambridge, Md. Mike Starling is general manager and chief engineer. Read the earlier parts at radioworld.com/whcp1 and whcp2.



The author, with scissors, cuts the ribbon in June. The station will inaugurate service on July 4.

If we are lucky, a few times in our life we get to collaborate on projects of significance where teamwork, strategy and happenstance fall into place beautifully.

WHCP's story is one of those, largely a result of good fortune and great timing. The article we wrote last August in Radio World coincided with the start of a drumbeat of equipment donations that have made all the difference. And our Cambridge Community Radio Calendar — our first public appearance in the local community — sold well, raised awareness and set the tone for being a classy, positive and thoughtful contributor to our fair city.

The end-of-year calendar raised a few thousand dollars towards construction, but we needed three times that amount to commence operations (the non-climate controlled barn without plumbing wasn't going to do, nor was the short mast near the barn).

We needed some serious fundraising. And that's when our board members stepped up and said "Let's do an early spring fundraiser with a DJ, silent auction, raffle tickets, wine pull and other activities to raise funds." They didn't just talk about it; they did it. We received more than

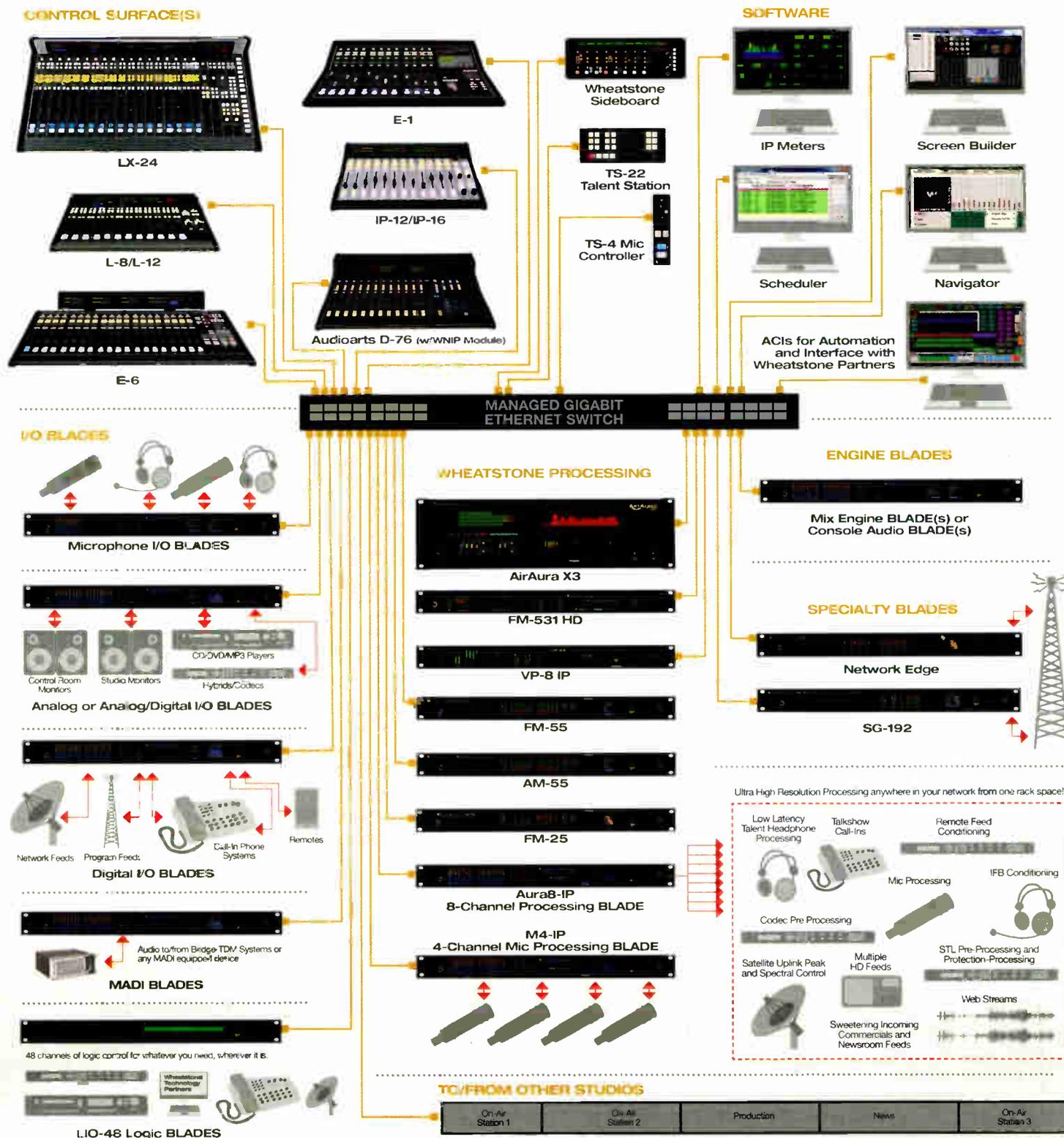
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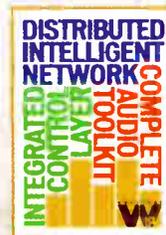
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Courtesy of Las Vegas Convention and Visitors Authority

A conceptual drawing of the Las Vegas Global Business District features an expanded convention center.

Big Changes Ahead for LVCC

Can the Vegas convention center get any bigger? Yes it certainly can

BY TOM VERNON

By the time the 2016 NAB Show rolls around, the landscape around the Las Vegas Convention Center and along the Strip will have changed quite a bit.

As part of its plans for the new Las Vegas Global Business District, the Las Vegas Convention and Visitors Authority purchased the historic Riviera Hotel and Casino's 26-acre site as the cornerstone for an expansion. The cost was \$182.5 million.

The Riviera closed May 4. A liquidation sale began May 14 and continued into June, according to the National Content Liquidators Website.

The dates for a demolition, likely by implosion, and start of new construction had yet to be made public in June.

The Riviera site will provide an entry point to a new business district on the strip, according to the LVCVA. The project will be completed in two phases. The first, at the Riviera site, will include 750,000 square feet of new exhibit space along with 187,500 square feet of supporting meeting space as part of the new 1.8-million square-foot expansion.

Phase two entails renovating the existing convention center and includes a 100,000-square foot general session space and another 100,000 square feet of meeting space. Including public and service areas, the expansion and renova-

tion will increase the size of the facility from its current 3.2 million square feet to nearly 5.7 million square feet, according to the LVCVA. Once construction begins, the entire project is expected to take five to eight years.

1.2 MILLION ATTENDEES

The announced expansion is likely to be welcomed by the larger conventions held at LVCC.

"The NAB Show has experienced considerable growth over the last few years, and we look forward to conference and exhibit space that this expansion will provide — particularly for marquee events and other conferences that have had to locate off-site due to space and venue quality," an association spokesman said.

The Consumer Electronics Association, which produces the International Consumer Electronics Show each year, recently said it was capping attendance for next year's event due to overcapacity concerns, Radio World has reported.

The LVCC hosts approximately 1.2 million convention delegates each year. Those visitors and the conventions they attend support 14,000 local jobs, sustain \$530 million in wages, and generate an annual revenue stream of \$1.7 billion.

These changes could mark the beginning of even bigger movement in this part of Las Vegas. In addition to the

\$2.3 billion convention center expansion and renovation, the new business district project includes the creation of economic development in the neighborhoods surrounding the center. That includes a planned business center that uses the facility's World Trade Center designation to attract corporations wanting to interact with tens of thousands of businesses that visit the convention center each year.

RAT PACK ERA

The closing of the Riviera coincided with its 60th anniversary; the building opened in April of 1955. It was the first high-rise hotel-casino in Vegas. Until then, Strip resorts looked like roadside motor courts. The nine-story, 300-room tower signified the beginning of a vertical expansion of hotels into the Vegas skyline.

At the time, it looked like something from Miami Beach. Not coincidentally,

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Littlejohn: Retain Class A Protections

Help AMs, iHeartMedia tech executive says; but don't increase interference while doing so

Should Class A AM radio stations enjoy the level of interference protection they do now?

The issue came up when officials from iHeartMedia + Entertainment met with senior staff of the FCC Media Bureau recently. A summary of that "ex parte" visit was filed by the company, focusing on comments by Jeff Littlejohn, iHeart executive vice president of engineering and systems integration.

A Class A station is one of the big boomers — think WSM, WWL, KFI, KMOX. It operates on a clear channel and is designed to provide primary and secondary service over an extended area and at relatively long distances, with operating power of 10 kilowatts to 50 kW.

Here is iHeart's summary of what Littlejohn told the FCC officials; it is followed by an emailed Q&A between me and Littlejohn:

As a follow-up to iHeart's Comments and Reply Comments in the AM Revitalization proceeding, Mr. Littlejohn stated that iHeart accessed the Nielsen NRD

database of diary and PPM (Portable People Meter) ratings to determine whether existing listeners of continental domestic Class A AM stations would lose protected service if Class A AM stations' interference protections were reduced to those equivalent to current Class B protections. The study showed that approximately 600,000 existing listeners of Class A AM stations (excluding Alaska), accounting for over 3 million hours of listening per week, would potentially lose service if such reductions were adopted.

Mr. Littlejohn noted that quality and expensive full-service programming content, such as significant news production and sports programming combined with reliable coverage, is often what drives listeners to Class A AM stations. National and regional advertisers expect wide-area, multi-state coverage, especially at night, from Class A AM stations, so that the loss of listeners outside of standard Metro areas would undercut the profitability of Class A stations and reduce the ability to continue the high-quality programming expected by their audiences.



Stockphoto/Big Ryan Design

Mr. Littlejohn explained that, as AM is losing listeners to FM due to electronic interference on the AM band, changes to AM station interference protections would cause additional AM audience declines due to increased signal interference. In the event current protections were diminished, Mr. Littlejohn gave as an example of increased interference the co-channel interference that is experienced when Class D stations fail to turn off their signal during nighttime hours.

FROM THE
EDITOR

Paul McLane



The resulting interference is a bass-tone "beat" frequency hum that interferes with the quality of the audio signal of the nighttime-authorized AM station. On the other hand, gaining new listeners to an improved-signal AM station is very difficult. Mr. Littlejohn cited as an example iHeart's concerted effort to improve the signal and audience share of an AM station in the Boston market. iHeart invested in an upgraded signal, and procured expensive programming, but did not attract a significant additional audience. Consequently, additional signal for an existing AM station should not be equated with additional listening.

Mr. Littlejohn noted that in the event an AM-only FM translator window is opened, participation should be equally available to all AM stations, as all AM classes have coverage issues, particularly in urban areas. Mr. Littlejohn remarked that while spectrum may not be available for FM translator stations in certain top urban markets, if an AM-only FM translator window were opened, many

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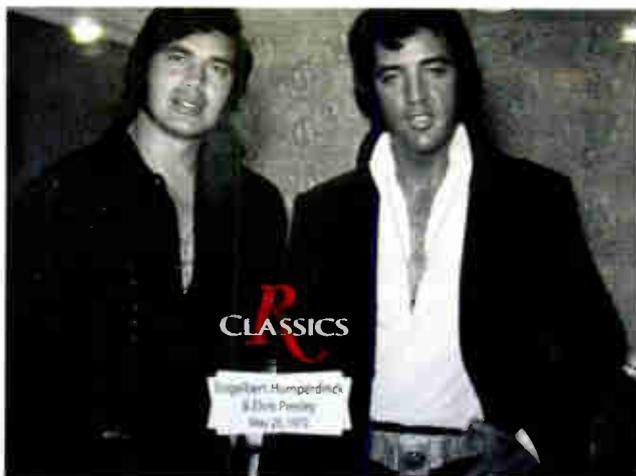
LVCC

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the architects. Roy France and Son, were based in Miami, as were the original developers.

When it opened, the Riviera boasted the Hickory Room Restaurant, Cafe Noir, Le Bistro and the Clover Room showroom, as well as an Olympic-sized swimming pool. The casino contained 18 table games and 116 slot machines, small by today's standards but considered lavish at the time.

Over the years, the Riviera continued to expand, adding towers and more gaming space. The last renovation in 1990 enlarged the casino to 70,000 square feet for a total of nearly 125,000 square feet, bringing the building right to the sidewalk, and making it one of the largest casinos in the world. Unfortunately, the renovation ran over budget, leading to the first of several bankruptcy filings, according to local news accounts. In 2010, Riviera Holdings filed for bankruptcy in order to reorganize debt.



The Riviera celebrated the many stars who appeared on its stages over the years.



TO THE BONEYARD

Shortly after its opening, the Riviera became a go-to destination for music and comedy acts. Liberace was the featured performer for the casino's grand opening, and appeared there for many years afterward.

When "An Evening at La Cage" closed at the Riviera in 2009, it held the unofficial record for the longest continuous performance run at a single casino in Las Vegas, over 20 years. The show featured numerous female impersonators, including Frank Marino with his impersonation of Joan Rivers.

One of the focal points on the site was a large plaque titled "The History of Entertainment Through the Years at the Riviera." The plaque listed artists

who performed at the historic hotel and casino; it was a virtual Who's Who of music and comedy acts from the 1950s through the '90s. Organized alphabetically, it began with the 1960s musical comedy "A Funny Thing Happened on the Way to the Forum," and ended with '80s actress and singer Pia Zadora. Beside the names were the dates when the acts first performed at the Riv. The plaque had long been a photo op for tourists and hotel guests. The list is long, but the comedy acts include Dean Martin, Woody Allen, Bill Cosby, Bob Newhart and Jerry Seinfeld. Musicians ranged from The Beach Boys, Elvis, Dolly Parton, The Village People and, of course, Frank Sinatra.

While the Riviera will soon be gone, a few pieces of it are being preserved for posterity. "We've had some conversations with the Riviera management about preserving the signs, and we've visited the site. Right now though, it isn't clear which signs or how many will be saved," said Neon Museum Public Relations and Marketing Director Dawn Merritt.

The Riviera's signs will most likely be added to the museum's collection in the Neon Boneyard at 770 Las Vegas Boulevard North.

Once the Riviera is demolished, only two of the original casinos along the Vegas Strip will remain: the Flamingo and Circus Circus.

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WHCP

(continued from page 1)

30 donations from artists, pilots, property owners and businesses donating goods and services for the auction. We primarily advertised on Facebook and quickly sold out the ballroom at the Cambridge Yacht Club.

It was a brutal winter, but the weather broke coinciding with our Saturday, March 21, fundraiser. A great time was had by all; we exceeded our ambitious fundraising goal by 30 percent and were quickly zeroing in on final purchases.

FINDING STUDIOS

Initially, we found a promising former doctor's office a half-block from downtown, including an upstairs apartment. This looked too good to be true as the mortgage payment could be fully offset by the upstairs rental income. It seemed perfect ... until we discovered the pipes in the radiator heating system had not been winterized. One radiator had exploded and the rest of the system, including the \$10,000 boiler, was in dubious condition. We simply couldn't take on that decided risk.

So we looked downtown for vacant retail space — and settled on a small retail shop of about 800 square feet with one large front room facing the most active block in downtown; this would become Studio A. The other rooms would serve as Studio B; a shared office space accommodating four workstations; and an oversized brick furnace room that room became the "Engineering Room." We added a small rack to the shared office area where the venerable QEI Mod Monitor and EAS equipment lives and used 12-pair Belden tying the studios, office and engineering room together using donated Krone blocks.

THE CASE OF THE MISSING TOWER

We knew that with only 100 watts ERP, indoor penetration — especially for the "MidShore Radio Reading Service" on 67 kHz SCA — would require a "close in" look angle to the community. We settled in at 120 feet HAAT on the City Municipal Tower, minimizing the ERP derating. It even had a big generator just outside the tower fence. We struck a deal with the city and assumed the FCC 318 modification would be quick and easy.

But ... there was no apparent Antenna Structure Registration for the tower. We discovered that the ASR had been filed erroneously for a kilometer away. To correct that we had to achieve clearance through the FAA, as the tower fails the TOWAIR calculation by 10 feet. To compound the error, we couldn't amend the original ASR because the FCC had never been notified it had actually been constructed when built in 1978.



The crew from Eastcor hangs the Shively antenna. Walt Myers leans out, John Yanik is at right.

Once again — just as with the low-power desk at the FCC and the FAA Eastern Region tower experts — it only took a helpful conversation with the WTB folks in Gettysburg, Pa., who tutored us about how to notify them the tower was actually constructed at the amended coordinates. Voilà, we could now file the Form 318 minor change modification specifying the new tower location, and moving down one channel to 101.5 FM to avoid interference from a planned move by the nearby station on 101.7. This took only three months to sort out!

Ultimately that application, like all of our others, was processed in rapid order; we needed only the antenna and a tower rigger to get the job done.

WHEN BAD NEWS TURNS GOOD

By April our remaining major purchases were only four: the transmitting antenna, tower rigger, transmission line and the CAP-compliant EAS receiver.

We had received a number of emails and private messages from well wishers offering support, and one in particular arrived from the head of a local engineering services company offering "computers and other technology assistance." I suggested a coffee and thanked them for the offer of some gently used computers and indicated how this would offset the quote from the recommended tower rigger



WHCP is fired up.

in our area of \$2,000 vs. the \$500 I had naively budgeted. To which the president of Eastcor replied "Oh, you need a tower rigger? You know, we have some that work for our company, we can probably help with that." To which we exclaimed, "How terrific, that only leaves the purchase of the antenna as our last major item." A short pause ensued followed by "Actually, we also have a machine shop and build custom antennas and could probably build whatever you'd need."

Ultimately, they decided the reasonable cost of a Shively Versa2une was suitable as a donation vs. shop build (we wanted a retunable antenna in case we ever need to shift frequencies). Can you say "Angels Among Us"?

The president of Eastcor — with a Ph.D. in physics — and his wife

— with an MSEE — now sit on our board of directors and keep this journeyman broadcast engineer on track with technology decisions and needs. Their contributions have been nothing short of stunning: a massive 10 terabyte server for our TuneTracker automation computer; managed routers; they even donated repair and servicing of the 20 kVA generator that belongs to the city, where we lease tower space.

Like everyone else on the board, they are station supporters who mean it when they talk about "giving back by supporting our community."

"THE STATION BUILT BY A NATION"

The PR&E BMXII-14 consoles donated by Wyoming Public Radio are the heart of our live operations, and WHCP is fortunate to have two, plus spares donated by Bill Traue Engineering in Idaho, including a spare power supply.

These consoles were extremely well maintained and came up in great shape (they started life as the consoles for Wellesley College station WZLY many years ago). In fact, every other item donated to us by the "nation of volunteers" powered right up and needed only calibration and commissioning. WHCP thanks them, one and all.

This good fortune meant more time planning for a quality community program service, working with the programmers of our local Hot Swing Big Band show "Swinging With Jim," "The Flamenco Radio Project" and our "Rainbow Reader" program for elementary schoolers.

In late April, we fired up the Nautel VS300 into the Shively for the first time, and have been conducting equipment tests since then. The coverage in our nearly flat region of Maryland's Eastern Shore has been better than expected, with a couple of stray reports from as far as 25 miles away. Listenable service for most car radios is roughly 10 miles in radius, far better than we expected.

GRAND OPENING JULY 4

WHCP staged a ribbon cutting through the Chamber of Commerce on June 4, and will be inaugurating service on Saturday, July 4, during a big block party that will close down Poplar Street for several hours. We will be giving away 101-and-a-half hot dogs for the kids on hand (the half recipient will get a nice radio). WHCP will also unveil the winners in our Logo Design Contest that day and pull back the covers on the bumper stickers, t-shirts and hats with the chosen logo (categories are Grand Prize, People's Choice Award and Honorable Mentions).

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CLASS A

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significant markets would have spectrum opportunities to pair with AM stations facing urban penetration issues.

As to AM all-digital, Mr. Littlejohn observed that recent experiments had raised concerns about increased interference. Further, given that less than 3 percent of all radios can receive digital signals, and only 10–15 percent of car radios are digitally-equipped, at this point, only experimental AM all-digital efforts should be considered.

My emailed conversation follows:

PM: Jeff, do you think there's a real chance the FCC will act to reduce AM Class A protections significantly?

JL: I think the FCC is going to continue carefully considering methods for potentially revitalizing AM stations. After reviewing all of the facts and the impact on existing listeners, I hope that the FCC will retain their current protections on Class A stations.

PM: The number you cited of approximately 600,000 refers to listening to all Class A AM stations (not just iHeartMedia stations), yes?

JL: There are far more than 600,000 listeners to Class A radio stations. However, there are 600,000 listeners to Class A AM radio stations each week (IHM and others) that would lose interference protections, if the rules were changed to match Class B rules. That is a substantial

NEWS

number of listeners at risk for losing access to a station that they have come to rely upon.

PM: Can you tell us more about how you calculated the potential loss?

JL: We identified areas that would no longer be protected from interference if rules were changed to match Class B rules. Within each of those areas, we then searched the Arbitron NRD Database for listeners who would be impacted.

PM: How many Class A stations does iHeartMedia have?

JL: iHeartMedia owns 17 Class A AM stations in the continental U.S.

PM: Is the historical justification for Class A protections still relevant, given the immense amount of readily available information now at the fingertips of virtually every American?

JL: Yes. Class A AM radio stations provide unprecedented news, talk, sports and information, free, to millions of people every year. They are typically the emergency information leaders in an area, including being the backbone of the Primary Entry Point network. The physics of AM radio have not changed. We should not adjust the allocations rules as though these physics are no longer relevant.

PM: You mentioned efforts to improve a signal in Boston. Which station was it, and why do you think those efforts didn't gain more audience?

JL: The station discussed was AM 1200. It is now operated by Bloomberg pursuant to an LMA.

AM listeners tend to be very loyal to their stations, which is great — but it can also make it more difficult to gain audience on a new channel.

PM: What else should we know about this issue?

JL: As we focus on improving AM, it is of paramount importance that our actions do not increase interference.

Also see a related commentary on this topic in the opinion section of this issue. Comment on this or any story to radioworld@nbmedia.com.

NEWSROUNDUP

FIELD OFFICES: The Society of Broadcast Engineers expressed pleasure at the compromise that would result in more FCC field offices remaining open. The agreement was negotiated by the House Subcommittee on Communications and Technology and the FCC. SBE President Joe Snelson, CPBE, 8-VSB, hoped that the Enforcement Bureau "will now turn its attention toward effectively dealing with interference and unlicensed operation in the broadcast service."

VERSTANDIG: VerStandig Broadcasting is selling a station at the center of a lawsuit against SoundExchange, but this doesn't necessarily signal the end of its royalty case, it said. VerStandig's suit in 2014 cited a 150-mile royalty exemption set down by the U.S. Copyright Office for streaming on-air signals. It wanted to use geo-fencing to cap online retransmission on WTGD(FM) in Harrisonburg, Va., to within 150 miles of the transmitter. The suit was dismissed in February. VerStandig is selling WTGD and four other stations to Saga Communications. "You should expect the geo-fencing issue to arise again, albeit in a different arena with a different judge," President John VerStandig said in an email.

IHEART DATA: Big data is at the heart of a business agreement between iHeartMedia and Unified. The two also announced that iHeart has made an investment in Unified. The companies said their partnership will provide insights to advertisers on iHeart's platforms. Unified is a marketing and analytics technology company whose Social Operating Platform is a data and analytics offering. IHeart believes the agreement will allow it to "aggregate and unlock the massive data sets" generated by its 858 radio stations and its digital, mobile, events, social and other services.

HALLENBECK: Colleagues expressed sorrow that Robert Hallenbeck had died at 88. He was a Gates/Harris salesman, an Army veteran of World War II and a ham operator. Hal Kneller told RW, "Bob knew his territory and customers well, starting in 1954 until his retirement in the mid-1990s, covering most of New York state (above the New York City metro area) and most of New England."

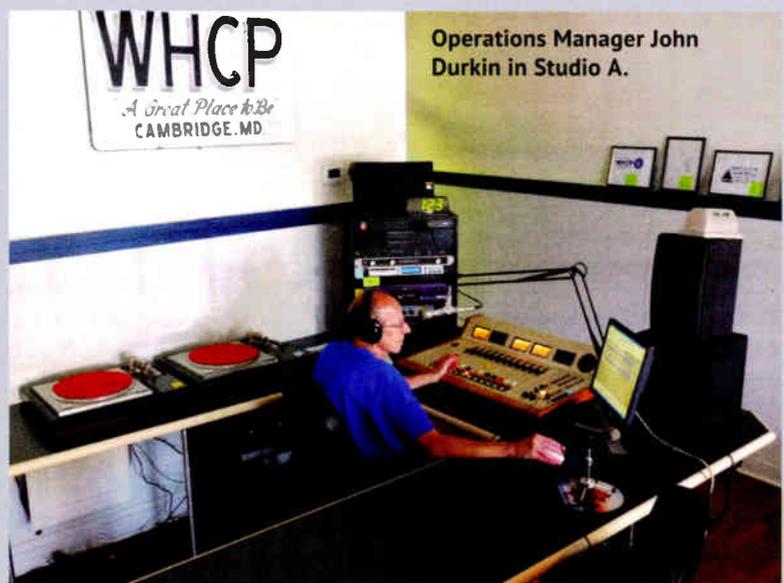
EAS DATABASE: The FCC is hopeful that a planned new system to report the outcome of nationwide EAS tests will involve a minimum of filing hassle, and also help it create an EAS "Mapbook" to illustrate how alerts are propagated. The FCC used a temporary electronic filing system to gather data in the first nationwide test; it said response was positive. An advisory council subsequently recommended that the commission develop a federal government database to contain EAS monitoring assignments. So when the commission in June issued a report and order to strengthen the Emergency Alert System, one required that participants file future test data via a planned Electronic Test Report System that would help accomplish both objectives. It will be implemented by the commission's Public Safety & Homeland Security Bureau.

WHCP

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Using Mail Chimp and Facebook, we have been alerting our volunteers and members about work days and milestones; using Doodle we are running the "People's Choice" award campaign.

Local musicians, games and fun await. All that's left is to get the final programming schedule lined up, along with the baseline charter underwriter packages, which will put us on a solid cash flow going forward. You can't provide a good service without a sustainable business plan; that's always the "other Job One." Thanks to an active board, dozens of volunteers, donations, good luck and modern technology you can check us out at 101.5 FM on the way to the beach or via online streaming come



July 4. WHCP is ready for liftoff!

Mike Starling is former executive director of NPR Labs.

SATELLITE SIGNAL LEVEL METER AND SAT IDENTIFIER

Our TURBO-S2 meter makes satellite antenna aiming fast and easy. Now you can perfectly peak all your dishes, to achieve maximum performance and reliable reception of "finicky" new digital channels. The unit powers the LNB for convenient work at the dish site. The TURBO-S2 shows the name of each satellite, plus displays key signal quality specs for all



MPEG2/MPEG4/DVBS/DVBS2/QPSK/8PSK channels. Adjust to perfection when viewing readouts for carrier-to-noise (C/N), signal quality (EbNo), and Bit Error Rate (BER). This USA-built unit comes with English speaking tech support, and our customers widely praise the unit for its features and reliability.

SURGE SUPPRESSOR FOR LIGHTING NEAR SATELLITE ANTENNA

Place "LNB-Zap-Stop" in the coaxial cable line that runs from the dish, to the satellite receivers. Think of it as an "insurance policy" to protect expensive indoor equipment from lightning hits. Transient



Suppressing Diode technology works to block high voltage lightning surges. The lightning protection units can take multiple hits, with no need for resetting or replacing.

CHOOSE THE BEST LNB SIGNAL CABLE

On long satellite signal cable runs, avoid using "noisy" amplifiers, so that you maintain the maximum C/N performance that your dish can deliver. Choose DAWNflex low-loss coaxial cable for dish-to receiver distances from 300 to 500 feet. This flexible cable passes satellite L band signals with very little loss. It is flooded for direct burial, and the quad shielded design



offers the best protection from signal ingress. Choose the SATfiber link for dish-to-receiver distances from 500 feet to 50 miles. Eliminate long distance signal attenuation, and lightning surge problems, when you install SingleMode fiber running out to the dish. Place our SATfiber Transmitter and Receiver units on both ends of the fiber, and pass 45 to 2800 Mhz with perfect quality. Call DAWNco to hear about our easy-install fiber, and for help choosing the best SATfiber system for your needs.

HD GRADE LNB AMPLIFIERS ARE NEEDED FOR NEW SAT CHANNELS

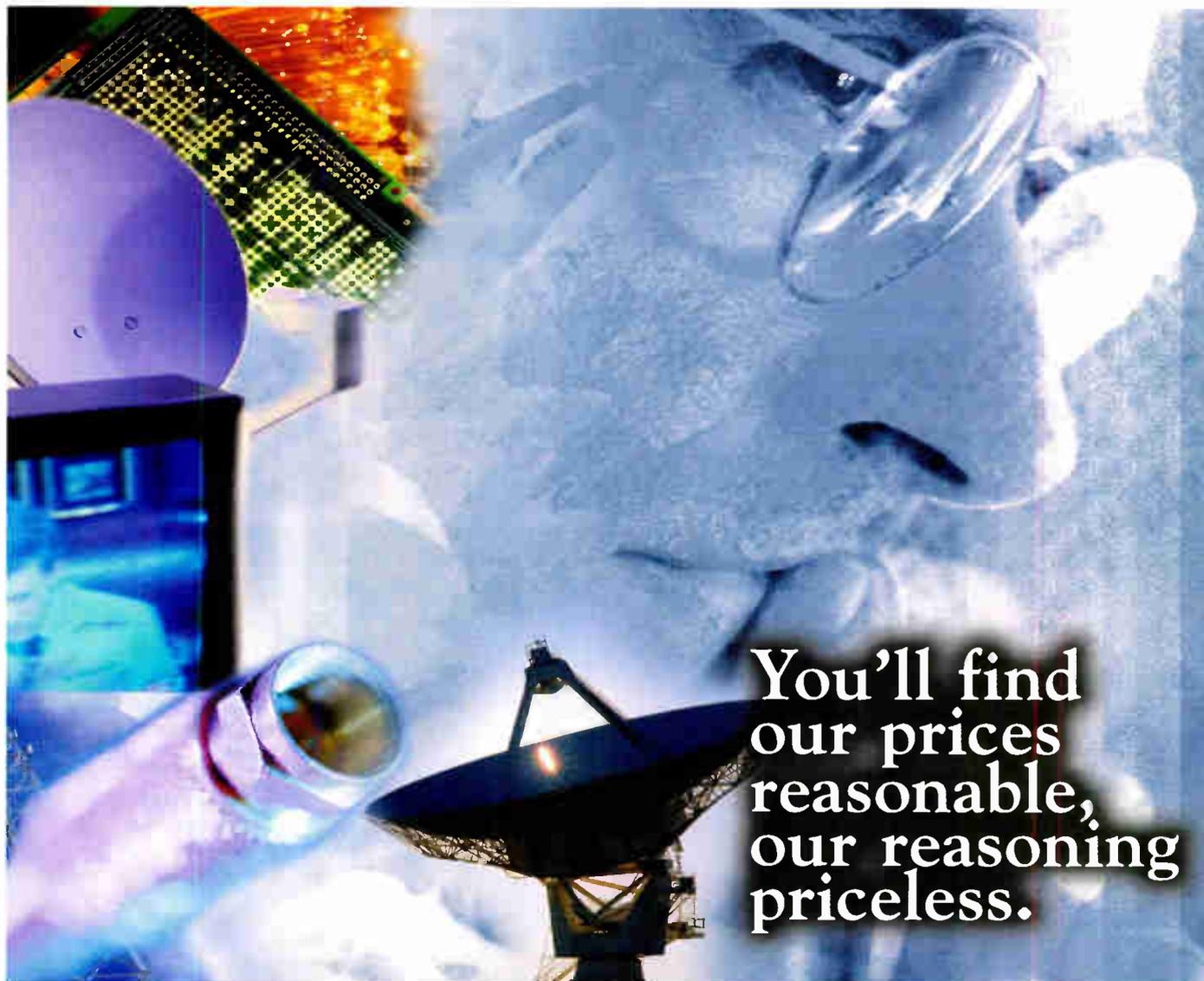
Several networks have made the switch to DAWNco's new "L series" of C and Ku band LNB amplifiers, to accommodate the "finicky" nature of new HD satellite receivers. This new generation of LNB has improved specs that can make a real difference in the reception of high-definition and 8PSK satellite channels. These new LNBs feature best-in-industry specs for "1dB gain compression point" and "phase noise." Internal circuitry has been completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent video picture tiling and signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 2 KHz rating. Make sure to upgrade to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers.



HIGH GAIN 4.2 METER SATELLITE ANTENNA

In stationary or motorized configuration

Bigger is better, when you consider satellite antennas for optimum MPEG4 satellite channel reception. The 4.2m is the largest and highest gain dish that still mounts on a single pipe. The unique aluminum reflector can be delivered in 1-piece on a special factory truck, for fast installation, or in an 8-petal configuration for easy-carry to a rooftop location. Call DAWNco for help choosing the most cost effective satellite antenna to improve your satellite reception.



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Call a **DAWNco** expert with your questions by simply dialing **800.866.6969**. Use the same number for our free catalog, or find it all on the web at www.DAWNco.com.



DAWNco

This Is a Strange Breed to Regulate

Know the LPFM rules before you go on the air

REGULATION

BY PETER GUTMANN

This is the second in a series of articles about low-power FM station procedures, requirements and prospects. Last time we outlined some considerations for building out an LPFM permit.

Let's assume that construction is nearing completion, and that it's time to get ready for operation. For that you'll want to think ahead to the FCC rules that apply to the LPFM service.

LPFM is a strange breed in regulatory terms. On the one hand, it is con-

of six days. The only exceptions are for stations subject to time-sharing or educational institutions, which are exempt during weekends and days designated as vacation on official school calendars.

UNATTENDED OPERATION

You don't necessarily need on-site personnel during all hours of operation, but you are responsible for proper operation at all times, including compliance with the Emergency Alert System. If personnel will not be able to monitor and control the transmission system in person, then you need an automated system that will notify responsible personnel of an anomaly and automatically take the

the basis of race, color, national origin or gender is absolutely barred — and only religious stations may establish religious belief or affiliation as a job qualification.

NONCOMMERCIAL STATUS

As with conventional educational FM stations, LPFMs cannot be operated on a for-profit basis. Does this mean no income? No — while you can't sell advertising as such, you can accept financial contributions from commercial businesses and acknowledge them over the air. But there are two fundamental principles to observe.

First, the amount of any such contribution cannot exceed the station's estimated operating cost for the time segment involved. For example, if a half-hour is "sponsored" by a car dealer, then the amount of its payment can only cover the station's cost of producing or obtaining the programming heard in that half-hour, together with the prorated portion of its on-going cost of operation (rent, utilities, paid staff, etc.) for that segment of the day.

Second, a distinction must be observed between identification (allowed) and promotion (disallowed). That sounds simple enough but it's not always easy to apply. Basically, you can describe a merchant's location, services, history, etc., but you can't



As a general matter, it's essential to become familiar with the applicable FCC rules found in Part 73, which can be downloaded from the FCC website.

ceived as a community-based, noncommercial, user-friendly service, presumably free from all but the most essential regulations. Yet it is subject to many of the same rules as full-service stations.

Let's outline some of those that have particular relevance to planning the launch of your service.

OPERATING SCHEDULE

LPFM stations are required to operate at least 36 hours per week, consisting of at least five hours per day on each

station off the air within three hours if a malfunction may cause interference.

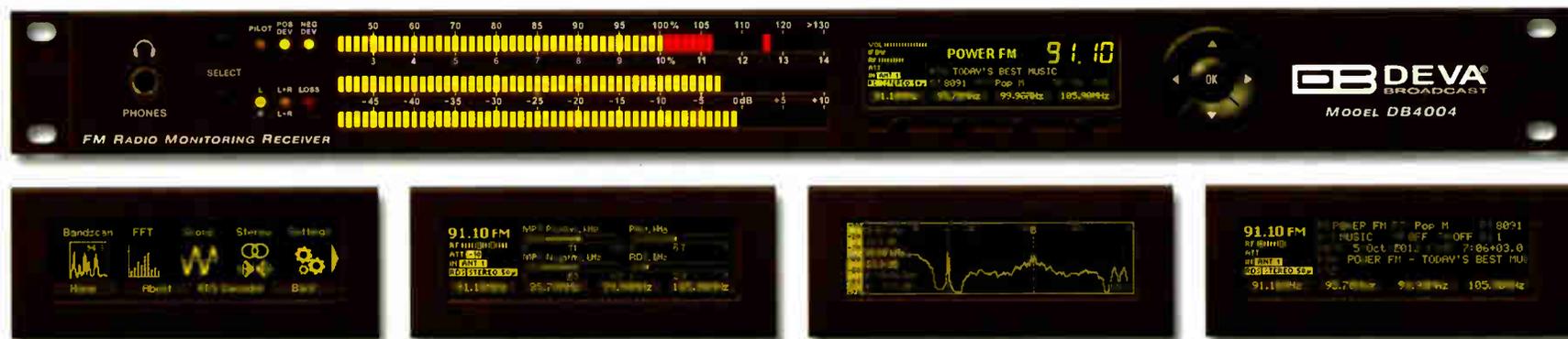
EEO

Speaking of staff, what equal employment opportunity regulations apply to your initial hires? Probably not many, as most LPFM stations will have fewer than five full-time employees (working at least 30 hours per week) and thus will be exempt from the formal EEO recruitment and outreach requirements.

Of course, actual discrimination on



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make comparative claims or urge listeners to act.

So "ABC Jewelers has been serving customers at 123 Main Street since 1950 with a wide selection of vintage watches" would be OK, while variants of "Don't miss our sale" or "Come visit our showroom" or "We always offer the best prices" would not be allowed.

EDUCATIONAL SERVICE

LPFM stations are required to "be used for the advancement of an educational program." What does that mean?

The FCC's view as to what constitutes an "educational program" has been extremely permissive and goes well beyond instruction — basically, any programming that informs listeners. In addition, the educational aspect need not be full-time but can be nestled within a music format. However, recall that the LPFM permit application for all but tribal and governmental entities required an exhibit describing the applicant's educational program and how its proposed station would be used to advance it. So any commitments made in such an exhibit should be fulfilled.

PROGRAM SERVICES

LPFM programming can come from any source except a full-power radio station, so long as you have authority to broadcast it. That authority includes not only the producer, distributor or owner of the program but also having the necessary music licenses from SoundExchange, ASCAP, BMI and SESAC.

However, be sure that programming excludes commercials and, if rebroadcast from another non-full-power station, you need that station's written consent. Also, be sure to broadcast sufficient amounts of locally produced programming to comply with any commitments you made in the construction permit application in order to qualify for a local program origination comparative point.

Well, we're nearly out of space already and we've barely scratched the surface. As a general matter, it's essential to become familiar with the applicable FCC rules found in Part 73, which can be downloaded from the FCC website at <http://transition.fcc.gov/mb/audiolincludes/63-amfmrule.htm>.

And, at the risk of promoting lawyers, to ensure legal operation, be sure to consult with your legal counsel concerning any particular questions or concerns.

Next time we'll look at some operational considerations.

Peter Gutmann is attorney with Womble Carlyle Sandridge & Rice LLP. He can be reached at pgutmann@wcsr.com.

WORKBENCH

(continued from page 12)

"Is audio quality a thing of the past?" That question was asked by broadcast audio engineer Jay Yearly, owner of Transient Audio Laboratories.

Jim Anderson, a multiple-Grammy winner and jazz recording engineer, says he'll play samples of work he recorded in the studio to compare original mixes against compressed versions of the same songs. To his utter horror, many students prefer the lower bit-rate compressed version.

At a recent New Mexico SBE meeting, audio consultant Paul Jacobs related similar stories. Jacobs' consultancy specializes in the research of the digital and mobile listen-

ing experience. He has become a leading spokesperson for the radio industry, with regard to the changing in-car audio experience (www.jacobsmedia.com).

So: How do we handle the fact that many listeners seem to prefer bit-rate-limited Internet audio to full-fidelity broadcast?

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 45 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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TAB, Austin, Booth 44

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www.lawo.com

DEVA DEBUTS FM, IP AUDIO MONITOR

Test and measurement equipment specialist DEVA Broadcast has a new FM radio and IP audio monitor.



The DB3010 can simultaneously monitor the FM and the online stream of the radio station to ensure proper performance. It comes with a built-in RDS decoder, and can measure and store RF levels, MPX deviation and left and right audio level values.

Rack-mountable, the DB3010 is equipped with two speakers to reproduce mid- and high-range audio frequencies, and one high-efficiency bass reflex speaker for high-quality sound reproduction. The DB3010 supports AAC, AAC+, MP3, RTP and PCM IP audio codecs and features a built-in DSP-based tuner.

It has a high-resolution OLED graphical display and three LED bargraph indicators that allow reading the main signal parameters at a glance.

The rear-panel hosts GPIOs for alarm forwarding and additional equipment triggering; email and SNMP capability provide online notifications in case of stream and Internet signal loss or change in the RF, left and right audio levels.

A similar unit, the DB3011, also monitors HD Radio.

Info: www.devabroadcast.com

WHEATSTONE: CLOSER TO THE EDGE



Broadcast equipment manufacturer Wheatstone rolled out the Network Edge, a WheatNet-IP interface for use with unlicensed 5–24 GHz wireless radios such as those used in STLs.

Likely located at a studio, the Network Edge interfaces directly to an IP wireless radio or commercial leased line for point-to-point connectivity between locations. According to Wheatstone, it can be used with any of the major IP radio brands on the market.

The Network Edge is AES67-compatible, and includes local I/O (two AES and two stereo analog) and 12 programmable logic ports.

Andy Calvanese, Wheatstone vice president in charge of technology, said, "We designed this unit as an affordable way for broadcasters to take advantage of inexpensive leased lines or wireless connectivity options that generally have more latency and not enough bandwidth to interface directly into most studio networks ... The Edge gives them a more solid network connection overall."

Info: wheatstone-radio.com

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NEW BROADCAST MIC FROM A-T

Audio-Technica has released a dedicated broadcast radio microphone, the BP40.

The top-address BP40 is a large-diaphragm dynamic microphone with a tight hypercardioid pattern. The company says that the capsule's construction, what it calls "floating edge construction," aids in performance and RF rejection. A humbucking coil adds to the RF rejection.

It also has a 100 Hz high-pass filter, internal pop filter and all metal construction. It ships with a shockmount. An optional

Info: www.audio-technica.com

NAUTEL WELCOMES NEW NX FAMILY MEMBERS

Transmitter maker Nautel has added to its NX line of AM transmitters.

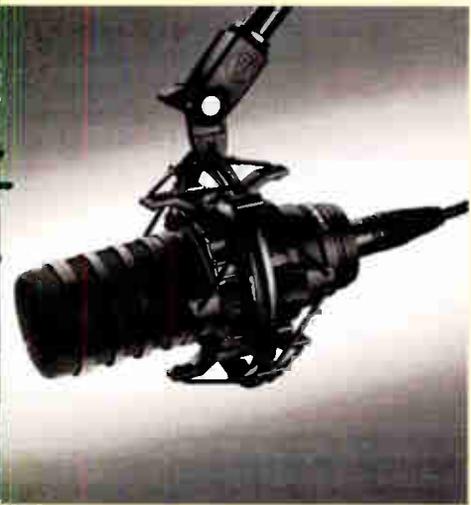
The NX5 and NX10 are 5 kW and 10 kW models, respectively, available in analog, HD Radio and DRM versions.

In addition, they offer Nautel's Advanced User Interface for local or remote operation, and as such they carry a number of onboard tools such as a spectrum analyzer, network analyzer and logging options, along with Nautel Phone Home service. Other features include 1.8 MHz direct digital modulation and USB payout for when a signal feed is lost.

Nautel says that the NX5 and NX10 are energy efficient, 86 percent AC to RF, and both models are MDCL-compatible for further energy savings.

Info: www.nautel.com





shockmount is also available.



COMREX UPGRADES STACS AND BRICS

Comrex has a new iteration of its STAC VIP VoIP-based call management system.

Version 2.0 contains several new features including split studio, which allows users looking to utilize their call management system in multiple places to run two inde-



pendent studios at once from the same mainframe. Configuration options are customizable to suit varying cases. With a modular setup, users will be able to modify their existing STAC VIP systems to make use of split studio (as long as they have a minimum of two separate control surfaces).

Comrex has also released a new version of its BRIC-Link utility codec, the BRIC-Link II (shown). It features hardware updates, including upgraded internal hardware, added XLR connectors (for analog and AES3 audio), Gigabit Ethernet and a front-panel headphone jack. BRIC-Link II includes a new Opus algorithm for WebRTC and smartphone app-compatibility, and a Web-based user interface for remote device management and software updates in minutes.

Info: www.comrex.com



LAWO TARGETS AOIP

Lawo has announced that all of its mc²56 consoles now integrate Ravenna/AES67 technology.

The new mc²56xt broadcast audio mixing console doubles the number of faders on the same surface with respect to the mc²56 model. The XT model can be configured with 48 to 144 faders arranged in a high-density dual fader layout, with further expansion achievable using 16 or 32 fader stand-alone extenders.

Lawo also introduced the A_mic8, the first member of the new A_line family of broadcast-grade audio-to-IP interfaces. The A_mic8 combines eight Lawo-grade mic/line inputs, four line outputs, eight GPIOs and two Ravenna/AES67 Ethernet ports, in a compact 19-inch, one-RU device.

Based on Ravenna technology, all A_line devices are compatible with AES67 and include the company's VisCon_Navigator, aimed at helping the set-up of audio and video streams in IP networks without the need for in-depth IT knowledge.

Info: www.lawo.com



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Digilink~HD (DHD) is designed from the ground up for today's fast paced, distributed content, single station or multi-site Group. It empowers local and remote talent to collaborate to deliver exciting content, build your audience share, and increase sales. DHD has the tools to enable you to work faster, work smarter, and do more. For On Air, DHD supports live on air, live assist, hard disk automation, satellite automation, and Games automation. DHD supports multiple sound cards for interface to a console and live crossfading. Audio files can be shared across the station or across the planet. To create live sounding automation and facilitate flexible use of talent, DHD features a powerful segue editor, voice track recorder-editor, and remote voice tracking over a VPN (virtual private network). The voice track recorder-editor supports complete control plus the ability to assign a music bed under the voice track with ducking. DHD supports any kind of programming and any size market or multi-site group.

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Cruising Main Street

Beasley's new WheatNet-IP remote studio near historic Las Vegas' Fremont Street is a modern throwback to the days when listeners and artists could walk into any radio station on Main Street with a request or a record album.

"It's sort of like being back in high school again when everyone cruised (downtown) Fremont street with their radios turned up," says Tom Humm, who was raised in the area and is now the Vice President and Market Manager for Beasley Media Group Las Vegas.

The new Beasley Media/Cox Business Broadcasting Studio built for Beasley Media Group's five Las Vegas stations sits adjacent to a busy amphitheater in Downtown Container Park, the area's newest shopping and entertainment center constructed of cargo containers stacked on top of each other. With the help of a fiber optic communications link sponsored by Cox Business and our WheatNet-IP audio networking, the group can seamlessly link its new remote studio to its main studio on Durango Drive some 15 miles away.

For the entire story... INN24.wheatstone.com



Above: The two ELNIE-3s and the W41 mic power the virtual console pictured in the top photo located with Screen Audio. Below: Lyle Smith, Beasley Las Vegas Regional Engineering Manager and Mike Cooper, VP of Engineering and CEO of Beasley Broadcast Group, standing outside the studio.



96 kHz



Super Duper Mic Processing

In the M1, M2 and M4-IP mic processors, the A/D converters and all the processing run at 96kHz (or 88.2kHz in a 44.1kHz context). This is done for three reasons:

1. Reduced latency. This is the time delay through the processor, end-to-end. An unfortunate aspect of digital systems is that such delays are endemic and cumulative, so any opportunity to reduce them must be seized. It is particularly crucial where presenters are involved: any significant delay can be seriously disturbing to them, and even short delays can produce comb-filter coloration when the talent's own voice, heard via bone-conduction, mixes with the headphone audio. This colors their perception of what they sound like. Mess with an artist's self-perception at your peril. In short, running at a super-rate halves the conversion times - the major source of latency in a processor - shaving a big chunk off the delay.

For the other two reasons... INN24.wheatstone.com



EDGE Network Interface to Wireless IP Links

You know those inexpensive wifi IP radios everyone's talking about for short studio-transmitter hops or for getting the signal back to the studio from the ballpark?

We have something for that, and it even won a Best of Show award from Radio World and Radio magazine.

We call it the Network EDGE, a cost-effective solution for interfacing between high-quality, low-latency studio networks such as WheatNet-IP and low-bandwidth STL connectivity options such as IP wireless radios.

Just click here! INN24.wheatstone.com



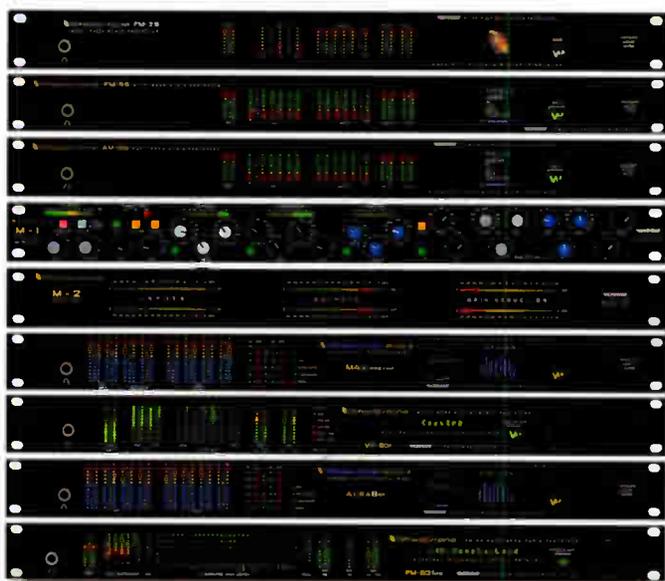


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Wheatstone gives you the power to sculpt perfect clarity, loudness, and sweetness with absolute precision – the sound you've always heard in your head, but couldn't quite get with traditional processors.

- SST (Sweet Spot Technology) can invisibly manage spectral balance and program density to create a truly natural and superior listening experience.
- Wheatstone's 31-band Limiter lets you dig into any audio and give it the volume your audience demands without introducing perceived distortion. It virtually eliminates listener fatigue.
- Bass Tools go right for the gut. They process on a sidechain and let you dial in exactly what you choose to put back into the mix.
- Multipath Limiter can help remedy multipath blend in car stereos by reducing excessive L-R (difference) transmission.
- Baseband 192 keeps your signal chain pristinely digital – from input straight out to your exciter or transmitter.

Of course, it all comes together seamlessly to deliver the finest audio you can imagine.

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NEW FIRMWARE FOR TIELINE BRIDGE-ITS

Tieline's Bridge-IT family of codecs has a new firmware version available. Vice President of Sales for the APAC and EMEA regions Charlie Gawley says that version 2.14.xx is a "substantial upgrade" to the Bridge-IT family of IP audio codecs. It is a free download for current owners.



He explained top new features: "The Opus algorithm has been added as standard to both Bridge-IT and Bridge-IT XTRA (shown), and the Web browser graphical user interface has been significantly enhanced to improve connectivity and usability."

In addition, AAC-LD and AAC-ELD in the AAC license pack have been added for Bridge-IT and AAC-LD and AAC-ELD are now standard in Bridge-IT XTRA. Furthermore, there is now data support for IP connections with Tieline Commander and i-Mix G3 codecs, support for sessionless IP connections and three levels of user "lock."

Info: www.tieline.com

GATESAIR MAKES A SPLASH WITH NEW TRANSMITTER

GatesAir's newest Flexiva takes a different approach to cooling.

The Flexiva FLX range is a liquid-cooled FM/HD Radio/DRM transmitter family that the company says is energy efficient. Power ranges between 5 kW and 80 kW.

The closed-loop liquid-cooling configuration utilizes redundant low-noise pumps for quiet and reliable cooling, the company says. The new transmitter uses GatesAir's PowerSmart 3D broadband power amplification technology to increase performance.

GatesAir Chief Product Officer Rich Redmond, "The introduction of our Flexiva FLX liquid-cooled FM transmitters exemplifies our continued investment in solving problems for our customers."

Info: www.gatesair.com



HARMAN DELIVERS DBX 676 PREAMP

Harman has announced that it is shipping the dbx 676 tube microphone preamp channel strip. A vacuum tube-based microphone preamplifier, the 676 offers flexible sound-tailoring options to deliver audio quality in recording and live sound applications, the company says.



The dbx 676 uses a high-gain, Class A tube preamp section based around a 12AU7 vacuum tube that can be adjusted to either sound clean or dirty and full of harmonic character. The 676 uses the compressor/limiter design from the dbx162SL along with a three-band parametric EQ. It adds a post-tube attenuation control.

The preamp section also has 48 V phantom power, 20 dB pad, phase reverse and an 80 Hz low-cut filter.

The dbx 676 offers 1/4-inch and XLR inputs and outputs, a front-panel instrument input, a side chain insert and a VU meter. An optional digital output card is available.

Info: dbxpro.com



HENRY DELIVERS THE DIGITAL

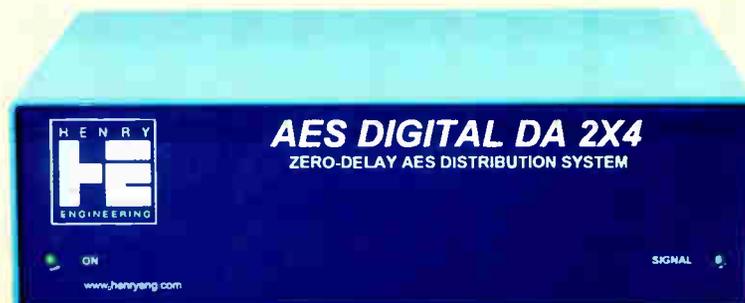
Henry Engineering, purveyor of problem-solving blue boxes, has a new interconnect problem-solver, the AES Digital 2X4.

This is a two-input and four AES output digital distribution box. It can handle AES or S/PDIF digital audio input. S/PDIF signals are converted to AES for the output.

The company says that the conversion process has zero delay and that the split copies will be "100 percent bit-accurate and transparent to the source."

The 1/3-RU box can be rack-mounted with an optional Henry Engineering Rack Shelf.

Info: www.henryeng.com



Who says a console can't be smart *and* sexy?



What matters most: beauty, or brains? Some networked consoles need a Masters degree to operate; others look like refugees from 1985. What to do?

Don't settle. Fusion, from Axia Audio (the guys who invented AoIP), delivers sophistication and style in one sexy package. Intelligent features like automatic mix-minus for phones and codecs, built-in talent talkback, source EQ and voice dynamics; 99 Show Profile snapshots, plus Custom Source Profiles with detailed control over the behavior of every input, deliver the fastest, most error-free talent workflow ever.

Good looks? Fusion's stunningly elegant design sets off any studio. Fusion is engineered with only top-drawer components. Like super-sharp OLED channel displays. Textured, machined metal work surfaces with double-anodized markings that can't rub off – ever. Optical encoders, aerospace-quality switches and super premium faders rated for millions of flawless operations. And only Axia backs you with the industry's only 5-year warranty, 24/7 Support, and experience gained from over 6,500 AoIP consoles on the air.

Brains or beauty? Choose both! Fusion – the perfect union of design and technology.



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World Radio History



BURK ARC IS UNDER CONTROL

Burk Technology says its ARC remote control products platform has been enhanced.

The flagship ARC Plus Touch has retooled firmware yielding increased overall system performance and a powerful platform for ongoing development, the company says. New management capabilities such as selectable front-panel lockout with security code and network upload of speech files add to an extensive list of monitoring and control features, and an array of touchscreen, Web, smartphone and telephone control interfaces. Existing as well as new ARC Plus Touch users will benefit from these enhancements, with firmware downloadable from the Burk website.

Users of the pre-Touch ARC Plus system can also benefit from firmware enhancements with the new "V3 for Free" upgrade, including updated Web and smartphone interfaces, advanced automatic actions and greater flexibility in email and SNMP alarm reporting.

New PlusConnect I/O units provide direct transmitter interfaces for the ARC Plus family of remote controls. The Nautel GV is added to the list of supported Nautel radio transmitters, including the V, NV, XR, VS and NVLT series. A new PlusConnect interface for the GatesAir Sigma UHF transmitter complements the list of supported GatesAir Z, ZXA, ZXB, 3DX, HPX and Flexiva radio transmitters.

Info: www.burk.com

AEQ'S PHOENIX RISES

Broadcast equipment maker AEQ is taking a new look at the portable audio codec. Its Phoenix Alio, the newest member of the Phoenix codec family, has an unusual tablet-style shape, though it retains the standard codec tools and features.

The Alio is SIP-N/ACIP-compliant. When connected to other AEQ codecs it can utilize "Smart RTP" tools to optimize the connection.

It is also compatible with ControlPhoenix codec remote control software protocol, providing tools that help control the unit and set up communications. Capable of being used in different scenarios, Alio was designed with sports commentary/reporting in mind.

Info: www.aeqbroadcast.com



TIME IN FROM ESE

The ES-150U (shown) is a master clock switcher that monitors ESE and SMPTE/EBU timecodes. Master clock switchers are used with a primary master clock ("A") and a secondary master clock ("B"); they provide a convenient way of switching to the secondary master clock if a problem develops with the primary master clock.

The ES-971 is a timecode display featuring bright 7-inch, four-digit LED displays, red, green and blue (shown) available. The unit is housed in a black-textured aluminum wall-mount enclosure. The ES-971 accepts, via a rear-mounted terminal block, either ESE Time Code or SMPTE/EBU timecode (time of day only) or RS-232C ASCII timecode. The ES-971 automatically determines which code is being received. If the time zone option is ordered, a rear-accessible DIP switch is installed for this function. A six-digit model, ES-976, is also available.

Info: www.ease-web.com



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TO VIEW THE ARCHIVE, VISIT: <http://radioworld.com/webinars/13>

TRANSRADIO ENHANCES DMOD3 EXCITER

Transradio has released an enhanced version of its DMOD3 DRM exciter.

The DMOD3-CS is a DRM exciter with an integrated DRM audio/multimedia encoder and multiplex generator based on Fraunhofer's DRM ContentServer R5 technology.



It is scalable, ranging from a cost-effective starter solution up to a fully featured professional DRM setup with automation, the company says.

Features include encoding of the standardized maximum number of DRM services in parallel, with access to multiplex configuration and signaling options provided by the DRM standard; support of latest HE-AAC audio and speech encoding; configuration options for standardized DRM data services such as text messages, Journaline, Slideshow, electronic program guide and TPEG/TMC traffic information, along with flexible interfaces on DRM protocol layers for broadcaster-specific applications; and maximized operation automation through a set of import interfaces for file-based and real-time contribution of audio and multimedia content (e.g. Livewire audio over IP, http(s)/ftp(s) upload and mirroring, UECP, RSS and real-time APIs documented with source code).

In addition, there are dynamic reconfiguration options according to the DRM standard based on weekly calendars, a calendar pre-planning tool and interfaces for external reconfiguration triggers. Plus there is maximum operational safety by support of the Redundancy Group feature shared with the standalone Transradio DRM ContentServers for centralized configuration and data management of frame-synchronous MDI output signals (even through dynamic reconfigurations).

Info: www.transradio.de

BW BROADCAST SWITCHES ON PLAN B

BW Broadcast wants broadcasters to be ready when something goes wrong with transmission.

It describes the Plan B Encore silence detector and back-up audio player as cost-effective, easy to install and use. It is capable of switching to a number of alternative audio sources if problems are detected.

Available sources for the Plan B Encore include internal flash memory, external USB drive, IP stream and audio inputs in the back panel. The unit can also switch to external equipment via the GPIO contacts.

It is possible to access the Plan B Encore via HTML5 remote, Telnet or HTTP API. Email alerts and SNMP can be configured to notify the user about any event.

Info: www.bwbroadcast.com




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Leighton Loves WheatNet-IP

The days of running a large amount of wire through a facility are gone

USERREPORT

BY TONY ABFALTER
Director of Engineering
Leighton Broadcasting

GRAND FORKS, N.D. — Out with the old and in with the new. Two years ago our company decided to start replacing the old analog audio systems with current audio over IP digital platforms in all of our markets. With the many great choices for AoIP systems out there, we standardized on the WheatNet-IP system for our company. The WheatNet-IP system from Wheatstone has all the great features you would expect from a current AoIP system.

Our most current build has been taking place in Grand Forks, N.D., at our new studio building. The plan for the audio side was to be as completely digital-in and -out, as it sits at a 5 kW AM site. The WheatNet-IP system for this build consists of 31 "blades" and nine consoles. The blades are rackmounted input/output, control or processing modules that work with the WheatNet-IP network.

Some of the WheatNet-IP blades allow you to add eight audio sources and destinations along with 12 I/Os. We managed to get all but a few sources and destinations onto our digital network.



We preconfigured the whole system in a conference room in St. Cloud, Minn. To most of the staff, it was quite a shock that five on-air studios, two production rooms, newsroom and tech center could fit into such a small amount of space. The days of running a large amount of wire for all these rooms and equipment are gone. At the end of two days, the system was ready to be installed with all sources and destinations labeled and system IP address set up. This saved us

a lot of time when we placed it for the first time in the new building.

For this market we are using direct wiring to each blade so the only punch blocks will be for tallies and relays. With the standard use of Cat-5e, Cat-6, etc., in AoIP systems, the wiring was easy. All the connectors are RJ-45 on the back of the blades. This allowed us to make use of our networking staff in wiring the new building for audio, which made for a quick install.

The Grand Forks market has a lot of satellite programming, so we used two LIO-48 logic blades to handle the relay inputs into the system in combination with the IP88D digital blades that add the satellite sources (AES) into the system. The LIO-48 logic blade is designed for logic and control functions. It has 48 I/Os (no audio) and has a front-panel display that shows which relay is active and makes troubleshooting easy when satellite problems arise. This also allows the system layout to stay clean and organized for integration with the RCS NexGen automation system.

We utilize NexGen to control WheatNet-IP through the utility mixers, source and destinations switches and control of fader on/offs. One of the features of the WheatNet-IP network that we found helpful was control. WheatNet-IP talks to the automation system with ease. We have our lobby/building speakers on WheatNet-IP and have a NexGen node automatically change the station each hour so the stations all get time. We also use the same approach in controlling our phone system's on-hold audio. We have programmed soft keys on the consoles to unlock doors for early morning guests through the I/Os on the blades.

All this sounds like a lot to keep track of, but we have found the use of Navigator to be an easy way to manage and control the system and keep things simple and easy. With one program you can get a layout of the total system and control sources and destinations with no problems. This also allows you to manage labels and do updates along with many other management items.

AoIP has been a great investment for us. It saves time in troubleshooting and installation, not to mention the audio quality improvement over analog makes it worth the money.

For information, contact Jay Tyler at Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

TECHUPDATE

ARRAKIS ARC AND BLUETOOTH CONNECTIVITY

Arrakis Systems says that when it added the Bluetooth feature to its ARC series consoles, it changed the way users connected to their boards.

For instance, users can connect a cellphone via the wireless Bluetooth connection to take callers and either put them directly on-air or record them for later playback. Or if a cellphone connection was unavailable or poor, the landline option was still available via a Bluetooth-enabled landline phone such as the VTech DS6421-3. It can connect to the ARC console like a Bluetooth headset. This provides landline reliability without the cost of an external phone hybrid.

The other half of the Bluetooth equation is the ability to connect a tablet, handheld recorder or Bluetooth-enabled MP3 player. With this connection it is possible to stream any audio, whether it be a playlist from a tablet or a news clip from a handheld recorder. This protects physical connections on the board, and adds simplicity to the daily routine. It is also useful for any school, community or other type of radio station that has a large amount of staff coming in and out and connecting their equipment.

The company says that since the addition of Bluetooth in 2013, a majority of users have chosen to add this feature. Originally introduced on the ARC-10 and ARC-15 models, it is now available on the ARC-8 too.

Bluetooth audio is RF-resistant and of CD quality. The onboard AGHFP Cell Phone Gateway has a sample rate of 8 kHz with a resolution of 16 bits. The A2DP streaming is stereo, with a sample rate of 8 kHz-44.1 kHz and 16-bit resolution.

For information, contact Arrakis Systems in Colorado at (970) 461-0730 or visit www.arrakis-systems.com.



ABOUT BUYER'S GUIDE

Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased the gear. A Radio World Product Evaluation, by contrast, is a freelance article by a paid reviewer who typically receives a demo loaner. Do you have a story to tell? Write to bmoss@nbmedia.com.

TECHUPDATES**ALLEN & HEATH CHROME MIXERS GET POLISHED**

Allen & Heath has upgraded its GLD mixer line with the Chrome Edition. These offer new firmware, which among other features adds Auto Mic Mixing capability to the GLD series. The Chrome Edition GLD-80 and GLD-112 mixers have been redesigned with a new metallic livery, while the AR84 and AR2412 AudioRacks received a sleek black finish.

The automatic mic mixer can be configured to work across all 44 microphone sources, allowing the user to select which inputs should be auto-mixed without the usual restrictions of a 16-channel insert-based system. The AMM can be set to work in two modes: "D-Classic" dynamic gain sharing for a simple quick set-up, and "Number of Open Microphones" logic gate technology for a more flexible and sophisticated auto mix. A Best Mic Lock system detects crosstalk between various sources and limits open microphones.

GLD Chrome firmware includes a new DEEP Plug-In architecture that allows users to select from a number of processing units on every input and mix channel. Two new RMS-VCA-inspired compressor models, the 16T and 16VU, are included. Integrated within the mixer's channel processing,

all six compressor models can be selected on any of the input and mix channels on the fly, without occupying FX slots or adding latency. The new version 1.5 Chrome firmware also features several additions to Allen & Heath's onboard effects suite.

For information, contact Allen & Heath/American Music & Sound in California at (800) 431-2609 or visit www.americanmusicandsound.com.

**SAS SHOWS THE RIO BRAVO IP ENGINE**

The new Rio Bravo IP engine is an integrated DSP-based engine from SAS. The high-capacity, small-footprint engine is designed to fit in any control room and provides all functions necessary for radio broadcast operations. The company says that with high-density DSP mixing, EQ and IO capabilities, the Rio Bravo IP engines are easily networked using a standard IP infrastructure as a standalone, or it can also interface with an SAS 32KD network using AoIP, (Audinate Dante and AES67). A variety of I/O options and console interfaces are designed to support a complete control room and studio, contained within a 2 RU chassis.

The Rio Bravo IP engine is designed with six slots for connecting a variety of hot-swappable I/O modules, such as analog, AES, AAC-encoded AoIP and microphone (input only) to provide up to 96 discrete channels of audio I/O. There are an additional 24 resident onboard outputs for common studio needs such as monitor and cue speakers, headphones and metering as well as other general purpose system functions. Microphone inputs are on standard XLR connectors while other analog and digital I/O are connected using RJ-45 connectors and standard Cat-5 cable. There are also Cat-5 connected, low-cost, rack-mounted breakout panels with XLR or RJ-45 options.

The Rio Bravo IP engine also provides an integrated automation system and console show control. Configuration parameters are stored in a front-accessible SD card and are programmable using its Web-based user interface to allow control and configuration of an entire system.

For information, contact Sierra Automated Systems in California at (818) 840-6749 or visit www.sasaudio.com.

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BUYER'S GUIDE

Boise State Public Radio Appreciates Axia

No mess, no fuss ... everything on the digital realm is now accessible anywhere on the network

USERREPORT

BY KIRA PARKER
Senior Broadcast Engineer
KBSU(FM), KBSX(FM)

BOISE, IDAHO — There is something delightful about dozens of channels of audio available on a single Cat-6 cable. No mess, no fuss, one clean connection between source and switch and everything translated into the digital realm is now accessible anywhere on the network. Audio over IP comes with its own challenges, of course, but after experiencing the Axia Livewire network from the Telos Alliance, analog distribution amplifiers and punch blocks aren't quite good enough anymore.

Boise State Public Radio, based at Boise State University, has used Axia equipment since 2010, when we first made the switch to Axia Element consoles and PowerStation mix engines. At the time of installation, digital groundwork was laid over the top of older equipment, analog connectors pulled out and stored in place. Last year, the station moved to a new home on the other end of the university campus and left much of that aging infrastructure behind. Now, BSPR is almost entirely run through sources and destinations networked through Livewire connections on nodes, consoles, and end equipment, allowing us to route any source to any destination with a few keystrokes or automated commands.

At the heart of our system are the PowerStations. They manage our Element consoles, but also contain virtual mixes (VMix), sources and destinations, and all console settings. From the same PowerStation, we can create single channel sources from multiple assigned channels with VMixes, add new physical sources or destinations into the Axia Livewire network, or designate show or source profiles in the Element, allowing DJs to access any existing channel with a few keystrokes. Each studio in our facility contains at

least one PowerStation, tied together into the Axia Livewire network through a central switch, and providing the criti-

cal connection between the DJ's point of control and station audio routed to air. Expansion is relatively painless. It is vital to track IP addressing and channel numbers throughout the network, as each new piece of Livewire-compatible equipment will need its own unique IP

and channel numbers to play well with previously installed gear, but once a PowerStation, node, router, intercom, etc. has been powered up and configured, it slides into place without a squeak. Even boxes that work without Livewire, our Omnia One processors,

any assigned channel, and does not need a "brain" beyond the central switch. To integrate automated routing controls, provide a central interface for the system, create custom events from various triggers, create virtual panels with even more keystroke opportunities, add silence sensors, timed delays, etc., we added the PathfinderPC software to our system. It does all of the above and so much more. Engineers willing to dive in with both eyes open may find coding in Pathfinder to be a challenge, but only have to sink as far as they need to. The system has developed very few issues, and is near rock-solid once it has been programmed.

Overall, Axia Livewire product is expensive but well worth every dollar spent. Installations are not difficult, and the learning curve is not too steep. Most users will never see further down the rabbit hole than a profile switch or button press on a console, and Axia technical support has always been on hand and helpful any hour of the day (or night) with issues. Upgrading equipment is as easy as a firmware update, and we have never had any compatibility concerns between older and newer gear. Overall, we have much appreciated our experience with the Axia Livewire system, and look forward to bigger and better things from the Telos Alliance in years to come.

For information, contact the Telos Alliance in Ohio at (216) 241-7225 or visit www.telosalliance.com.



KBSX afternoon show host Samantha Wright operates an Axia Element console.

cal connection between the DJ's point of control and station audio routed to air.

Expansion is relatively painless. It is vital to track IP addressing and channel numbers throughout the network, as each new piece of Livewire-compatible equipment will need its own unique IP

for example, integrate seamlessly into the network once the initial settings have been entered. The Axia Livewire system works well as a distributed AoIP system without a single point of control: When audio enters the network, it may leave in

TECHUPDATE

KLOTZ OFFERS TOUCH-SENSITIVE CONTROL SURFACE

The newly formed Klotz Communications GmbH based in Munich, Germany, recently introduced its Touchstone controller.

The Touchstone control surface is a configurable console that interfaces to the Klotz G2 audio engine and router frame and Klotz's real-time radio and broadcast software tools.

The console surface layout supports flexible and tactile control for easy operation and access to mixer data. The company says the controller unifies the requirements of a modern "Internet-age" studio in a single surface with solutions for multiple studio environments and station management.

The Touchstone surface has a touch-sensitive LCD monitor with integrated tactile faders and knobs. The touch-sensitive tactile elements are surrounded by active displays, which allows for new graphic surface layouts with context-driven controls and information presented to the user on the LCD monitor at all times.

Touchstone controllers are equipped with common interfaces to control audio processing, software and hardware radio mixers, workstations or audio/video routers, from the same console surface. Associated program data such as videos, pictures, text and studio control can be managed from a single surface along with the signal processing, routing and other software applications.

Klotz says its G2 frames form the basis of integrated studios, routing, public address and intercom systems. Multiple G2 audio engines and routers can be connected over fiber, MADi and audio over IP to create large audio networks, with the ability to remote control all signals from Touchstone controllers. Control of remote station hardware or creation of "virtual" studios is all possible with G2 frames and Touchstone control surfaces.

For information, contact Klotz Communications in Vermont at (802) 424-4866 or visit www.klotzcommunications.com.



TECHUPDATES

AEQ CAPITOL IP OFFERS DANTE

AEQ's Capitol IP small-format digital console can use Audinate's Dante audio over IP networking technology.

In its basic form the Capitol IP is an eight-channel mixer with features making it useful for radio and TV applications. With Dante it can scale to 16 channels.

The Capitol IP works with a PC, which expands the features available and allows for remote operation.

It has two footprints for its control surface — desktop and flush-mount. It offers analog, AES/EBU digital and USB I/O on its rackmount engine.

Faders are 100 mm and it has programmable function buttons. It also has standard broadcast mixer tools such as talkback, cough/mute buttons, mix-minus, on-air tally, clock, along with phantom power, test tone generator and phase meter.

The Capitol IP system offers many options such as digital hybrids, MADI I/O and Dante IP network.

For information, contact AEQ Broadcast in Florida at (800) 728-0536 or visit www.aeqbroadcast.com.



STUDER RELEASES ONAIR 6.1 SOFTWARE

Studer's OnAir v6.1 software is a free update for owners of Studer OnAir digital mixing consoles. It offers feature enhancements including loudness metering; delay function; improved AoIP support with Dante; automated gain calibration; and BSS BLU link support.

The OnAir v6.1 software provides loudness metering as an added option for the main screen of OnAir 3000 digital mixing consoles. It offers EBU R128, ITU-R BS.1770-3/1771-1-compliant loudness metering, covering single-channel and summing bar graphs, loudness range (integrated value, short term, momentary), true peak and numeric views.

The delay function is an option for OnAir 1500, OnAir 2500 and OnAir 3000 consoles, according to available DSP processing. It offers up to five seconds each. Summing bus delay for master channels include a predelayed output to be used for output routing and monitoring. It is configurable as mono/stereo/surround in the OnAir Config Tool.

OnAir v6.1 supports the new Studer D21m Dante audio interface, providing Dante with 64 I/Os. This allows connection of an OnAir console into a Dante IP audio network with the D21m Dante interface and operates the OnAir mixing desk with other Dante devices.

As an addition to Studer's VMix function found with OnAir software 6.0, this software release brings automated gain calibration for mic input sources to OnAir products.

OnAir v6.1 offers support for the Studer D21m BLU link card. This card is a 32 x 32 interface between a console and the Soundweb London digital audio bus, informally known as BLU link. The card allows connection to a variety of Harman products equipped with a BLU link interface, such as BSS London BLU 800, dbx PMC or Crown PIP-BLU interfaces, among others.

For information, contact Studer in California at (818) 920-3295 or visit www.studer.ch.



LAWO ADDS XT TO MC56 LINE

The Lawo mc²56xt is the newest addition to the company's large format mc²56 broadcast console line.

The new console maintains the performance and features of the mc²56 predecessors but doubles the fader count in the same footprint.

The XT model can be configured with 48 to 144 faders arranged in a high-density dual fader layout, with further expansion achieved using 16 or 32 fader stand-alone extenders.

The mc²56xt can be custom configured to address a wide range of workflow requirements. The metering bridge shows all fader levels clearly on the console's high-definition touchscreen displays, with multirow metering allowing for viewing of all fader levels, including the XT's second fader row as well as signals from other layers or banks.

For further customization the overbridge also accommodates integration of additional modules such as a user panel. And recognizing that AoIP is becoming an increasingly common method of transport, Lawo has already integrated Ravenna/AES67 technology into all mc²56 consoles — with only two cards needed to enable a digital IP network.

Philipp Lawo, CEO of Lawo AG, said, "The new mc²56xt addresses a variety of requests that we've received from sound engineers. By adding more faders on the same footprint we have demonstrated Lawo's commitment to listening carefully to our customers ... I'm confident many audio professionals will find the mc²56xt desk a compelling solution when high fader count is needed in a restricted operating environment."

For information, contact Lawo Group USA in New York at (888) 810-4468 or visit www.lawo.com.

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GatesAir Goes to Broadway

IP network efficiency makes workflow a snap

USERREPORT

BY TRENT ANDERSON

Director of Engineering and Chief Operator
Broadway Media

SALT LAKE CITY — Seventeen studios in six weeks seems like a long shot for even the best-planned moves, however that is what we at Broadway Media Group accomplished with our friends at GatesAir and SCMS, the supporting sales and service arm for our project.

Broadway Media Group acquired Simmons Media Group of Salt Lake City in early 2014, and within months initiated a relocation plan to consolidate multiple FM and AM stations on the second floor of a downtown Salt Lake City building. With a lengthy skywalk, large windows and an open and inviting design, the new location offers a visually impressive facility that gives passersby a clear view into our multistation operation.

The overall goal was to build a noticeable facility that delivered a better working environment for employees, and a more efficient technical design. GatesAir delivered on all fronts, with special emphasis on the last point: a fully networked environment with facility-wide routable audio and data, along with a vast reduction in wiring and technical infrastructure. The biggest benefit to date has been the common functionality: Instead of forcing two or three disparate systems to talk to each other, we instead have one unified, comprehensive platform that works exactly as we require.

Following a studio design phase with



GatesAir — including custom furniture plans to match the open feel and ambience of each studio — the Broadway Media team moved onto technology decisions, with SCMS working hard to procure supporting equipment within the quick timeframe. The networked strategy eliminates the large consolidated routing model of past systems, and instead leverages a distributed architecture marrying a central GatesAir VMConnect network core with VMXpress I/O points in each studio. The cross-studio interconnections are simplified, using Cat-6 connectivity with breakout XLR connectors. This removes the time and labor-intensive headaches associated with legacy wiring and soldering.

Console choices were narrowed to GatesAir RMXdigital consoles for

seven on-air studios; and NetWave consoles for 10 production studios. Even though all consoles live on the audio network, the flexibility for standalone operation proved handy during the move-in phase. Each studio operated as its own entity early, with quick connectivity to the GatesAir VM audio network in the final stage.

EQUIPMENT CHOICE

Our RMXdigital consoles are built to 20 or 28 channels depending on the needs of each studio, with each providing I/O for up to six microphones, a POTS system, native media players, ISDN units and auxiliary audio among other sources. We find its session-based design to be especially useful. Our DJs

can come in for shifts and load their sessions with the push of a button, without needing to reset the console and adjust settings. This is a shining example of the operational efficiency we receive from the RMXdigital.

We highly regard the mix-minus capabilities of RMXdigital for our largest shows, including our sports station. The ease of bringing callers into the live show can't be overstated, with a quick learning curve for those unfamiliar with the console. A second, and perhaps greater, advantage is the ability to route a mix-minus feed and recall it in another on-air or production room, without requiring a manual send. This is a new benefit for the Broadway Media operation that highlights the value of the VM network.

The NetWaves are ideal for the production rooms, which require the networked functionality and operational flexibility without unneeded bells and whistles. Using eight-channel models for all but our largest studio (12 channels), the NetWave delivers a high-functioning, cost-efficient choice for our busy production operation. The latest NetWave design does add functionality compared to previous generation models, including an extra program bus and a direct send bus — along with more virtual channels to mix in additional sources.

We chose to equip our production NetWaves with two routable channels, allowing producers to pull up any sources in the facility on two faders of the console. And because the consoles are networked, we can go live-to-air from production, easily and seamlessly when needed. This happens quite often due to conflicting sports events, with a simple change to the transmitter route from the rack room.

An added benefit of the GatesAir networked consoles is the elimination of many computer monitors. We looked at other systems that required monitors for each console. That option is less attractive from both an ergonomic point of view and visual reasons. Our on-air studios are all wired for HD video, with remote controllable cameras to stream our shows online. GatesAir slims down the infrastructure, removing pointless monitors from the desktop. This was a cosmetic benefit that proved especially attractive to our DJs.

Moving forward, we will explore integrating next-generation VMXpress IP devices into the network, which will allow more freedom in moving audio between the studio and three transmitter sites in collaboration with our GatesAir Intraplex NetXpress systems. We expect that will be just one of the many benefits of transitioning to a true radio over IP environment over the coming years.

For information, contact Keith Adams at GatesAir in Ohio at (513) 459-3447 or visit www.gatesair.com.

TECHUPDATE

LOGITEK SAVES RACK SPACE, IMPROVES WORKFLOW

Logitek's JetStream Mini and JetStream Plus routers offer high-density I/O that is configurable by the user to tailor audio and networking requirements with a minimum of components and with minimal rack space, the company says.

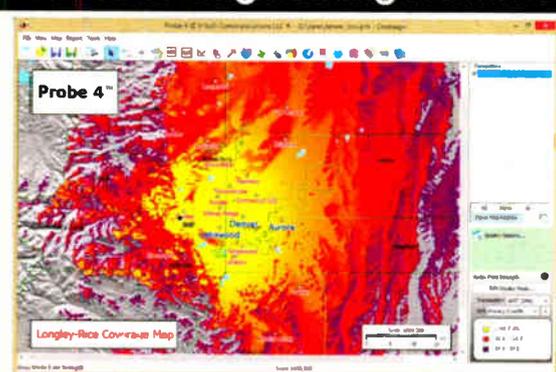
The JetStream Mini, a 2 RU router, provides up to 128 digital or analog inputs/outputs while the 4 RU JetStream Plus handles up to 240 channels. Both routers can manage multiple Logitek digital consoles, and both are networkable, allowing connections to other Logitek JetStream units in the facility. Direct network transfer of audio from hard-disk payout systems is available via the built-in JetNet network conduit. In addition, Logitek JetStream products offer Livewire connectivity and interoperability with video routers, edit systems and program automation control systems.

Analog inputs, digital inputs, microphone inputs, analog outputs and digital outputs may be accommodated in a single frame. Up to four consoles may be connected to a single JetStream Mini or JetStream Plus. GPIO is also provided on both routers.

Logitek products are made in the U.S. with final assembly and testing taking place in the company's Houston facility. For information, contact Logitek in Texas at (713) 664-4470 or visit www.logitekaudio.com.



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

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Embrace Local Service and Remain Viable

AM station owner explains why he thinks it's time to relax Class A protection standards

COMMENTARY

BY CARL COMO TUTERA

According to a notice of ex-parte communication, Jeff Littlejohn, iHeartMedia's executive vice president of engineering and systems integration, recently told the commission that about 600,000 existing listeners of Class A AM stations would potentially lose protected service if interference protections were reduced to equivalent to current Class B protections [see story, page 4].

While iHeartMedia is certainly entitled to voice its opinions, there are serious objections to be raised with these particular ex-parte discussions.

First, the discussions involve models that have not been disclosed. We have no way to validate Mr. Littlejohn's premise or assertions. The correct venue for this type of comment would be to file the comments, along with the model, in MB Docket 13-249 so that everyone can see how the figures were derived. Unless that is done, assertions based on the iHeartMedia model should not even be considered by the FCC.

Second, even if we accept the premise that there would be erosion of listeners, that outcome might not be bad if other, local stations gain significant potential listeners as a result. Mr. Littlejohn's arguments do not disclose the potential benefit to other stations. For all we know, several million listeners might gain local service for the loss of those 600,000.

ORIGINAL INTENTION

Class A channels are a relic, an opportunity that was given to some early broadcasters over 75 years ago but that has no place in today's world.

Communications networks have grown so much since the early days of radio that national and regional news and information is readily available in every community. There is simply no longer a need for AM Class A services that duplicate far more popular methods of listening to news and entertainment. The key to all broadcast survival is being local. Radio stations are licensed to serve the needs and issues of a community. For most broadcasters, this is also where they earn a living. Those who embrace local service have, generally, remained viable.

In earlier times, Class A channels served areas way beyond their main city of license, rural areas that needed farm

and weather reports as well as other content not otherwise available. Today, with licensed stations in more small and rural markets, the massive coverage of Class As doesn't mean much except "status" to the major broadcast chains that own them.



Interference levels in the real world make most signals useless beyond the 2 mV/m contour. The fact is that protections to even the 0.5 contour are totally unrealistic, much less the .05 contour. Frankly, most stations struggle to claim acceptable coverage within their 5 mV/m contours.

Also, one must realize that iHeartMedia wants to protect its Class A stations even at the expense of the AM band, in general. While they don't likely see themselves in this light, the FCC must consider what is best for Class A stations or for the entire band. While iHeartMedia may or may not preserve some regional listeners by preserving Class A protections, AM radio will continue to decline. The exceptions have been a few AM stations that have significant local presence.

In order to have a significant local presence, those stations need to be on the air 24 hours a day with enough signal to be useful in their cities. Unfortunately, this is impossible for quite a few stations if existing Class A protections remain. As listeners migrate from the band, they generally do not come back. As Mr. Littlejohn noted, it is quite difficult to attract new listeners to the band. Thus even he acknowledges that migration is hurting his Class A stations.

What's good for iHeartMedia in the

short term may be bad for everyone in the long term. I strongly believe that the short-term benefits to Class A stations of preserving existing protections are offset by the long-term loss of listeners that happens when listeners find that there is no content on the band, especially after dark in their town.

The 50 kW power licensed to these facilities would not be taken away. I only suggest decreasing the interference level

content that counts. Despite claims to the contrary, many Class As continue to offer syndicated programs, satellite-driven music formats that serve their licensed market, not the rural markets they once catered to. The Class As are now holding up these small-market, mostly independent, broadcasters by insisting their regional service is as important as local coverage. It just ain't so. Across small towns and communities, local stations provide a service that has replaced any so-called coverage that a Class A station can give to that community. Listeners rely on their local radio stations.

LOCAL SERVICE

The Class A channels are actually depriving small-market communities and residents who rely on local service and content as well as advertising benefits derived from these stations by insisting that their wide net of coverage is important. This super-coverage is not so super; and it's only important to them and their corporate stockholders.

Nighttime service is awful for small-market radio, having to depart at sunset and sometimes as early as 4:30 p.m. Local stations sign off while the Class A stations bump them off the air; for what? Mainly "static" and no content that could possibly relate to the community served by the local stations.

The FCC should adopt rules to decrease current interference protections to expand AM stations' local coverage both day and night in markets everywhere.

The author is co-owner of WRSO(AM) in Orlando, Fla.

Comment on this or any story. Write to radioworld@nbmedia.com with Letter to the Editor in the subject line.

that would affect contours outside of the main coverage area.

Class A channels, non-directional with day and night coverage at 50 kW, number around 31 in the United States. Compare that to the total number of AM stations and it's clear that the Class As are a very small part of the AM delivery system.

Local radio has been responding to the needs of their local service area with

READER'S FORUM

RADIO STATION, MARKET THYSELF

Responding to "Let's Take It Back to the Dealer," April 22 issue:

I've lamented for years that radio has done a terrible job of marketing itself. That continues. You can bet the satellite radio companies did a lot of marketing — and today, when you go into a dealership, there's at least one Sirius display. What about radio?

In 2013, I bought a new Toyota truck with the "standard" audio system. The sales person never mentioned I could connect my phone to it through Bluetooth. I had to figure that out for myself.

Most major cities have a broadcasters group; it's time they come up with a plan to infiltrate the dealerships like Sirius did.

"KXXX — Now in stereo in the 2015 Toyota Tundra — no cost!" C'mon — we need to get on the offensive and work some deals, don't you think?

Dave Mason

*Assistant Program Director
XHPRS(FM) 105.7 MAX FM
San Diego, Calif.*

READER'S FORUM

TESLA IS STILL CURRENT

Thank you for the Tesla article ("Teslathon Isn't About Expensive Cars," April 8). As noted in the article, Tesla was truly the father of radio. I am glad to see such an article to instill his work on the bones of younger readers.

The article mentions the similarity of Tesla's resonant transformer (i.e., the Tesla coil) to the design of spark radio transmitters. However, I would like to point out the design also resembles the schematic of most switching power supplies, a technology that is far more "current" (pun noted but not deliberated) than spark transmitters.

*Rolf Taylor
Rocket Engineering and Consulting
Annandale, Va.*



WDLN(LP) DOES ITS JOB

On Wednesday, April 8, a mysterious suitcase was reported to the Dunnellon, Fla., police department, fearing it might be a bomb. Within minutes WDLN was on the air with live reports of the unfolding event.

Reporter Frank Stevens was 1,000 feet from the scene at the local Sonic parking lot, continuing to report events as they happened. The local McDonald's arches went dark as Dunnellon police evacuated everyone in the building, along with other small businesses in the immediate area. The bomb squad was called in from the Marion County sheriff's office in Ocala, after examining the suitcase with an X-ray device, then decided to detonate the package in the parking lot. It was amazing to see 40 or more people hovering over a portable radio that someone just happen to have. It was not long before Sonic removed its satellite music service and broadcast WDLN over their PA system.

Although it turned out to be just clothing, what if it really had been a bomb? What if it went off, injuring or killing people? Radio would have been right there with instantaneous information as it was happening to keep the citizens of Dunnellon informed as to the dangers.

Was it perfect? No. Could it have been better? Of course. It was a test that we neither passed nor failed, but we did finish as a good learning experience for local law enforcement and local radio, and demonstrated the importance of a good working relationship.

Dunnellon is served by a local LPFM station and a local newspaper that is published once a week. Everything that happened on the night of April 8 was reported in the April 16 edition of the Riverland news; but if you were around a radio, you knew everything that was happening as it was happening.

Radio did shine on April 8 in Dunnellon, Fla., on a local LPFM station doing its job for the citizens of Dunnellon. With the 2015 hurricane season coming up in Florida, WDLN demonstrated the importance of live and local radio in emergency situations.

*Frank Vela
Chief Engineer
WDLN(LP)
Crystal River, Fla.*

LPFMS MISCHARACTERIZED

In your April 22 edition, reader Paul C. Hedberg writes that the majority of LPFMs "are doing niche ethnic programming."

The Radio Mall database only lists seven stations meeting that description. It does list 257 carrying Christian programming. Most of those are owned by churches. This should come as no surprise, as most people live a relatively short distance from the church they attend.

*Dave Dworkin
Owner
Radio Mall
Minneapolis, Minn.*

Editor's note: Radio Mall maintains a database of 16,500 FCC-licensed radio stations on the air in the U.S. and its possessions.

Our readers have something to say:

"I've been reading Radio World for 30+ years and still have to drop what I'm doing to peek inside. I learn something from nearly every issue."

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