TAB SET FOR AUSTIN — Page 14

RADIOWORLD

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Puzzle image: iStockphoto/istocksdaily

"Come on, Radio Is Fun!"

Ahead of CBS Merger, Gaviria says Entercom focuses on events and localism

BY SCOTT FYBUSH

When Ruth Gaviria came to Entercom last year as chief marketing officer, she arrived with a corporate background that included stints at Procter & Gamble, Colgate Palmolive and Time Inc. and a media background that included Meredith Corporation's Hispanic-targeted magazines and Univision television and radio. Within a few months of her arrival, her new job grew considerably with the announce-

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Making a Marriage Work

Four veteran tech executives share thoughts on the challenges of technical integration

BY RANDY J. STINE

BALA CYNWYD, PA. — If anyone has a playbook on how to combine technical operations of two major radio broadcast groups smoothly, John Kennedy and Paul Donovan likely will want to see it.

Kennedy, corporate director of technical operations for Entercom Communications, and Donovan, vice president of engineering for CBS Radio, are overseeing the complex integration of engineering staff and technologies pending federal approval of the marriage between Entercom and CBS Radio. The new entity will have a total of 244 stations in 47 markets with operations in 23 of the top 25 markets in the United States.

The success of the combined company, which will become the second-largest radio broadcaster in the United States based on revenue, will depend in part on the combined work of the engineering, IT and digital departments responsible for the backbone of the broadcast group's technical operations.

The estimated $2.5 billion deal, being scrutinized by the U.S. Justice Department, could close by the end of this year, according to those familiar with the agreement. That leaves little time to plan out such a herculean effort.

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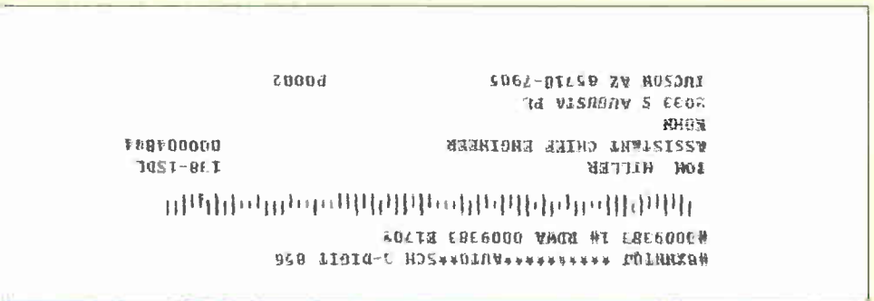

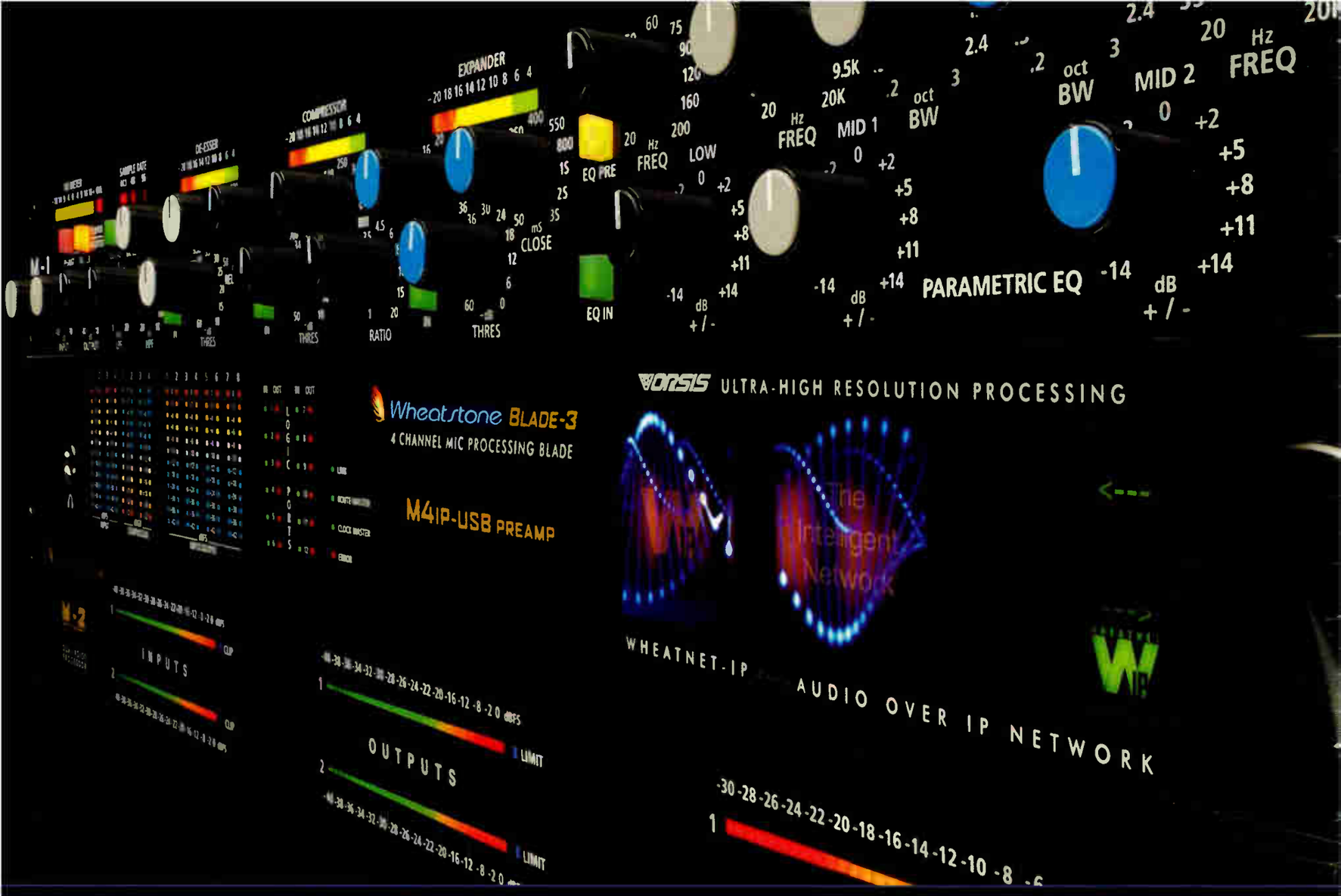

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NewBay

GAVIRIA

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ment of the company's impending acquisition of CBS Radio's portfolio of major-market stations.

Until that deal closes, Gaviria can't talk about any of Entercom's specific plans for those signals and those new markets. But she spoke to Radio World this spring about what the company is doing and how she and Entercom CEO David Field see the future of the radio business.

Radio World: *What's the message Entercom is sending to the radio industry right now?*
Gaviria: It's a very optimistic message. We believe in the power of radio. It has the opportunity and ability to connect brands with fans. It's a growing medium, the least disruptive medium. It's evolved as the number-one reach medium. We reach 240 million people a month, which is really amazing. We are really bullish about radio.

RW: *David Field has been traveling the country to visit Entercom's local markets. What are some of the things he's seeing? What's he picking up on his visits?*
Gaviria: Our business model is about local marketing, so local is at the core of everything we do. The listener is at the center of our business model. So our investment in local personalities, local brands, the events that connect communities and help them thrive is really the core business model that we have. David and [Chief Operating Officer] Weezie Kramer going around to local markets, they're even more optimistic about the power of local connections and how brands can benefit from that. When you start looking at a media-mix model, and when you look at the power of each medium, and when you look at automotive for example, you see the importance of media that has a day in, day out relationship with the consumer and that can translate that relationship to a brand. So for us, it's an incredible time. I also think that as you look at advertisers, there's a renewed commitment to mass media, there's renewed commitment to the massive scale that radio has, and in our case the local connection we can provide.

RW: *What will it mean to add CBS Radio's stations and markets to that mix?*
Gaviria: I can only speak to my life right now, to what Entercom is right now. We are continuing to invest in local relentessly. What does that mean? We continue to do the research, to ensure we have the best local personalities, and continue to work collaboratively in each of the markets to make sure we offer multi-market plays and national plays. I can see the opportunity of what this can be, but for right now what I'm focused on is how I can serve my advertisers and my listeners today.

RW: *For several groups, event promotion has become a big part of their business model. What does it mean for Entercom?*
Gaviria: Entercom produces 4,000 events a year, and it's from small farm-to-table events or custom-crafted events to massive events where we have audiences of 10,000 and more like Riptide [Music Festival] in Miami or Pain in the Grass in Seattle. Events are parts and parcel of the connectivity we have with the community. It's an integrated play, right? So from a consumer perspective, we want to make sure our that local brand is touching that consumer "360." Events and digital are part of that conversation.

The inflection point is, the radio brand and the on-air personalities that have that relationship, how do you extend that? We extend it through events that make sense organically. One of the things you'll see Entercom doing is custom local events. We do not have that cookie-cutter, all events are named one thing. When an advertiser comes to us, we say, "We can give you access to that consumer, but it's going to look a little different in each market." Because we want to make sure that we are really connecting with that audience. So it's a major part of this business and something we want to continue to grow. And it's fun! Come on, radio is fun!

RW: *Let's talk about that fun part, because that sometimes gets lost, especially in groups that don't have a lot of local personality to work off of. How important is it to keep that feeling of excitement going in the business?*
Gaviria: You're talking my language. Radio reaches 92 percent of millennials, 95 percent of Generation X. If we weren't cool and fun, we wouldn't be reaching that many. Ninety-two percent translates to 67 million millennials. The way we do that is music discovery — we are committed to new artists, to new music. Bacon and bourbon events, that's fun, right? We are launching a new beer in one of our markets. We're able to have that agility, to have that kind of connectivity to consumers to be able to respond, to take risks in the right places. That's a super millennial thing, and it's super fun. And I think that's part of what radio can offer, and one of the reasons radio keeps young, because of the audience it serves and because we have the ability to do so many fun things.

RW: *What about the role of digital media? Where are the digital plays right now, and what is some of the non-traditional revenue you can generate in that space?*
Gaviria: Digital is an imperative, and the new reality is that we have to have integrated enterprise, and we do.

What we've done is to ensure each of our broadcast brands has its own digital frame. The inception point of content and the inception point of relationship is the broadcast, but then we continue that conversation on digital, on social, on podcast, and also on loyalty programs. So on a weekly basis, for example, across our footprint we have 55 million shares a week. We have over 10 million monthly listening hours on streams. We also have 12 million podcast downloads a month. And we are able to offer that to advertisers. I don't think there is any longer just a discrete broadcast play, there is an integrated play.

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"As you look at advertisers, there's a renewed commitment to mass media, there's renewed commitment to the massive scale that radio has, and in our case the local connection we can provide."

Ruth Gaviria. "We want to be a champion for the radio industry, we are poised to continue to connect with local communities and build our enterprise in that way."

Programs Nourish Engineering Talent

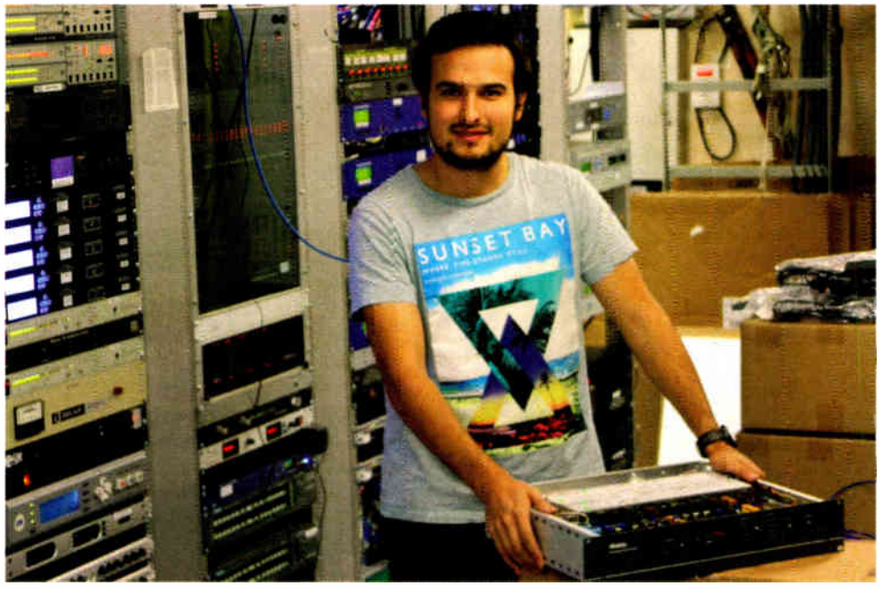
iHeartMedia's COOP approach brings new blood into radio engineering

RADIO EMPLOYMENT

BY JAMES CARELESS

"Radio needs engineers!" is the battle cry of station managers across North America, and has been for years. The problem is where to find this new blood. And as baby boomer engineering directors retire, colleges graduates seem even more likely to seek uber-profitable 9-to-5 IT office jobs rather than more "realistically compensated" positions in radio that may involve 'round-the-clock responsibilities and multiple working locations.

Of course, as many a radio engineer will tell you, an engineering job — particularly one involving RF — offers a level of variety and adventure that a desk IT job can't. So the challenge for radio engineering directors is to expose college technical students to the romance and quirkiness of the profession. Once they have been exposed, many such students become hooked and commit to it for life.



Virgilio Martinez Sanchez

iHeartMedia is one company that has grasped this truth and run with it. Under the company's COOP program, electrical engineering students at the University of Cincinnati, Philadelphia's Drexel University and other U.S. colleges spend part of their education as paid interns at iHeartMedia.

"The typical pattern is that an electrical engineering student alternates a semester in college, then a semester working for us as an iHeartMedia COOP engineering intern," said Jeff Littlejohn, iHeartMedia's EVP of engineering and systems.

"Typically, they join us for two semesters in total. During that time, these interns get hands-on experience with our engineers; working on our radio studio and transmission facilities, and gaining real skills."

ONE-TWO COMBINATION

Under its COOP program, iHeartMedia typically hires and trains eight to 12 interns annually.

"Our goal is for them to experience the diversity and challenges of RF engineering firsthand, and to get caught up in the romance of radio," said Littlejohn. "As anyone who has worked in radio knows, no two stations' facilities are exactly alike. That's one thing that makes maintaining, troubleshooting and upgrading them challenging, but also interesting for RF engineers. The work

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iStockphoto/rorat

GAVIRIA

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But you need to make sure you have permission from that and you need to make sure digital delivers, that it's something that actually doubles down and delivers. So we are very committed to having a completely integrated enterprise. And we are very listener-led. Listeners want to continue this conversation on digital, it's really a mobile platform. And it needs to be digital, and we are.

RW: How did you get into radio?

Gaviria: I worked at Univision, and that enterprise was very TV-focused. But we did have a radio piece, and we had an opportunity to rebrand radio and integrate radio into the full picture of how we touched consumers. I got recruited into radio.

At the time, I didn't really understand Entercom's play. I call Entercom the hidden gem, a hidden brand about to be not so hidden. In talking to David and hearing his vision, for me it was serving local communities and that what we do matters. And when you have a values-driven and a mission-driven company, where the CEO is committed to serving communities. One day a quarter, we're allowed to fundraise for anything that we think makes sense for the community. You have to find meaning in your job, and it's very meaningful for what we can provide to the community and by default be able to provide to advertisers. I got hooked! And then you go to a few concerts, you go to "Bourbon and Bacon" in Denver, you go to Miami for Riptide, it's not a bad job!

RW: While you can't talk about the details of your plans for CBS Radio, it's been publicly announced that the merged company will keep the Entercom name. Will we be seeing a higher profile for Entercom in the industry?

we have a balanced message out there, so that advertisers can make a decision to include radio as part of the mix.

We want to be a champion for the radio industry, we are poised to continue to connect with local communities and

"The inception point of content and the inception point of relationship is the broadcast, but then we continue that conversation on digital, on social, on podcast, and also on loyalty programs."

Gaviria: From a business-to-business perspective, absolutely. We made the decision, David has shared that this will be "Entercom." I know we will be much more vocal as a business enterprise, representing the value of radio, stepping up to the plate in terms of how to educate advertisers on what radio can do, investing in the marketing of radio, investing in research, in radio impact studies, so that build our enterprise in that way. I think radio is going to be important to the vitality of the media industry. We need to offer advertisers an easier way to participate in events and have this 360 experience. It's really about experiential marketing, and when you harness the power of radio, you harness the consumer in a way that you can get more share of mind.

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Learn more at **tinyurl.com/rw-innovator.**

COOP

(continued from page 4)

is always creative and different."

Once these COOP students graduate, the best of them are offered full-time jobs with iHeartMedia. But the educational opportunities don't end there: Since 2014, Littlejohn has run a two-year Market Engineering Manager Development Program, "MEM-Dev," that uses a mix of online and hands-on training (including complex group projects) to bring assistant engineers up to full management capabilities. As with COOP, the company's goal is to put eight to 12 people through the MEM-Dev program every year.

The typical pattern is that an electrical engineering student alternates a semester in college, then a semester working for us as an iHeartMedia COOP engineering intern.

– Jeff Littlejohn

"An electrical engineering student who has taken two years' of our COOP program in college and then gone through two years of MEM-Dev while on the job at iHeartMedia has enough skills and experience to support a medium market radio station or group of stations," said Littlejohn.

"This one-two combination works: We've been able to fill a number of our RF engineering positions this way with young, motivated engineers."

THE INTERNS' VIEW

Chris Herlinger, Virgilio Martinez Sanchez and Drake Spivey have three things in common.

First, all were college students being trained as electrical engineers and decided to do COOP terms with iHeartMedia. Second, they are now full-time RF engineers working in various iHeartMedia markets. Third, all three all love being RF engineers, even though they hadn't entered college with radio as a career choice.

Herlinger is director of engineering for iHeartMedia in Waco/Killeen, Texas, Martinez is a broadcast transmission engineer who serves Austin and San Antonio, and Spivey is chief engineer for Milwaukee and Madison.

In each of these former interns' instances, their colleges and iHeartMedia made an effort to attract them to RF engineering as COOP options.

"I heard about the iHeartMedia COOP program from a woman in our engineering department at University of Texas at Arlington," said Martinez. "Then, right out of the blue, I got a phone call from iHeartMedia Senior Vice President of Engineering Tom Cox, asking if I was interested in an interview. I went to Dallas for that interview, got accepted, and soon enough was doing actual field work with iHeartMedia engineers."

Drake Spivey

Taking part in the iHeartMedia COOP program presented these interns with novel, hands-on assignments from the get-go, under the expert guidance of iHeartMedia engineers.

"I got to build a box full of relays, that would switch between a station's main and backup transmitters automatically in emergencies," said Herlinger. "I was working with high-power lines and multi-kilowatt transmitters; the stakes were really high."

Once these three had graduated, full-time radio jobs awaited all of them.

"As soon as I was finished school in February 2016, iHeartMedia asked me to take over RF engineering for a six-station group in Madison, Wis.," said Spivey. "I am now based in Milwaukee, working as chief engineer for four AM and two FM stations."

As full-time employees at iHeartMedia, these former interns have access to the MEM-Dev program. Herlinger and Spivey are enrolled: "Besides online learning, we get to take part in group exercises that matter, such as rebuilding one of our AM station's transmission facilities," said Spivey. "How cool is that?"

For these former interns, taking part in iHeartMedia's COOP program steered them to lifelong careers in radio. "This is such a varied and different business to be in," said Martinez. "Without taking part in the iHeartMedia COOP course, I would never have considered radio as my profession of choice."

Chris Herlinger

From iHeartMedia's perspective, the company's COOP and MEM-Dev programs have provided a practical, effective answer to the question of where to find new technical staff.

"The system works," said Littlejohn. "COOP allows us to interest young engineers into coming into radio, while MEM-Dev gets them up to speed fast to serve our medium- and small-market stations."

Does your organization have a program to develop radio engineers? Tell us about it at radioworld@nbmedia.com.

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It's not clear exactly how many people in the engineering and technical staffs at the two companies will be affected, though there is some market overlap between them. Entercom has announced it is placing 14 FMs in a trust for future spinoffs.

Execution of their integration work will be scrutinized by those inside and outside the company, according to people who have been through complicated mergers.

Kennedy declined to be interviewed for this story while a CBS Radio spokesperson declined on behalf of Donovan. Given that we were unable to speak directly with them, we asked four expert outsiders, former corporate engineering executives who have been through a variety of mergers and acquisitions, to comment on what a technical game plan for such a huge merger might look like and the potential pitfalls. Respondents were Gary Kline, former VP of engineering for Cumulus; Milford Smith, longtime director of engineering for Greater Media; Bert Goldman, one-time VP of engineering for ABC Radio; and Andy Laird, former vice president and chief technology officer for Journal Broadcast Group.

RW: What are some of the first engineering management issues that come to mind when merging broadcast companies?

Kline: I typically start with the big-picture outline and then narrow things. The big picture may include departments you are not directly responsible for but somehow may touch. For example, HR systems may be on the engineer's list because there's interaction with IT or access in the local markets — things which engineering should be involved with but more in a support role. In the early stages of a business deal, you may not be permitted to discuss anything with the other party or their employees, even though you may know them well. Radio is a small business, especially in the engineering ranks. So in the beginning, I'd form a list of questions that the business development and legal teams can request.

Smith: Whereas it might seem like equipment, budgets, procedures and the like would be first up, I would make a case for people being the first priority. Such transactions are fraught with anxiety, fear of the unknown and insecurity on the part of all the staffs involved, technical staffs included. Good broadcast engineers are extraordinarily difficult to find and more challenging still to "lure away" in the event of an opening. Thus, it's my opinion that the number one priority is to immediately get acquainted with the new folks suddenly joining the organization and to allay their fears and concerns going forward. It's important, too, to make sure "your" people have any concerns addressed relative to the merged entity. These are unsettling times, and efforts made to make the situation less scary and to provide positive assurances is very much time well spent.

Laird: Both companies are very successful, so job one is do no harm!

If there is a broadcast engineering technical mandate that needs to be understood, ask: What technical procedures and records are in place at each company? How good is the physical diligence for the properties? What are the reporting structures for each technical group and how do they differ? How do the two companies differ concerning FCC related issues, representation? How do each of the companies handle expert technical work — in-house, consultants? Since one company is mostly major market and the other large and medium market, does it make sense to consolidate technical management across the combined group? Major changes take time for personnel buy in, for trust to develop.

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Such transactions are fraught with anxiety, fear of the unknown and insecurity on the part of all the staffs involved, technical staffs included.

– Milford Smith

IN CASE YOU MISSED IT

Radio World and our NewsBytes e-newsletter complement one another. The magazine brings you news analysis, features and deep-dive coverage 26 times a year; the newsletter provides a snapshot of a day's regulatory and technology headlines in near-real time. To receive the free newsletter, click the Subscribe tab at radioworld.com, *then choose Newsletters.*

Here's a sampling of headlines from recent weeks:

➤ House Bill Would Give FMs Some Repack Relief
A bill introduced in Congress by Rep. Frank Pallone (D-N.J.) asking for more money to help TV stations includes a pledge to assist radio stations that experience service interruptions.

➤ FEMA Schedules Next National EAS Test
Mark your September calendar for Wednesday Sept. 27 at 2:30 p.m. (ET) — and note the backup date one week later.

➤ Broadcast Engineer Jack Layton Passes Away at 76
A broadcast engineer and consultant, his written work included "Directional Broadcast Antennas" and "Directional Antennas Made Simple."

➤ NAB: Main Studio Rule Actually Impedes Service
The association said a slew of comments overwhelmingly support eliminating the longstanding requirement for stations to maintain staffed main studios near their communities of license.

➤ Weller Returns as AFCCE Board President
All officers are reprising the roles they held during the prior term: Bob Weller returns as president; John Lyons will serve as vice president; Chris Horne was elected as secretary; and Ron Chase fills the role of treasurer. David Layer will step down from the board, and Anne Goodwin Crump joins.

➤ 19 Ways to Make the FCC Rules Better
Several large U.S. radio entities — including the largest one, as well as an influential public broadcaster — want the FCC to change a bunch of familiar management and technical rules under which broadcasters have operated for years. Their proposals touch on issues from station IDs and ownership reports to AM proofs and single-sideband FM stereo carriers.

➤ Public Broadcasters Ask FCC to Reevaluate Channel 6 Protections
The current rules mean that "NCE FM stations have been forced to limit their service coverage areas so as to avoid interfering with non-existent analog television receivers," they wrote.

➤ Broadcasters Have Call Option for Stake in NextRadio App
Is the ownership structure of NextRadio and TagStation about to change?

➤ Nebraska SECC Chair: Handle Blue Alerts Differently
Rodney Zeigler thinks that the Blue Alerts plan is overreach and suggests they be treated more like Silver Alerts.

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- John Herath, Director of Operations, Farm Journal Radio

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(continued from page 8)

Certainly the merger improves capital purchasing leverage. How can communication among CEs be fostered for sharing best practices? The collaboration tools we have today are a great help.

RW: How is redundancy in technical operations typically handled?

Goldman: There are two kinds of redundancies.

Technical equipment redundancies is the first type. As part of the overall planning, office/studio and transmitter leases should be evaluated as to cost, lease restrictions and term. If it makes sense, and as part of the due diligence budget, any potential consolidation should be examined and budgeted. FCC allotments should be checked to see if consolidation of tower sites and/or facility upgrades should be considered. The lease terms for studio and transmitter seldom line up with the acquisition schedule, so there's usually some period of time when operations remain separate and redundant.

Personnel redundancy is the second type. This is tough and varies considerably by company culture and overall needs. From a corporate standpoint, the corporate engineer of the company being acquired is seldom retained, at least not in the same capacity. Regarding local station staff, questions come up very soon after the merger announcement as to what the new company's intentions are both from incumbent and by the engineers being acquired. In my experience, however, unfortunately, I've found that the engineering personnel are the last to be considered when companies are merging. Ultimately, upper management and imposed budgets make hard decisions necessary.

Smith: I think communication with staff is the key. There will obviously be some painful changes that will ultimately have to be made — and I can speak from personal experience! — but if humane measures are put in place as to any reductions in staff the potential pain can be considerably eased and the negative turned into at least a partial positive. For those unfortunate enough to be RIF-ed [slang for fired], there are new opportunities out there. Any severance arrangements should allow the individual impacted time to seek them out.

RW: What kind of technical issues must be laid out and managed? How are legacy networks and various brands of equipment dealt with?

Laird: Any technical issues that can put a license in jeopardy require immediate attention. Do all the stations have established procedures that are followed daily, weekly, monthly and yearly with record keeping? Example: tower inspections, history of transmitter and antenna parameters, server back-ups, testing of back-ups, etc. How are the ongoing inspection results reported to the station manager and to corporate technical management? Legacy technical networks and various brands of equipment within an enterprise of this size are normal. This is not necessarily a bad thing as long as proper IT structure and security is in place to protect them. The need to change is sometimes driven to get new features or because of discontinued hardware and/or software support. With the merger, station technology changes may be needed to support back office initiatives, centralized traffic, billing and IT management. Considering audio programming, will file sharing and voice tracking be expanded?

Kline: The first higher-level engineering things that come to mind are the major backend systems for each. Then there are lots of questions to be answered about HR/payroll, accounting, CRM, billing/traffic, music scheduling, streaming, etc.

Goldman: Regarding legacy networks and equipment, I advise folks not to move too quickly. If the stations are all being consolidated into a new facility, I'd wait until then to make major changes. All involved staffs should have a hand in deciding what brands of equipment are purchased. Some equipment by necessity must be the same, but many equipment items can remain specific to the needs of the individual stations or even specific people, such as preferred production equipment. When deciding on a common equipment platform, like consoles and automation, solicit input from everyone. It may not change the ultimate choice if there's a company preference, but it may prompt some tweaks to make it more user-friendly to the newcomers on the chosen platform.

RW: There are likely culture differences between the companies. How does a manager handle operational differences?

Smith: Likely, at the outset, the right way to do things, the right way to structure the organization, management wise, and the right level of staffing is pretty much thoroughly ensconced in each organization. Before blindly imposing the right way of doing things on the acquired company, it is very wise to take a good look at how they are doing things and see what positives one might want to incorporate in the new, merged organization, and obviously any negatives that might need to be eliminated. There will certainly be changes, and a lot of them; but letting people know in advance what is being done and, more importantly, why it is being done is critical to buy-in. Without such buy-in, the transition period is doomed to be a rough one.

Laird: Consolidation of best practices in this area should be pursued. Each location should have a list of items that need inspection procedures such as fuel tanks, generators, UPS, building mechanical systems, real property issues, roofs, electrical panels, fire suppression, etc. There should be procedures specific to FCC, such as tower lights, EAS, Part 101 license renewals not associated with the station license. And what about OSHA compliance issues, noise, personal protection, physical hazards and RF exposure? Standardized reporting helps corporate engineering properly oversee technical management responsibilities. This is usually not a big issue with technical personnel, especially if they know they get support when issues arise.

RW: How much time is given to deciding who reports to whom and can you describe the process?

Goldman: Usually, the acquiring company and people associated with the acquiring company take the upper hand in the reporting process. I think it's simply a trust issue. The corporate staff knows and trusts the local station manager, who knows and trusts the department heads. That's why I suggest waiting for a while before making any particular staff cuts or organizational changes until more is known about the people coming into the company. Speaking for myself, I have experienced being forced to make decisions before I could properly get to know the new people I was managing. As a result I didn't make the best choices.

RW: What little things tend to bog you down when planning a merger? From your experiences what potholes can be avoided?

Smith: Trying to focus on the minutiae right out of the box is, I believe, a mistake. That can tie you up in knots and result in noting much of consequence being accomplished.

Laird: Many potholes with technical staff can be avoided by establishing a clear path for technical communication on closing day. The first day communication package is critical for reducing those problems. If there's a lack of information the void will be filled with bad speculation. Anticipate likely questions by starting a FAQ. Have the org chart available with contact numbers.

Goldman: The biggest potential pothole I'd say that a technical manager must keep in mind when going through a merger is that you must minimize future surprises. Corporate managers really hate surprises. Learn as much as you can as fast as you can about the technical facilities and the people managing those facilities to provide good intelligence and minimize surprises after closing.

In my experience ... unfortunately, I've found that the engineering personnel are the last to be considered when companies are merging.

– Burt Goldman

First Invent. Then Innovate.

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AXIA® THE TELOS ALLIANCE

End the Mystery of the Transmitter Site

You take pictures of transmitters — so share them with nontechnical staff

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

Randall Rocks leads the engineering team at Cumulus' Boise, Idaho, cluster. Along with his associate Bill Frahm, they make it a point to keep their staff informed.

Fig. 1: Cover equipment rack doors with pictures of that station's transmitter site.

Fig. 2: Visual in the TOC help dispel some of the mystery about off-site transmitter and tower facilities.

Figs. 1 and 2 are examples. Equipment racks in the Boise technical operations center have solid front doors and are organized by station. So the staff can see what each transmitter site looks like. Randall and Bill have posted pictures of each station's site. Further, tours of the site are available for employees. This is also helpful for new employees to see what a transmitter site actually looks like.

Non-technical folks hear about a transmitter site or tower but really have no idea what it means. In the age of smartphone technology, snapping transmitter site pictures and posting them gives your staff a better idea of what you do and takes little effort.

One creative engineer I know posts a weekly "What is it?" picture in the staff break room. Photos of burned components, snakes or other animals and other curious things found at the remote site help bring your staff into the world of engineering.

If you maintain an AM and invite the sales staff to visit, bring along a fluorescent tube. As the tube illuminates because of the RF in the room, you can demonstrate how the signal weakens as the tube is moved further away from the RF source. This demonstration will stick with them for years! I still remember the first time I saw it done as a lad of 12.

Bill Frahm shared a solution to a problem common in studios: the chair banging into equipment mounted in the vertical rack space to the left and right of the console.

In his picture, Bill mounted a blank panel on standoffs. Long bolts with nuts will also work. Seen in Fig. 3, the panel absorbs any shock from the studio chair, but allows fingers to slip in and access the switches, if needed.

Fig. 3: A blank panel mounted on long standoffs prevents switches or other front-panel components from being bumped by the studio chair.

Fig. 4: Daniel Hyatt found another use for the vinyl used to wrap station vehicles: Apply it to your studio furniture.

Fig. 5: A sleek but inexpensive studio tabletop.

Remodeling studios can include furniture changes, too. But if you don't have the budget for wholesale studio furniture replacement, you might want to consider what Daniel Hyatt of Denver's Max Media did.

Taking a cue from the vinyl wrap we often see used on station vehicles, Daniel had his console furniture wrapped. Fig. 4 shows the results.

Speaking of furniture solutions, Eric Ostlund is assistant engineer for One Putt Broadcasting in Fresno, Calif. Eric recently completed a new facility build; when it came to studio furniture, Eric found that simple was better.

Since there's not as much equipment in today's AoIP studio, the simple curved tabletop, shown in Fig. 5, looks sleek and is supported by a brushed aluminum post.

(continued on page 14)

THERE'S A NEW MEMBER TO THE AARON FAMILY

INTRODUCING THE AARON 655

REBROADCAST/TRANSLATOR RECEIVER

The AARON 655 is the first of its kind—combining an FM/HD Radio Receiver with an Audio Processor, Dynamic RDS Encoder, and IP-Streaming. With premium features and unparalleled performance, the AARON 655 excels in the most challenging reception conditions.

FEATURES

- Uncompromising DSP-based (SDR) receiver
- Program Sources: HD 1-8, FM, IP-streaming, Analog/AES Line Inputs
- RDS Encoder: Converts HD Pad Data, IP-Stream Meta Data or IP Telnet Data
- Audio Processor: Powerful 3-band, 10 factory resets, Dayparting
- No Dead Air: Assignable failover audio backup
- Dynamic Web Interface for remote control & monitoring
- Alarms & Notifications via email, SMS messages, SNMP support

Join us at TAB 2017 - Austin, Aug. 9-10. See you at RF Specialties booth

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TAB Event Attracts Beyond Lone Star State

Photos by Beth Bobbit

REGIONAL EVENT

BY TOM VERNON

When it comes to over-the-top broadcast trade shows, the NAB's annual event in Las Vegas wins hands down. Conventional wisdom holds that if you can't find it at NAB Show, you're probably far better off without it. That said, some find the scale of the event to be a bit intimidating, and getting any amount of face time with the exhibitors can be difficult.

And that's where state and regional trade shows enter the picture. The smaller setting and relaxed atmosphere is more conducive to focus on the sessions and to find opportunities for complete conversations with the vendors.

It should be no surprise that the Texas Association of Broadcasters hosts the largest state broadcast association convention in the nation. RW spoke with TAB President Oscar Rodriguez about what to expect at this year's gathering.

According to Rodriguez, the event will host around 1,300 attendees, including station owners, managers, engineers and sales executives. He adds that there is a growing out-of-state contingent.

"We don't track numbers, but we're seeing a larger number of registrations from outside Texas, particularly among engineers. Many are with groups who have stations in the state," said Rodriguez.

The one-and-a-half-day event will take place Aug. 9 and 10 at the Renaissance Austin Hotel, and will feature 40 sessions and 45 speakers divided among three tracks: engineering, management, and sales and marketing. "We pack a lot into a day and a half," said Rodriguez. "It's pretty intense and fast-paced, but people tend to enjoy it."

SESSIONS

Among the sessions of interest to radio is "Putting Amazon's Alexa to Work for Your Station." Robert Meisse, president and general manager of Mid-State Multimedia Group in Mansfield, Ohio, will share his stations as a case study for employing Amazon's Echo and Alexa devices to serve viewers and listeners. Meisse will explain how to do it, what it costs and how it's helping this local broadcaster bring their programming to the latest in-home and in-car media platforms.

Wayne Pecena shares his IT knowledge during a 2016 session.

"It's Your Turn Now: Radio's Transition to all Online Public File" will explain the steps that radio stations in markets 51+ need take to be ready for the new all-online era. The session will be hosted by legal counsel Scott Flick.

Patrick McFadden, associate general counsel at the National Association of Broadcasters; Joe Seccia, manager of market and product development strategy for the TV transmission products at GatesAir; and Christine Zuba, national TV sales manager at Dielectric will co-host "Navigating the Spectrum Repack." Radio and TV stations alike must prepare for the biggest technical challenge of this century. This session will bring attendees up to speed on the

(continued on page 16)

#TAB2017
64th Annual Convention & Trade Show
August 9-10 | Renaissance Austin Hotel

IF YOU GO

What: Texas Association of Broadcasters 64th Annual Convention & Trade Show

Where: Renaissance Austin Hotel

When: Aug. 9–10

How: www.tab.org

How Much: $115 for TAB members for full conference. See website for exhibits-only, educational and other packages.

WORKBENCH

(continued from page 12)

Rychard Withers is general manager for KFCF(FM), also in Fresno, Calif. "Free Speech Radio for Central California" depends on both listener contributions and community volunteers to generate 20 percent local programming. The station is involved heavily with the community, giving many on-air guests their first broadcast experience.

To improve microphone technique, Rychard ditched the typical mic stands and headphones and invested in the Audio-Technica combination headphone/boom mic, seen in Fig. 6.

Once on the guest's head, and after adjustment, it doesn't matter if the guest turns to speak to a host or another guest during a roundtable discussion — the adjustable boom ensures they are always "on mic."

Rychard also painted a small dot on the end of the boom mic, shown in Fig. 7, so operators can be sure the guest is speaking right into the element.

For more information, head to *www.audio-technica.com.*

Workbench — Radio World's iconic and most popular column — relies on your good, practical ideas and those of your colleagues. Send in tips big or small; help your fellow engineers and qualify for SBE recertification credit. Email johnpbisset@gmail.com. *You can even (gasp) fax them to (603) 472-4944. And discover a trove of past tips by clicking on the Columns & Views tab at* radioworld.com, *then choosing Workbench.*

John is SBE-certified and is a past recipient of the SBE's Educator of the Year Award.

Fig. 6: Eliminate the problem of guests sounding "off mike" by switching to a headphone/boom mike combination.

Fig. 7: A small dot of nail polish helps orient the boom mic.

Leave Your Competitors in the Dust

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

TelosAlliance.com/VOLT

Omnia
THE TELOS ALLIANCE

TAB2017

(continued from page 14)

latest in this still-unfolding plan, and what it means for coordinating with other stations, the wireless industry, vendors, engineers and, of course, securing federal reimbursements for related costs.

The session "Next Steps for AM Revitalization" will be led by Rick Greenhut and Gregg Skall. With initial work on AM revitalization already underway, learn what's next and what might be possible, from transferring AM daytimers to translators, to possibly going all-digital and beyond.

For sales executives, there's "Why do Clients Buy From Us?" Pat Bryson looks at the motivations buyers have for advertising on stations. This session examines the "buy cycle" of the buyer, as well as how to recognize what part of the cycle prospects are in, and how to move them through the marketing channel to reach a positive conclusion.

ON THE FLOOR AND MORE

The trade show portion of the event will include 124 vendors — read the full list in the sidebar.

The event will wind down with the awards gala, which includes presentations of Texas broadcasting's leadership honors.

"They have helped shape 21st Century Texas by practicing lifesaving journalism, holding public officials accountable, inspiring future leaders and enhancing the technology infrastructure that undergirds all that radio and TV stations do. Each has earned the respect and admiration of legions of fellow broadcasters, community leaders and everyday Texans," said Rodriguez.

Wendell Mayes Jr.

Wendell Mayes, Jr. will be recognized with the association's Lifetime Achievement Award. Bob White of Corpus Christi has been chosen as the TAB Pioneer of the Year. Brian Purdy of CBS Radio Dallas has been selected as Broadcaster of the Year. Errol Coker of KHCB Radio Network was named George Marti Award for Engineering Excellence. Dan Sessler of RF Specialties was also tapped as Associate of the Year.

Brian Purdy

Rodriguez emphasizes the advantages a state show — like TAB's — has over larger conventions.

"Because this is a smaller event, there are greater opportunities for meaningful interactions with session presenters and vendors. We have organized the event so that the trade show is the central focus, and we try and make it easy for people to do everything that they need to. We also keep it affordable for members."

He adds that the member registration fee for the full conference is $115; the early bird discount period closed in June.

A testament to the popularity of TAB's annual Convention and Trade Show comes from the many attendees, who have requested that a third day be added.

"It wasn't something we had been thinking about," said Rodriguez. "But now that the suggestion has been made, we'll be giving it serious consideration."

EXHIBITORS

These are TAB exhibitors as of press time; see on-site program materials for full final list.

360 Systems Inc.
Accelerated Media Technologies Inc.
AccuWeather Inc.
AJA Video Systems
Alive Telecommunications Inc.
Beck TV
Bitcentral Inc.
Broadcast Electronics / Commotion
Broadcast Pix
Broadcast Supply Worldwide (BSW)
Broadcast Works
Broadcasters General Store
Burst Communications Inc.
ChyronHego
Cineo Lighting
Cobalt Digital Inc.
Comrex Corporation
Continental Electronics Corporation
Cool-Lux
Dalet Digital Media Systems USA Inc.
DeSisti Lighting

Dialight Corporation
Dielectric LLC
Digital Resources Inc.
DoubleRadius Inc.
DPA Microphones
ENCO Systems
ERI — Electronics Research Inc.
Evertz
Florical Systems
FLUOTEC
Frontline Communications
Fujifilm North America Corporation, Optical Devices Division
G&D North America Inc.
GBS — Giesler Broadcasting Supply Inc.
Grass Valley, a Belden Brand
Harmonic Inc.
Heartland Video Systems
Hitachi Kokusai Electric Comark
IHSE USA
ikan Corporation
Ikegami Electronics
Imagine Communications
IMT-Vislink
JAMPRO Antennas Inc.
JB&A
Joseph Electronics
JVCKENWOOD USA Corporation
Lectrosonics, Inc.
LiveU Inc.
Lubbock Audio Visual Inc.
Marshall Electronics

Show floor photos by Beth Bobbit

Middle Atlantic Products Inc.
Miller Camera Support LLC
Mobile Power
Myat Inc.
Nautel
Nemal Electronics Intl. Inc.
NVERZION
Octopus Newsroom Americas Inc.
Omega Broadcast Group
Orbital Media Networks Inc. (OMNi)
Osee Americas Ltd.
Panasonic
Pebble Broadcast Systems
Persistent Systems LLC
Precision Camera and Video
Quantum
RCS
RF Specialties of Texas
Riedel Communications Inc.
Rio Steel & Tower Ltd.
Rohde & Schwarz USA Inc.
Ross Video Limited
RTS Intercom Systems
RUSHWORKS
Sabre Industries
SAM — Snell Advanced Media
Satellite Engineering Group
SCMS Inc.
Sencore Inc.
Shively Labs
Slatercom-WCD
Software Generation Limited
Solid State Logic
Sony Electronics Inc.
SWIT Electronics USA LLC
Telescript West Inc.
Telestream
Teradek 61
Texas Media Systems
Texas State Networks
Tieline Technology
TitanTV Inc
TM Television
Total Channel Media Inc.
Triveni Digital Inc.
TVU Networks
Utah Scientific Inc.
Vizrt Inc.
Weather Metrics
Wheatstone Corporation
WideOrbit
ZVS-Media LLC

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Meet ruby, the new radio console from Lawo. So elegant and uncluttered, you might think something's missing — and you'd be right. We've moved most of the controls that litter the faces of other radio consoles onto an intuitive context-sensitive touchscreen, while essential controls like faders and monitor selectors are right where you'd expect them to be. ruby gives you the best of both worlds: familiar physical operations, and a modern graphical interface.

ruby's powerful visual interface is designed for fast-paced radio, with fingertip access to source, bus, and mix-minus assignments, as well as EQ and dynamics processing — freeing your talent to perform instead of searching for settings. You can even use ruby's GUI-building app to centralize control of studio software and peripherals. With intelligent AutoMix hands-free mixing and one-touch AutoGain mic calibration, your operators will tackle the most complex shows with ease. Even voice-tracking while on the air takes only the push of a button. Be prepared: your talent may actually thank you! And because ruby is engineered and built in Germany, it might just be the last console you'll ever need to buy.

ruby, from Lawo. The console with a refreshingly new point of view.

Join us @ IBC, #8.B50

www.lawo.com

SUMMER OF PRODUCTS

It's new equipment season again! Radio World's "Summer of Products" feature is all about new gear that has come onto the market in recent months, especially during spring convention season. Over several issues we are featuring equipment that caught our eye. Send ideas to radioworld@nbmedia.com with "Summer of Products" in the subject line.

DEVA INTRODUCES DB4402 DUAL FM MONITORING RECEIVER

The new DB4402 dual FM monitoring receiver is based on a dual-FM tuner design to allow simultaneous monitoring of a single or round-robin multiple FM signals, while simultaneously looping back an uninterrupted audio stream from the station of choice.

The system is designed so that streaming and measurement activities do not interfere each other. While streaming back the received FM signal of choice, measurement and logging take place in the background. Users can set custom alarms for RF, MPX, pilot and RDS signals and receive warning messages via email, SMS or SNMP.

TCP/IP and GSM connectivity provides remote control, monitoring and listening to the radio signal from any location. DEVA says the DB4402 is DSP-based, with a built-in oscilloscope for left, right and MPX signals and an RDS/RBDS decoder with a BER meter. The DB4402 also features MPX power measurement with data history, RF spectrum analyzer to check the RF carrier parameters, and selectable de-emphasis (50µs or 75µs).

Info: www.devabroadcast.com

WAVEART FM TRANSMITTERS ARE UPGRADED

The WaveArt series of medium-power FM transmitters from Italy, ranging from 600 W to 3 kW output power, have been upgraded with a new generation of power semiconductors. This was done with the aim of ensuring a futureproof design and improving overall transmitter efficiency.

An embedded RDS encoder features a dynamic mode capable of retrieving RDS data from a satellite feed through the built-in satellite receiver. Models in the WaveArt product line integrate a set of analog and digital input interfaces and feature DDS direct digital modulation and the capability to monitor the operating parameters continuously for predictive maintenance purposes. This means that each unit can recommend the proper actions required to extend lifespan. The company says customers complying with the preventive actions suggested by each unit are eligible to receive a free warranty extension up to five years.

Info: www.waveart.it

ALTEROS DEBUTS WIRELESS MIC SYSTEM

Audio-Technica's Alteros wireless microphone system offshoot is launching an Ultra Wideband wireless mic system, the GTX series.

The GTX series operates in the license-free 6.5 GHz spectrum. It is planned to provide up to 24 channels of 24-bit/48 kHz digital audio. According to a release, the system is designed to minimize interference.

"The GTX Series operates far beyond the UHF and VHF television bands, requires no frequency coordination, license, database registration or STA, and does not cause interference or create intermodulation products. The system is ideal for studio-to-studio operation since it emits less intentional radiation than the typical PC and will not interfere with surrounding signals."

It debuts with the GTX3224 control unit, GTX24 bodypack transmitter and GTX32 transceiver.

"The unit features MADI, Dante and AES67 digital outputs that are all available simultaneously and allow for seamless integration with IP-based infrastructures. A single-mode fiber output supports long-distance runs."

A 7-inch front-panel touchscreen provides access to system settings, monitoring tools, performance reports and other controls.

Up to 32 transceivers can be connected to the controller via Cat-5 cable.

The controller has dual power supplies for redundancy and can be remotely operated.

Info: www.alteros.tech

NETIA OFFERS MULTIMEDIA HUB

Netia says its Media Assist software suite acts as a multimedia hub for content production and delivery in any format.

The cloud-ready system enables radio stations to deploy their back-office applications in a dedicated SAN or host them securely outside the station's premises. By offering safe access to outside entities, the station can exchange with its affiliates.

Now available for Media Assist is a monitoring tool that provides radio staff with a single interface for managing multisite workflows. The module allows staff to monitor priority levels on all launched processes to help minimize their impact on bandwidth, while facilitating content delivery within the group and increasing time-to-air ratios.

Info: www.netia.com

ORBAN ROLLS OUT 5.1 SURROUND SOUND MONITOR

DaySequerra's acquisition of Orban began to bear fruit in the shape of a nifty rack-mounted headphone surround sound monitor for higher-end broadcast operators.

The iMix 5.1 Headphone Monitor features Orban's patent-pending DSX Headphone Surround algorithm. It utilizes the ITU-R BS.1770 loudness measurement system.

"Designed for accurate rendering of a discrete 5.1 soundstage in the users' headphones, the iMix 5.1 Monitor does not require artificial ambience or special encoding to accurately reproduce multichannel audio," a release explained.

"No proprietary surround encoding is required; test tone locations are rendered with precise image integrity, including BLITS tones and SWOOP tests without artificial ambience that masks the program audio."

Orban President David Day said the iMix 5.1 addresses the needs of the company's HDTV and radio broadcast customers for a 5.1 surround headphone monitor that will allow them to monitor and QC 5.1 broadcasts outside a specially-designed and expensive audio control room.

He added, "This robust, cost-effective solution allows users to work with their preferred type of headphones, achieving the sonic accuracy they need without special setup or calibration."

Basic I/O is AES digital audio with an options for HD/SDI inputs. Other options planned are AES67-Dante input and balanced analog I/O.

Info: www.orban.com

BURK UNVEILS CAPTURES CAPABILITY AND DIGITAL TEMPERATURE UNIT

Burk Technology is adding features to its remote control platforms.

A feature for the ARC Plus Touch (shown) and SL remote control systems is called Captures. It allows station engineers to track changes in critical site parameters over time. Sample rate and the

number of channels captured can be adjusted to tailor operations to meet a range of analysis needs. Captures can also be triggered by events, creating a record of site conditions at the time of occurrence. Captured values are directly stored on the ARC Plus and can be data can be accessed or downloaded through the AutoPilot software. Captures is standard on currently shipping ARC Plus Touch and SL units and is optional for v.5 models in the field.

Also new is the BTU-4D Digital Temperature Unit. The BTU-4D connects up to four digital temperature sensors to the ARC Plus or ARC Solo remote control system. The unit supports sensor cables up to 1,000 feet long. Line voltage telemetry is also built in. The digital temperature sensors available for use with the BTU-4D include general purpose, wall-mount, stack-mount and exterior installation. The sensors can also be used with Plus-X EM and Climate Guard Environmental Monitors.

Info: www.burk.com

The Forever Console...Wheatstone LXE

Adapt to new technology, new techniques, and new workflows with LXE. Completely configure/reconfigure your console – every button, knob, and display on the surface is fully programmable using our intuitive ConsoleBuilder™ GUI/scripting interface.

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Need more input faders? Enable up to four layers to double/triple/quadruple the number (up to 32) in the same footprint.

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What makes Wheatstone consoles best-of-class? Breakthrough technology with award winners like WheatNet-IP Intelligent Network with bus-minus®. Unique design ingenuity. Precision production/starship-grade materials. Obsessive Wheatstone quality. FullTime support*. What does all that get YOU? Absolutely spoiled...

LX-24 –This Really Changed Everything

THE standard in radio today. Exceptional console at every level, fully loaded and completely modular.

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Outstanding companions to the LXE and LX-24. Perfectly sized for newsrooms, etc.

IP-12 & IP-16 – Best $ Per Channel Ratio

Precisely designed and engineered for peak performance at mid-size stations.

Intelligently Network Your Consoles

Each powerful BLADE-3 (point-of-use interface) contains a map of the entire WheatNet-IP Intelligent Network to route I/O, access sources, add processing, mix to/from any device. Plus routable logic, silence sensing, gain control, automated mixing, discovery/control, and much more. Format agile: MADI, AES/EBU, TDM, Analog, and AoIP. AES67 compatible.

Learn more: wheatstone.com/consoles

NEW!

VoxPro Crushes It In The Ratings Thing

Getting rid of ALL your dead air makes better shows. Research shows that tighter programming dramatically retains listeners. Retained listeners = higher ratings. Download our free white paper, "*The Business Case for VoxPro*" at the link below.

Speed To Air

VoxPro's software tools let you edit, remove silence, re-record your voice, add effects, and be ready to go...in seconds.

Obsessive Organization

Hot buttons put a library of clips and tracks at your fingertips. Have your entire LIVE show programmed before you even start.

Creative Controller

With VoxPro hardware, you control every aspect of the software. Designed and laid out for maximum speed and agility.

VOX 7 PRO

RECORD/EDIT/PLAYBACK AUDIO LIVE, IN REAL-TIME, ON THE AIR

Learn more: voxpro.wheatstone.com

NEW!

Bring Your Sound Into *This* Century with Phase Linear Audio Processing, RDS, & Built-In HD Time Alignment

Wheatstone crafts powerful, persuasive modern sound by developing integrated processing tools like: Mastering Limiters, Intelligent AGC, BassTools, Multipath Control, and Baseband 192 for the all-digital processor-to-transmitter chain. All algorithms share data interactively, constantly optimizing your settings for remarkable consistency, track after track. Our new flagship, the AirAura X4, has a built-in HD tuner for automatic Time Alignment as well as full RDS capabilities. New Phase Linear processing delivers detail and transparency unheard of in on-air processors. Brilliantly modern.

Learn more: wheatstone.com/processing

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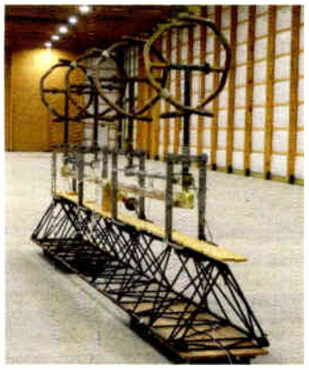


ERI HAS NEW AXIOMS

Antenna maker Electronics Research Inc. recently launched a new pair of Axiom antennas.

The Axiom is a side-mount master FM antenna utilizing the company's well-known Rototiller design. The two new models are the LPA and MPA (shown) series, with power ratings at 15 kW and 39 kW, respectively. They'll be available in 4-, 8-, 12- and 16-bay versions.

A release explains: "The Axiom is a specially designed antenna system which provides high input power handling capability and can provide service as an auxiliary master FM antenna for systems that are limited to a band width requirement of up to 18 MHz of the FM Band (88 MHz to 108 MHz). The antenna can be designed with a single RF input or can be configured as separate upper and lower antennas for higher power handling capability and redundancy."

Info: www.eriinc.com

AUDINATE ON BROADWAY

Dante IP technology specialist Audinate has a new chip available for original equipment makers into IP or looking into networking their audio equipment via IP.

The Broadway chip handles 16 I/O channels of up to 96 kHz audio, with latency as low as 0.25 ms and Gigabit Ethernet. Interface options include SPI, UART and GPIO interfaces.

The company says the chip is aimed at "mid-tier" equipment such as multichannel amplifiers, smaller DSP sections, hardware interfaces, compact mixing consoles and conferencing systems.

According to Audinate, Broadway has "significant performance enhancements over the low channel-count Dante Ultimo solution."

Info: www.audinate.com

ORBITAL LAUNCHES OMNISTREAMER

Orbital Media Networks, known for its satellite services, is branching out with an IP-based network delivery box, the OMNiStreamer.

According to Orbital it is a dual network-path HTTP Live Streaming and Real-time Transport Protocol audio appliance. Control and operation features include regionalized spot insertions, automation control relays, PAD Data pass-through, high-quality AAC audio, scheduled program playback, and local content playout.

In addition it offers balanced analog outputs, eight N.O. relays, serial and UDP delivery of program data. The company says that it has polished error correction schemes and path length accommodation algorithms to optimize the public internet/WAN or LAN performance of the box.

AES digital audio is an option.

Info: www.orbitalmedianetworks.com

OMNIA ELECTRIFIES WITH VOLT

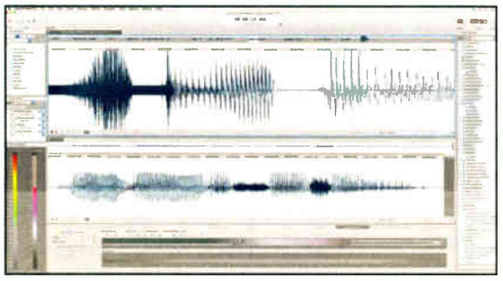
Omnia Audio has rolled out Volt, a processor in one rack unit that the company says shares technological lineage with its top-of-the-line products like the Omnia.11.

The Volt features a clipper designed by founder Frank Foti and dynamics from processing algorithm guru Cornelius Gould. There are six separate AGC sections (one wide-band, five multiband); five time-aligned limiter sections; deep bass, warmth and stereo enhancers.

Omnia says that its QuickTweak function will take away much of the mystery of mastering a processor and provide simpler adjustments and settings that are also pleasing. In addition, the Volt is multifaceted, able to handle AM, FM and HD Radio/DRM duties.

Info: www.telosalliance.com

MAGIX RELEASES SOUND FORGE PRO MAC 3



For Sound Forge DAW users who may have felt abandoned, Magix promises that you are not forgotten.

Magix purchased the Sonic Foundry properties from Sony last year. First out of the chute is an upgrade of the Mac version. New tools in Sound Forge Pro Mac 3 include loudness metering, iZotope Plug-ins RX Elements and Ozone 7 Elements. Magix lists SF Pro Mac 3 as native 64-bit, 32-channel, 24-bit/192 kHz and Red Book-qualified.

Also expected this summer is a new 64-bit Windows versions of the platform. Magix's Gary Rebholz said that developer teams in Madison, Wis. (where the old Sonic Foundry was based) and Berlin were working on the new iterations, including a Sound Forge Pro 12.

Info: www.magix-audio.com

STREAMGUYS DELIVERS PODCASTING SAAS SERVICE

StreamGuys is launching a service to turn video into an audio podcast. The cloud-based SGrecast live streaming repurposing platform adds to its audio podcast recording capabilities by enabling broadcasters and video professionals to automatically transform live, linear video streams into podcasts and side channels.

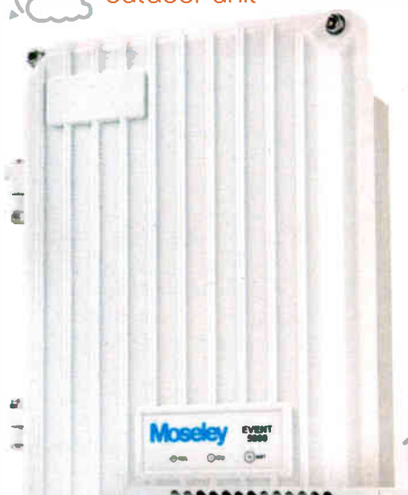
SGrecast uses StreamGuys' transcoding technology to automatically convert audio to the formats and bitrates appropriate for use in live syndication; it also has a new recording mechanism to record audio streams in their native format. The transcoding technology can also be applied to video for live syndication and is capable of recording live RTMP, RTSP and HLS streams for conversion to MP4 files. In addition, the system offers a suite of scheduling tools that enable unattended operation, while integrated publishing to RSS feeds, automated delivery and compatibility with syndication services are also available.

Additional features of the SGrecast for audio include rebroadcasting tools and social media integration. These capabilities are expected to be included in the video application in the future.

Info: www.streamguys.com

HIGH CAPACITY
EVENT STUDIO TRANSMITTER LINKS

outdoor unit



TAKE ADVANTAGE OF WIRELESS HIGH PAYLOAD STL/TSL CAPACITY

Moseley EVENT STL/TSL systems provide up to 155 Mpbs combined IP, T1/E1 payloads. Multi-station clusters can convey multiple linear uncompressed audio pairs for a truly cost-effective STL/TSL link. Connect your existing T1/IP audio hardware directly into the EVENT system, or use Moseley Rincon for your audio payloads. An optional DVB-ASI module is available for full duplex video.

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

indoor unit

INTELLIGENT SYSTEM DESIGN

Spectrum-scalable digital radios with user-selectable data rates enable broadcasters to have greater flexibility in STL planning and future growth. The integrated T1/E1 and Ethernet interfaces allow for a combination of T1/E1 and IP packet data.

IP APPLIANCES AND APPLICATIONS

Offer IP transmitter control, surveillance security, and site monitoring to reduce downtime, and protect valuable station assets while saving travel time to the site.

REMOTE MIRRORED SERVERS

From the transmitter site, offers backup of business records and programming content to get you back on the air quickly in the event of a studio outage.

EMAIL AND INTERNET ACCESS FROM THE TRANSMITTER SITE

Saves engineers time accessing manuals or technical support from manufacturers during maintenance sessions.

SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

Full SNMP package with GUI provides easy monitoring and configuration changes.

Contact The Moseley Sales Team to Custom Configure Your EVENT STL/TSL Today!

moseleysb.com

WHEATSTONE REVS AOIP WITH DMX

Wheatstone wasted no time this spring getting a new PR&E product out after acquisition of the brand from GatesAir.

The DMX, shades of PR&E's BMX and RMX lines, is dedicated to IP technology. It does not require an external Ethernet switch since a Gigabit Ethernet network card is built in.

Eight-fader and 16-fader models are available. A 1RU rackmounted I/O box is part of the system.

Features include talkback and cue functions, EQ and dynamics, LED meters, timer along with control room, studio and headphone monitoring. Each channel strip has pan, mode and input control knobs.

Wheatstone Director of Sales Jay Tyler called it "an ideal setup for the two- or three-studio facility where each studio can act independently as a separate standalone entity, but the studios are linked together through an IP network."

Info: www.wheatstone.com

DIELECTRIC CROSS-COUPLES FILTERS

Building on its product introductions over the last year, Dielectric announced the addition of cross-couplings to its FM combiner filters.

Dielectric explains that the couplings allow "less frequency separation for combined channels. Since fewer cavities are used, efficiency is improved and operational costs are reduced."

Senior Engineer Derek Small said, "Higher-order filters have been required for channel combiners and IM reduction due to the crowded FM spectrum, and have a tendency to reduce efficiency ... Higher-order filters with large amplitude rolloff and delay can add asynchronous AM, and reduce stereo separation in the FM signal. From a classic design standpoint, the use of constant-impedance FM combiners means twice as many filters and components and raise both initial and operational costs.

"Our new cross-coupled designs tackle these problems with much less complex architecture in shared FM facilities."

Info: www.dielectric.com

DIGITAL ALERT SYSTEMS UPGRADES ONE-NET & DASDEC

Monroe Electronics and its Digital Alert Systems subsidiary have issued a software upgrade to the One-Net and DASDEC platforms for advanced Emergency Alert Systems and Common Alerting Protocol messaging compliance. The new Version 3.1 of the One-Net and DASDEC platforms provides the latest compliance mandates, operational improvements and security features.

A new feature is MPEG-DASH message playout. Customers can add MPEG-DASH to One-Net SE and DASDEC-II devices. In addition, the internal MPEG-2 encoder now includes an option switch to provide a constant stream to maintain continuity with downstream encoders and other devices.

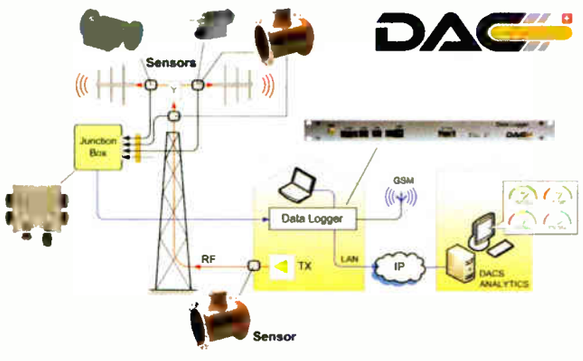
The upgrade features an update for emergency alert authentication to address changes made by U.S. and Canadian authorities. This includes the latest FEMA IPAWS and Pelmorex NAAD digital certificates, which are required to ensure proper validation and authentication of emergency alert messages.

More features that make up Version 3.1 include a selector to normalize radio and CAP alert audio output levels; an upgraded Alert Agent with improved handling of rare alert cases; enhancement to the network settings; an addition of a RSYSLOG function; and support for the new upgrades to Custom Message Pro.

Previous users of Version 3.0 will be able to upgrade to Version 3.1 for free. Customers upgrading from older versions will need to purchase a Version 3.0 enabling key before installing Version 3.1.

Info: www.digitalalertsystems.com

DAC SYSTEM OFFERS TOWER MONITORING SOLUTIONS



Switzerland-based DAC System rolled out the latest version of its DAC Monitoring System, v1.3.

The system is designed to monitor radio frequency signals at an antenna input and at the power splitter/divider used for distribution.

As part of this update, v1.3 offers support for new products and a number of new key features, enhancing the DAC Monitoring System for indoor applications.

Among the new supported products for v1.3 are the indoor RF detector, a temperature detector for indoor application and the Indoor Junction Box 4.x, which connects sensors, temperature and RF detectors.

The version also offers support for the outdoor/indoor sensor in the sizes of 3-1/8 inches, 4-1/2 inches and 6-1/8 inches.

New features for the updated system include support for SNMP v2c and v3; enhanced alarm and system monitoring; support for Wi-Fi/WLAN hot spot functionality; a "Maintenance Mode" that suspends alarm forwarding; and the ability to scale the system from zero to 250 monitoring points per data logger.

The DAC v1.3 of its monitoring system is available now.

Info: www.dacsystem.ch

NEUTRIK CLEANS UP

It might seem surprising, but cleaning and inspecting fiber-optic connectors can be difficult. Contrary to first impulse, they should not be wiped with a cloth, clothing, paper towel or air blaster, according to manufacturer Neutrik; such materials can scratch or leave lint, the smallest of which can wreak havoc with a cable's performance or damage the connector.

To bring proper fiber-optic inspection and cleaning techniques to the public as the cable becomes common within broadcast facilities, Neutrik said, it has created a set of cleaning accessories for its opticalCon Advanced high-performance cables. These connector-like attachments hold the shutter open, allowing for the use of professional optical connector cleaners. This alleviated the need to jigger the shutter open or remove it to get at the ferrules.

Neutrik USA President Peter Milbery stated, "For anyone using fiber optic cables outfitted with Neutrik's opticalCON Advanced cable connectors, these new cleaning tools are an invaluable accessory."

Info: www.neutrik.us

SUMMERTIME SPECIAL

GATESAIR

Flexiva 3kW (analog power) solid-state FM transmitter with Flexiva Integrated FM Exciter

Designed for low- and high-power requirements, up to 40 kW, Flexiva has the most compact design on the market today. Flexiva takes FM transmission to the next level.

- Power levels up to 3850 W Analog FM, 3100 W FM+HD
- Broadband, frequency agile design 87.5 to 108 MHz needs no tuning or adjustments
- Best-in-class power efficiency for lowest operating costs
- Compact, space-saving, 2, 3 or 4RU design
- State-of-the-art, direct-to-carrier digital modulator
- Operation at up to 1.5:1 VSWR with proportional foldback
- Full remote control capability

The Burk ARC Solo and Autopilot

The all-in-one remote control, brings you powerful features like Jet™ Active Flowcharts, smartphone control, custom email templates and the Recordable Speech Interface. All the I/O is conveniently located on the rear panel, with connections for up to 16 status, meter and control channels.

Add AutoPilot and your remote sites come to life with customized graphical views, automated logging and scheduled reports that take the drudgery out of FCC compliance.

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Package includes the Burk Arc Solo and Autopilot with the GatesAir FAX3kINT for one hot price!

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regular price for this package is $36,990.

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Comrex Keeps on Working for VPR

BRIC-Links keep all 14 of Vermont Public Radio's transmitters on 24/7

USERREPORT

BY FRANK ALWINE
Broadcast Engineer
Vermont Public Radio

COLCHESTER, VT. — Vermont Public Radio is Vermont's NPR station. We supply local programming and news across the state of Vermont. I've been a broadcast engineer at VPR for two years now, focused on the studio engineering side of things. I'm responsible for everything in the path from the microphone to the STL that delivers our programming. It's my job to oversee the broadcast chain at the main studio in Colchester, along with our outlying satellite studios in Norwich and Montpelier.

My predecessor installed and designed our current STL setup in 2010, and I inherited it when I took over the job. VPR has 14 full-powered transmitters, used by two networks (VPR News and VPR Classical), and we have more than 30 Comrex BRIC-Links handling all of our STLs.

For our network, we use private ELAN from our local internet provider, Fairpoint. It's a 40 Mbps-outgoing connection here at the studio, and then each transmitter site gets a 3 Mbps bidirectional link. For all of those connections, we use the BRIC-Link. We also use a backhaul on our BRIC-Links, to transmit an off-air back feed.

For confidence monitoring, we have a profiler system that lets us record our programming. This feed is sent back to the studio over the BRIC-Link in a lower quality stream. It enables us to get actual audio back to the sites, and gives us some confidence. We use the AAC Stereo D8 codec to transmit from the studio to the transmitter, and for our return feed, we use the HE-AAC v2 codec. It works beautifully.

Talking with my colleagues before writing this story, we were at a loss as to what we should say. It's kind of boring — our BRIC-Links simply work, and that's pretty much all there is to it.

But as I was thinking about it, I realized that's the best endorsement I could give. I don't have to worry about these things — they just plain work all the time. Once or twice a year we'll have to disconnect one and reconnect it, but since we purchased them in 2010, not a single unit has failed. That means 24/7, every single day, for the past seven years, these units have just been working. From a broadcast engineer's standpoint, you can't get much better than that.

For information, contact Chris Crump at Comrex in Massachusetts at (978) 784-1776 or visit www.comrex.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

AETA µSCOOP FACILITATES STL TASKS

AETA's µScoop full-duplex IP audio codec, available with analog or digital input/outputs, is designed to utilize IP connections over wired IP networks.

According to the company, µScoop offers many advantages to ensure a permanent link between two codecs.

Transmission is ensured by two types of packet duplication functions, which AETA calls an exclusive. This makes it possible to improve the resistance to packet losses, and thus increasing connection reliability.

The auto redial feature lets users configure the number of redial attempts in case of a connection loss along with the waiting time before each attempt. If the link is dropped, the codec relaunches the call and sets the link up again. This feature is also effective in case of a power failure with µScoop recalling the remote unit as soon as it restarts.

In addition, µScoop features multicast transmission; Ethernet remote control from its embedded HTML server; configurable status and control relays (GPIO) that inform users when the remote µScoop is synchronized; a choice of encoding algorithms including Opus and MPEG AAC; and SIP or direct RTP modes.

For information, contact AETA Audio in France at +33-1-41-36-12-01 or visit www.aeta-audio.com.

APT IP CODECS ADD FEATURES

WorldCast Systems says the latest release in its IP audio codec line features scalable MPX transmission, new NTP alignment and support for Dante, the multichannel digital media networking technology.

The APT IP Codec range consists of the stereo IP Audio Codec and the Multichannel IP Audio Codec, which transports multiple channels of audio or MPX content over IP links. Systems are DSP-based and feature SureStream technology for AoIP over public internet connections.

A new multichannel I/O board on the slimline APT Multichannel AoIP Codec offers users the ability to connect from the codec to a Dante or an AES67 network. This enables the codec to become integrated into in-house network ecosystem, which the company says ensures interoperability with near-zero latency and synchronization.

Also new in the APT Codec range is the NTP time-alignment feature, which enables latency control when distributing programming across multiple decoders. Suitable for multiple-frequency networks, NTP timing ensures playout alignment on each decoder with constant link latencies.

Last, the MPX capabilities of APT codecs have been enhanced with the launch of a new limited MPX transmission mode. In addition to the 192 kHz sampling rate, which enables transmission of the full MPX spectrum, APT codecs support 128 kHz sampling, transmitting the audio and RDS signals but limiting the MPX bandwidth to 64 kHz. This bandwidth limitation saves network capacity, reducing the requirement of 3.2 Mbps for 16-bit audio at 192 kHz to just 2.048 kbps at 128 kHz.

For information, contact APT/WorldCast Systems in Florida at (305) 249-3110 or visit www.worldcastsystems.com.

BUYER'S GUIDE

Channel 4 and Telos Team Up

Z/IP One takes part in world's longest underwater broadcast

USERREPORT

BY MUHAMMED RAFEEQUE
Channel 4 FM Dubai

DUBAI, UNITED ARAB EMIRATES — One of the greatest things about being in radio is that you occasionally have a chance to be involved in some unique broadcasts. While some broadcasts are unique for the events they cover, others are so memorable that the broadcasters themselves become the story.

Such was the case recently with our crew at Channel 4 FM in Dubai, when the marketing team thought it might be fun to do a live 5- to 10-minute broadcast segment from the Ambassador's Lagoon outside the iconic Atlantis the Palm Resort. This was to be more or less as a publicity stunt to promote the exotic location. We're not talking poolside, mind you, but broadcasting from within the pool — an underwater broadcast from a pool that hosts a variety of sea life.

UNDERWATER

This might have been interesting enough, though such an aquatic broadcast had been done before. Our plan soon evolved into something much more when our Station Producer Lucas Poole suggested that Stu Tolan, host of the "Celebrate Mornings" breakfast show, not only broadcast underwater but attempt to break the record for longest underwater broadcast.

We then learned that this would mean staying on-air and underwater for nearly five hours — no small amount of time to broadcast live while wearing scuba gear. Our team was up for the challenge and preparations began to break the record.

One question on all of our minds was if the tech could hold up for such a stunt. There were a number of challenges ahead of us, and the engineering team initially didn't feel prepared for the record-breaking broadcast.

We were informed that one of the requirements to set the record was that the broadcast crew could not disconnect from the studio for more than two minutes, so we would need to ensure a stable link from the site of the broadcast to the main broadcast studio at all times. In addition, the broadcast hosts would need to remain in communication with a representative from the Guinness Book of World Records.

These requirements presented some challenges for our technical crew to ensure these lines of communication would remain stable throughout the broadcast, and that any delays in communications or getting callers on the air would be minimal.

Complicating things, the resort could not provide a stable internet connection because it is reserved for guests, so the only access would be via cables. As such, a good bit of equipment would need to be hauled to the broadcast site so everything would be at the ready.

Stu Tolan


The equipment rack with the Telos Z/IP One in the center.

As a solution, we used a router that connected to a Telos Z/IP One IP audio codec, and then to the main broadcast studio. The studio features 100 percent Livewire infrastructure, so getting the audio feed into the studio would be easy using the Z/IP One, especially with sufficient backups. We assigned two Z/IP Ones to the studio, so if one failed, the second one would take over and the broadcast could remain live. For this broadcast it was all about convenience, quality and low latency — Livewire fit the bill perfectly for that.

All the coordination paid off, and on May 13, Stu and the Channel 4 "Celebrate Mornings" went live from underwater. Everything went smoothly, and various guests joined our team underwater during the show including news reporters and our own program director, while our co-presenter presented poolside throughout the event. With the help of the engineering staff and the marketing team, the broadcast came off without a hitch.

In the end, the record was not only broken but shattered; the broadcast went well beyond the five-hour mark, giving future underwater broadcast hopefuls a high bar to shoot for. It certainly wasn't your everyday broadcast, but at a place like Atlantis the Palm, "A World Away from the Everyday" is the norm.

We have more pictures of our record-breaking event at our website — *www.channel4fm.com*.

For information, contact Cam Eicher at Telos in Ohio at (216) 241-7225 or visit www.telsoalliance.com.

TECHUPDATE

DAWNCO OFFERS NEW FOUR-PETAL DISH

Dawnco is offering a new four-petal design for its 3.7-meter/12-foot satellite antenna. The company says that this offers advantages in performance and cost, plus it's easier to ship and install than the older one-piece design.

The dish uses aluminum that is twice as thick as competitors, the company says. It is spun into a reflector shape, and then cut into four petals. The machined reflector edge support beams are bonded to the edges of all four reflector petals, creating an accurate 2-degree spacing-compliant dish shape. The assembled four-petal reflector is mounted onto a strong steel back structure, on a steel mounting post.

Petals can be lifted by one person, and the four petals can be lifted one-at-a-time onto the mount for an easy two-man installation process.

Dawnco's reflector blocks adjacent satellite interference when receiving programs from the new AMC18 satellite, and prevents the drop-outs and distortions that plague users of old imprecise dishes. Radio networks on AMC18 are recommending our 2-degree-compliant 3.7-meter dish size.

The four-petal 3.7-meter dish has been priced low, and the crated design can be shipped quickly using economical common carrier trucking. In the last few months, over 200 stations have purchased Dawnco's four-petal aluminum 3.7-meter satellite antennas to replace their older small-sized dishes.

For information, contact Dawnco in Michigan at (248) 391-9200 or visit www.DAWNco.com.

BBN Spreads Message With GatesAir

Bible Broadcasting uses Intraplex IP Link 100 for radio network distribution

USERREPORT

BY ROY BECKER
Senior Engineer
Bible Broadcasting Network

CHARLOTTE, N.C. — Bible Broadcasting Network grew from a single station that we owned and operated in Norfolk, Va., to our present-day network, which consists of 45 full-class radio stations and 90 translators in 31 states and Bermuda.

Using this 24/7 radio network infrastructure, we're able to reach a potential audience of about 50 million people with our program mix of Bible programs and Christian music. We also reach a worldwide audience by streaming media in eight languages over the internet to mobile and other connected devices.

With respect to radio distribution, we deliver our program signal — as well as the commands for transmitting relay closures for PSAs and IDs — to the vast majority of our stations via a Galaxy 16 satellite transponder.

However, about four years ago, we found one of our radio stations couldn't be reached effectively via satellite due to interference caused by our transmitter.

IP DISTRIBUTION

Since we couldn't reach that station via satellite, and our internet bandwidth at our Charlotte, N.C., network operations center is plentiful, we decided to deliver the audio stream over IP to just that one station. To do this, we installed a GatesAir Intraplex IP Link 100 network, with an encoder/decoder box in our main server room and a similar unit deployed at the receiving station.

Intraplex audio codecs give radio broadcasters an array of audio coding options for sending signals over studio-to-transmitter links using IP. While Intraplex is bidirectional, our encoder/decoder "send" box multicasts the audio as two identical HE-AAC v2 compressed streams to the receiving site for redundancy.

We later consolidated our studio and transmitter facilities where there was not sufficient space to accommodate a satellite dish. Then we acquired yet another station where our satellite signal was adversely affected by too much external interference. Since satellite delivery was not an option for these stations, we deployed additional Intraplex IP 100 units to those locations and added them to our Intraplex audio over IP network.

I can monitor all of the Intraplex sites, including the home base and field units, remotely using a web browser. In fact, once they're installed in the rack,

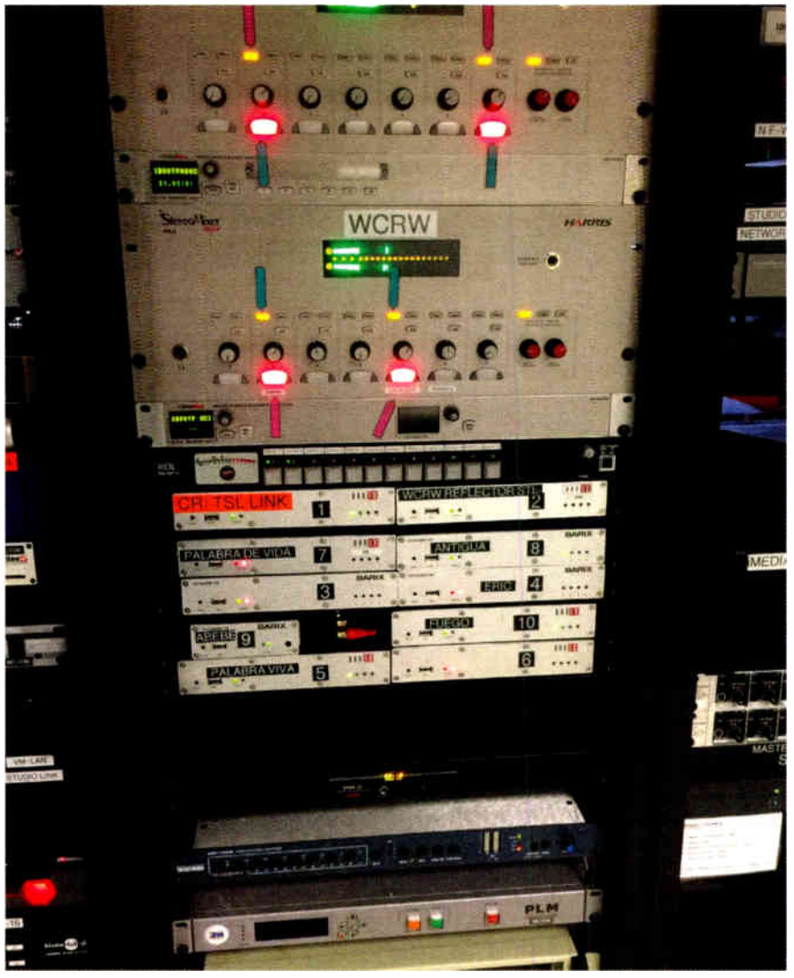
(continued on page 31)

Barix Delivers for New World Radio Group

Simplicity and savings sell multicultural broadcaster

USERREPORT

BY BRIAN C. EDWARDS
Vice President
New World Radio Group



WASHINGTON — New World Radio Group has been broadcasting international radio content since 1992, and now it encompasses a trio of stations: WNWR(AM)/1540 in Philadelphia, WCRW(AM)/1190 in Leesburg, Va., and our flagship station, WUST(AM)/1120 in Washington. WUST is known as "the multicultural voice of the nation's capital," providing foreign language and English programming to the region's diverse ethnic communities.

I've been a fan of audio over IP for years now, and moved our infrastructure away from traditional telco solutions. With the bandwidth available today, moving to IP just made total sense, as it offers greater scalability and virtually unlimited flexibility. We want to stay on the forefront of technology, and for our paying clients who are supplying programs, we want to get their audio into our studios at the best possible quality.

We chose Barix audio over IP devices, which are distributed in the U.S. by LineQ, to connect our stations and our remote contributors. We were attracted to Barix because of how much functionality their products offer at a cost-effective price point. Beyond affordable pricing for the equipment itself, our IP-based links provide ongoing cost savings versus alternative distribution methods.

The primary application for our Barix units is enabling our client programmers to do remote shows from their own studios, while delivering studio-quality audio into our stations. With numerous Barix units deployed across multiple clients, the cost savings are amplified. We use additional Barix units as backup studio-transmitter links to our transmitter sites, and to backhaul satellite audio inexpensively from WUST to our other two stations. In this latter case alone, we realize big cost savings by not needing an expensive satellite installation at each location.

We use a Barix Instreamer at WUST to encode audio for distribution to our other sites, and Barix Exstreamer 500s to receive and decode the resulting IP audio streams. For connecting clients' remote studios, we use Exstreamer 500s at both ends. We chose the Exstreamer 500 because it's a broadcast-grade model with balanced audio inputs and outputs, which is important given some of the environments we're installing them in such as transmitter sites. We also have a handful of Exstreamer 1000s for deployments that require AES/EBU digital audio.

The Exstreamer 500 and 1000 are versatile, able to function as either encoders or decoders. That flexibility comes in handy when we get new program producers, as I can grab a Barix unit off the shelf to supply to the client without worrying about its specific capabilities.

Security is crucial to us, and again, Barix gives us the tools we need. There has been lots of press attention given to hacked radio stations in recent months, but they all shared a common fault — the users had never configured a password on the STL devices. The Barix units do offer security; you just need to use it, which is easy. It takes literally five seconds to set up a password and secure the device.

While the Exstreamer units could be connected point-to-point with static IP addresses, I use the cloud-based Reflector service — offered by Barix in partnership with streaming specialists StreamGuys — for almost all our Barix-driven links. The Reflector ser-

(continued on page 32)

TECHUPDATE

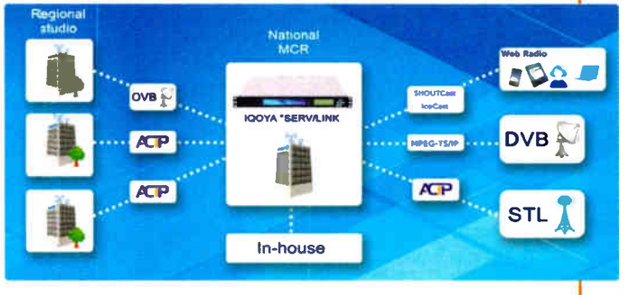
DIGIGRAM IQOYA *SERV/LINK SERVES NATIONAL BROADCASTER

Digigram reports that at a single national master control room an Iqoya *Serv/Link decodes, transcodes and routes all incoming regional streams for in-house use (MAM, production, logging, etc.), for distribution to transmitters and to web radio CDNs. All the ingested metadata remains unchanged throughout the network.

The Iqoya *Serv/Link incorporates multiple distribution codec instances and the company's FluidIP technology on one hardware-based processing platform to simplify transport of multiple audio programs over IP networks in a high-density format.

Designed for radio broadcasting and for intercom and commentary for radio or TV, the Iqoya *Serv/Link codec allows users to configure multiple-stereo or multichannel solutions for studio-to-transmitter links, studios-to-studio links, DVB operators, or content delivery networks.

In its compact 1 RU version, the solution can handle up to eight stereo analog channels, or 16 stereo AES/EBU channels, or 64 stereo MADI channels and/or 64 stereo



AES67/Ravenna IP channels, and up to 64 stereo codecs instances with multiple GPIOs and RS-232 ports for auxiliary data tunneling. The scalability of the system allows users to expand the supported audio I/Os, and a larger 4 RU version provides higher channel density.

The solution supports multiple audio codecs (PCM, MPEG Layer II and Layer III, AAC, Opus, and aptX Enhanced), and the company says it is one of the few audio over IP codecs that can simultaneously stream raw RTP, HTTP and MPEG-TS/IP streams.

For information, contact Digigram/Point Source Audio in California at (415) 226-1122 or visit www.point-sourceaudio.com or www.digigram.com.

MOSELEY TRANSPORTS FOUR STATIONS ON ONE STL FREQUENCY

Moseley Associates Inc. has added features and models to its digital RF STL lineup to provide flexibility and high payload capacity.

The new eight-channel Starlink (shown) features four stereo audio streams and a one-way Ethernet channel for HD Radio. This means the user can transport up to four stereo radio stations on a single STL frequency. The eight-channel model features AES and analog I/O. Choices of audio coding from linear uncompressed to AAC compression provide flexible bandwidth usage while delivering clear digital audio. It sports metering, diagnostics and control of all parameters from the front panel, as well as a web browser interface for networked monitor and control.

The Topanga Digital Composite STL provides operators the opportunity to keep processing at the studio and deliver the stereo MPX stream to the transmitter or multiple transmitter sites. Topanga's digital platform offers greater than 20 dB system gain advantage over old analog composite systems, which the company says benefits audio performance through improved signal to noise and stereo separation. In addition to the digital MPX, Topanga carries a simplex Ethernet channel for HD Radio data stream plus RS-232 channels for RDS.

Starlink and Topanga models have a new 5 W power output for improved robustness in challenging RF environments. Moseley's open architecture offers for customization and adaptability to changing requirements and technologies.

Moseley offers wireless solutions from 9.6 kbps to 3 Gbps covering the 250 MHz to 90 GHz spectrum for both point-to-point and point-to-multipoint applications for the broadcast, carrier, broadband enterprise, and service provider marketplaces.

For information, contact Moseley Associates in California at (978) 373-6303 or visit www.moseleysb.com.

GATESAIR

(continued from page 29)

there isn't much I need to do. This makes system maintenance simple.

WORKFLOW

Our radio broadcast workflow produces a single program signal that is split in two directions for distribution. One path travels over coax cable to our satellite uplink, while Intraplex delivers the other signal as two simultaneous, redundant streams that are carried over Ethernet enroute to the Internet.

Our Intraplex network has the capacity to multicast signals to a total of six receivers. We are currently only delivering the stream to four receive sites. These include the three full-class radio stations, as well as to a broadcast translator site, which happens to have two other translators associated with it that extend its reach even further.

Since we have no other way to deliver our live programming to these four broadcast sites, Intraplex has become a vital link to these four points of distribution. Today, as we are close to acquiring our 46th radio station, having the GatesAir Intraplex IP Link 100 available as a reliable means of program distribution is an important factor in the future growth and expansion of our radio network.

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

AEQ Outfits La Xarxa

Phoenix Venus codecs send and receive programming for more than 125 affiliates

USERREPORT

BY XAVIER CABESTANY
Head of Technical Infrastructures
La Xarxa Audiovisual Local

BARCELONA, SPAIN — La Xarxa Audiovisual Local (XAL) is a public audio and video programming producer, created by the Deputation of Barcelona. It generates contents for local broadcast for approximately 125 associated radio stations. The programming provided to these stations is combined with locally produced material. The stations also contribute content to the lead studios in Barcelona for the creation of programming that can be distributed across the network.

La Xarxa's distribution scheme had been satellite-based. In 2015, it was decided to migrate to an IP network, for which XAL contracted with Telefónica, the Spanish telecom.

As part of that project AEQ provided audio codecs and control software.

CODECS

In total, nearly 150 AEQ Phoenix Venus audio codecs have been supplied, and software has been designed for control and monitoring of all audio codecs from any PC connected to the internet; program connection and disconnection; integration with an existing audio matrix; creation and activation of local or regional broadcast groupings; and management of point-to-point contribution connections from the central location.

The satellite links were replaced by terrestrial IP connections using Phoenix Venus IP audio codecs. Multicast groupings were created to which all local stations subscribe. Main and backup codecs send the audio to multicast IP codecs that in turn broadcast the audio to the remote devices subscribing to the multicast.

There is a Phoenix Venus codec at each local station. Channel 1 receives the multicast audio, with Opus encoding. The signal is stereo, 20 Hz–20 kHz with very low latency.

The existing broadcast automation system generates GPOs for the multicast main and backup Venuses' GPI, which sends to the selected codec the transporting orders to switch to the remote audio source or live console control.

The control server continuously monitors the status of the main and backup codecs and if the active fails, it resets the connection to the other. The audio input is distributed to both units from the matrix.

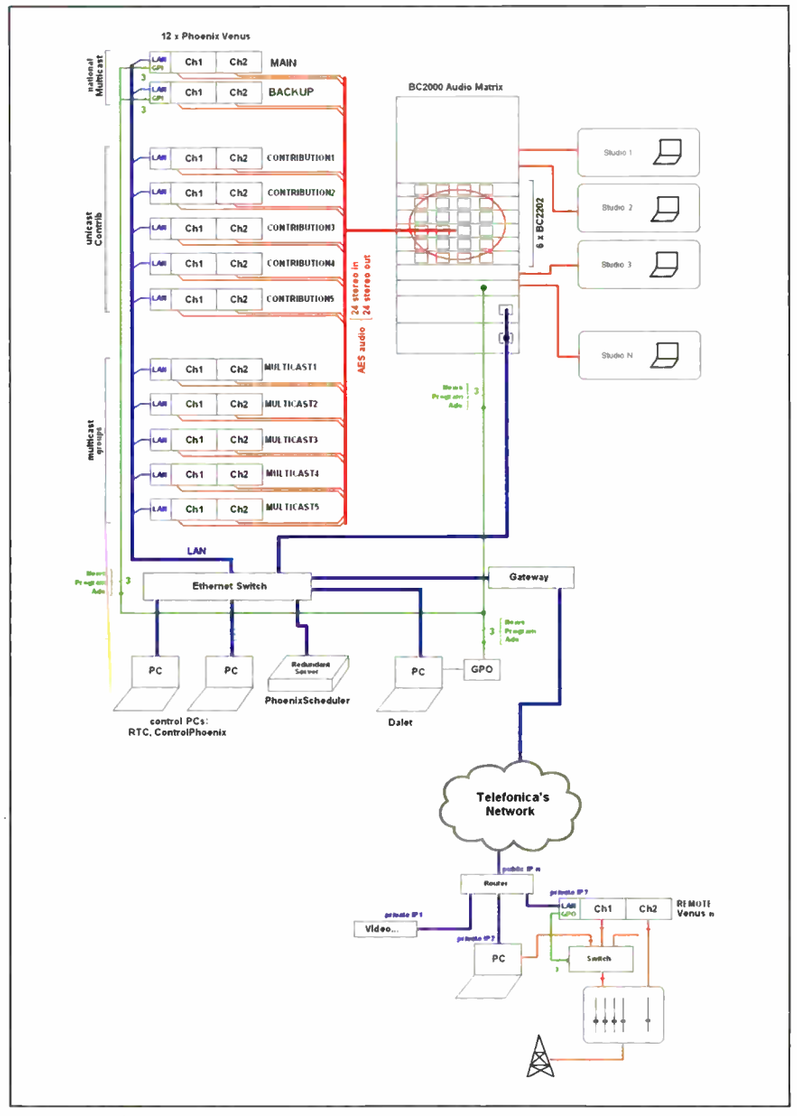
There are also multicast groups of reduced size and limited duration. Another five dual-channel Venus codecs are programmed for these missions.

In addition, there are also groups with fewer receivers or subscribers, where the "main station" is a local station sharing its program feed.

In both cases, these groups are controlled with scheduling software that creates groups, defines the time slots and automatically controls the connections of any of the involved codecs. If a codec is switched from the main group to a regional or local group, once finished its connection, it automatically deactivates and returns to its previous state and continues receiving the main program.

Channel 2 of the local Venus sends contributions back to the main studio. For this, in the main station there are five Venus codecs for contribution reception, each with two channels. This allows for up to 10 simultaneous contributions from various associated stations. These 10 bidirectional stereo channels are connected to the facility's AEQ BC 2000D matrix. Calls are manually placed from central control in the main station using a phone book and SmartRTP to establish the communication.

By February 2017, more than 85 stations were connected. The savings with regards to operating costs compared to the previous satellite infrastructure are considerable and, in addition the network is benefitting from greater flexibility, very low latency and fully bidirectional links.



It has been necessary to deal with challenges concerning the traffic distribution (IP multicast), QoS and bandwidth management, centralized control of all equipment and management tools, adaptation of the software to specific needs, documentation and configuration, training, etc.

Using the Opus algorithm, Phoenix Venus codecs provide a clean audio signal with practically transparent quality and no data/audio loss. The software is being used daily and, together with the integration with the BC 2000D matrix, allows us great flexibility to produce and broadcast programs with the affiliated stations.

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

BARIX

(continued from page 30)

vice makes setup plug-and-play, without having to manually configure network and streaming parameters.

This simplicity is particularly valuable when supplying Barix encoders to our contributors. I can set up a Barix unit to use Reflector, configure its security and hand it to the client, and they can take it to their studio. They essentially just plug their studio output into the Barix box, connect it to their internet service, and they're on the air, with Reflector taking care of the details.

We also like the monitoring functions of the Reflector service, which give me visibility of the performance of the system and notify me of any issues. Like the Barix units themselves, I can access the Reflector service through a browser-based interface, letting me remotely manage and control the equipment at multiple stations from anywhere I go.

From STL to connecting remote studios and occasional on-location remote broadcasts, the Barix Instreamer and Exstreamer devices and Reflector service have securely delivered studio-grade audio with great reliability and remarkable ease of use, all while saving us money.

For information, contact Brenda Stadheim at LineQ/ Barix at (866) 815-0866 or visit www.barix.com.

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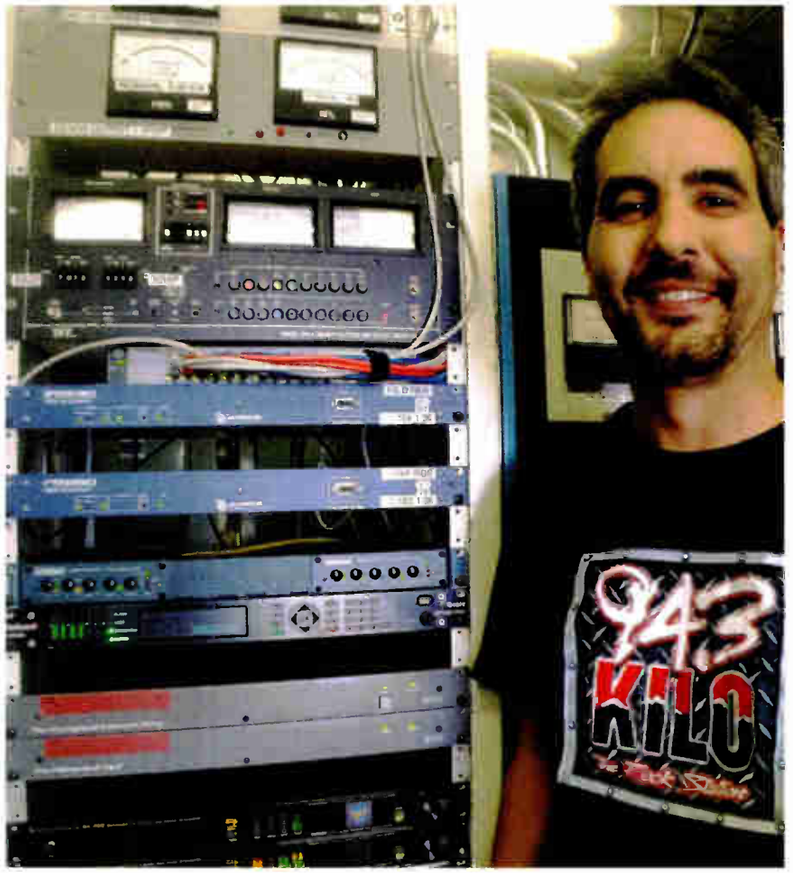
Tieline Climbs New Heights in Colorado

Bridge-IT XTRA links remote mountaintop transmitters to studios

USERREPORT

BY BRYAN WATERS
Chief Engineer
Cheyenne Mountain Public Broadcast House and
KILO(FM), KRXP(FM)



COLORADO SPRINGS, Colo. — Think of Colorado and you think of mountains, and in a broadcast sense this presents challenges. As a broadcaster, you learn to work within the confines of what's possible based on the rugged terrain and inhospitable weather conditions encountered.

MOUNTAINTOP CHALLENGES

One such example is how we transport STL audio from KCME(FM)'s studio in Colorado Springs to three remote mountaintop locations. These include Breckenridge in Summit County, Methodist Mountain above Salida, and Cripple Creek. KCME has an "all-classical" radio format, so we need to achieve great quality audio. None of these sites has wired network available; previously we used an expensive high-bandwidth satellite receiver to transport audio to each transmitter site. At around $17,000 per year, this was prohibitively expensive for a member-supported station. Plus, the connections experienced frequent dropouts due to poor weather conditions.

I first started using Tieline codecs years ago at Citadel Communications (now Cumulus Colorado Springs), and I have broadcast with them in just about every way imaginable; they are versatile and reliable. For KCME, I believed we could improve our results by installing Tielines, so in 2016 we purchased a six-input Tieline Genie Distribution codec with WheatNet-IP and installed it at KCME in Colorado Springs. We also installed a Tieline Bridge-IT XTRA codec at each remote transmitter site. To transport the audio we are using satellite IP data service attached to the codecs at Salida and Cripple Creek. Breckenridge uses a different service provided by the owners of the translator site on Mount Baldi, in Summit County, and is maintained by engineer Gary Peterson.

This has been a complete transformation for us. The connections are so much more reliable. We are not bothered too much about latency, so have employed conservative fixed jitter strategies with remarkable results. Our bandwidth is limited, so we connect using HE-AAC v2 at 64 kbps and the audio sounds much better than before. Lots of listeners have called and written to us to remark about how much better the station sounds which is extremely pleasing.

The other benefit is the cost savings. With lower bandwidth satellite links, we now save significantly on data costs, in fact we recouped the cost of the codecs in less than a year. The ongoing savings are also huge.

The codecs have to be reliable because we are unable to get to the mountaintop transmitter sites for around three months out of the year due to the weather conditions. They haven't missed a beat and we can remotely log-in to the codecs using the Toolbox web browser configuration tool to effect any configuration changes.

The studios for KILO(FM) and KRXP(FM) are at the foot of Pikes Peak, the most visited mountain in North America and reaching 14,000 feet above sea level. Our transmitter for KILO and KRXP is situated at the top of Cheyenne Mountain and we feed audio to the transmitter over multiple paths.

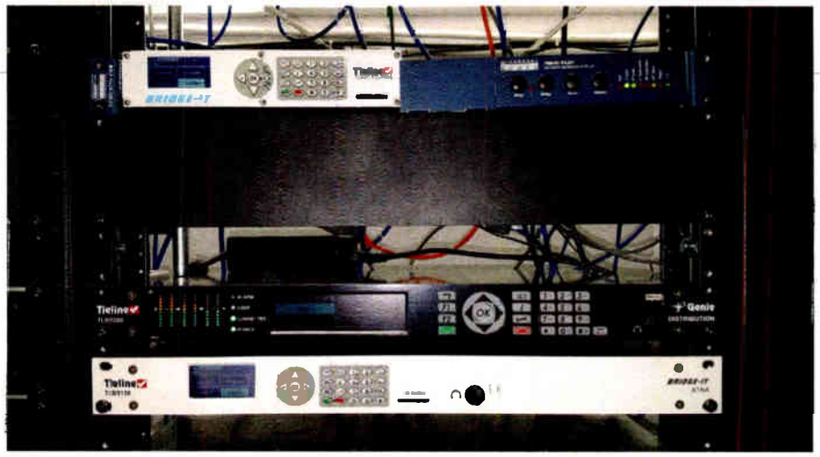
REPORT-IT FOR TEMPORARY STLS

When I speak of versatility, I have to mention that I once ran a station for around four hours using Tieline's Report-IT Enterprise smartphone app while I performed some transmitter site servicing tasks. To achieve this, I fed audio from the studio down the return path of a Report-IT smartphone connection and fed this into a Matchbox D.I. box and then into the transmitter. It worked solidly and proved to me that with a bit of lateral thinking, anything is possible in the world of broadcast.

We use a Moseley 900 MHz STL encoder to feed linear audio directly up the mountain to a Moseley decoder for both stations. As a backup, we use a Genie Distribution codec at the studio to stream two stereo feeds over a 5.8 GHz Ubiquiti link to a Genie Distribution codec top side. Inputs 5 and 6 of the Genie Distribution top side are used to feed an older Marti RF transmitter, which is used to bring audio down as a remote broadcast backup for each station. There is also a transmitter for KCME on Cheyenne Mountain. We use a Moseley Starlink 900 MHz STL for the primary HD system into a BE FMi703 transmitter.

As a sidenote, Pikes Peak is not too far from Summit House, the purveyor of world-famous Pikes Peak doughnuts. So if time allows, it is definitely worth the trip!

For information, contact Dawn Shewmaker at Tieline USA in Indiana at (317) 845-8000 or visit www.tieline.com.



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WANT TO BUY

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST - 214 738-7873 or sixtiesradio@yahoo.com.

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

AUTOMATION EQUIPMENT

WANT TO BUY

Western Electric 25B input console & amplifier (speaker). Li, vanhanli@yahoo.com.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condition. Contact Bill Cook, 719-684-6010.

WANT TO BUY

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

MISCELLANEOUS

WANT TO SELL

I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

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

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

WANT TO BUY

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

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

CONSULTANTS

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

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

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

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

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

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

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

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

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

WANT TO BUY

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

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

STATIONS

WANT TO SELL

AM, Kentucky, Cheap! Group deal. wrecktech@yahoo.com, 478-741-1710.

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

WANT TO BUY

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5 KW	1992	BE FM5B
10 KW	1988	BE FM10A, Dual 5 KW
10 KW	1998	Nautel FM10, Solid State
10 KW	2004	Harris Z10, Solid State
20 KW	1998	Nautel FM20, 2 X FM10 Combined
35 KW	1990	Continental 816R5B, SS IPA
25 KW	1982	Harris FM25K with DIGIT
35 KW	1991	BE FM35B

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Australian broadcast technologist authorized to work in the USA seeking employment in NY, NY. My background is in IT, Radio and TV. I worked as a Senior Engineer in Australia covering all technical aspects of the broadcast chain, from the front door to the TX and of course OBs. My skills include both hands on and project managing network design and conif, studio design, rack planning, migration, install and commissioning, alalog and digital facilities, playout systems, Cisco IP voice and data, desktops and servers, and help desk as well as good knowledge in solid state and valve TX equipment. I enjoy working in a team environment and work well under pressure. Excellent references available upon request. I live in Manhattan an can start immediately. If you would like to know more, please contact me at tech@numeralla.com or read by CV at www.numeralla.com.

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EAS Is Still Relevant as WEA Works Out Kinks

WEA alerts should direct citizens to tune into local stations

COMMENTARY

BY KEVIN CURRAN

Whether it was CONELRAD, the Emergency Broadcast System or today's Emergency Alert System, broadcasters have been tasked with responsibility for mass notification for 66 years.

You can count me among those broadcasters who have wondered if the audience would be aware in the event of an actual emergency. A study I conducted and recently published in the peer-reviewed Journal of Emergency Management provided support for those skeptical of the effectiveness of the EAS. But it may also present a sobering reality to emergency managers, who might expect more from both media and cellular notification systems than they are likely to receive.

Today's EAS covers over-the-air TV and radio, satellite radio, DBS and cable systems. As the number of media options has increased, the chance of an EAS message reaching a critical mass of its intended audience has decreased.

Veteran engineer James O'Neal wrote in TV Technology in 2014, "It's not the same world that existed a few decades ago."

Time-shifted television viewing has been around since the advent of the VCR. One study of cable subscribers found 45 percent were using DVRs to time-shift viewing, 8 percent of those waiting eight to 15 days to view the recorded shows, long after the useful life of a severe thunderstorm warning. With Hulu and similar video on demand services available, there is no way for broadcasters to reach those viewers with timely alerts.

The view is not much better on the radio side, where one survey found more than a quarter of drivers were listening to internet audio streams through a smartphone connected to the vehicle's audio system. That self-curated Pandora playlist is not going to be interrupted by an Amber Alert. The "connected cars" rolling off assembly lines will only decrease the likelihood of drivers making an audio choice that could receive an EAS activation.

INSTRUCTIONS AND OFFICIAL INFORMATION

An assessment of warning systems for the Federal Emergency Management Agency determined six actions need to be taken for a warning to be effective:

1. Hearing it
2. Understanding its message
3. Believing the accuracy and credibility of the warning
4. Personalizing the warning
5. Confirming the warning is true and others are taking action
6. Taking their own action

An advantage of EAS is that viewers or listeners are not likely to doubt the accuracy or credibility. However, personalizing the warning may be a challenge.

Broadcasters should be pushing for a procedure where a WEA message refers to local stations by frequency so users would know where to tune for official information.

"One of the drawbacks of the current EAS system is that it tends to send warning messages to a much larger area than is actually at risk from the hazard," according to Mike Smith, a warning coordination meteorologist at the National Weather Service storm prediction center in Norman, Okla.

TV stations in markets such as Wichita-Hutchinson, Kan., are tasked with providing service over large territories, perhaps of more than one state. An EAS alert on a tornado warning would reach not only those potentially affected, but others far from the warning area.

Another challenge for EAS is the source of the warnings.

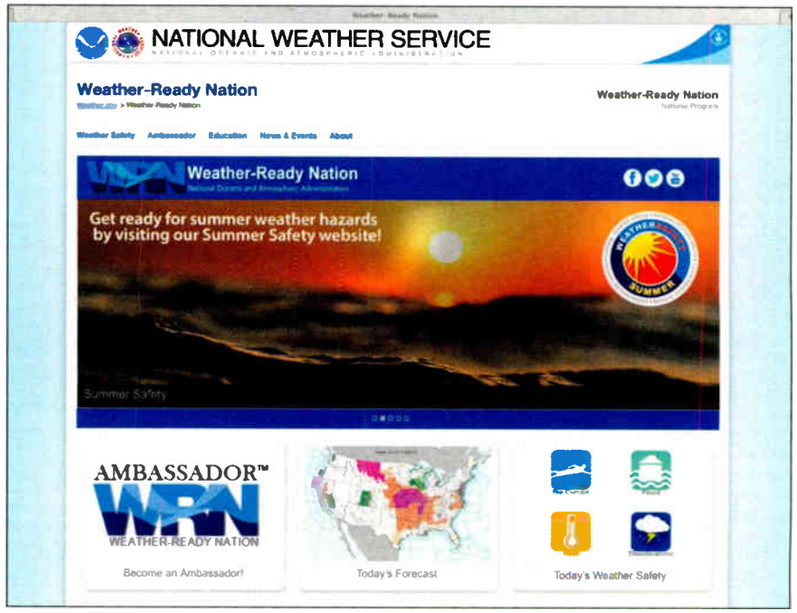
The NWS generates the most EAS activations, would be recognized as a credible source and has decades of experience with mass notifications. That may not be the case with local emergency officials. Most broadcasters have heard the tale of the Minot, N.D., train wreck and the lack of an EAS alert that a toxic cloud was spreading through part of the city. Many reports blamed the absence of an alert on the unattended operation of the local radio stations because police officials said they could not reach anyone in the studio. A post-event investigation found that officers were calling an EBS phone line that had been disconnected when the stations gave the dispatch center an EAS encoder. That encoder had never been installed.

THE CELLULAR OPTION

In 2013, Warren Schulz, a veteran Chicago engineer and former Illinois EAS chair, suggested in Radio World, "EAS cannot be fixed and should be closed down. Rely on cellphone text alerts. If desired, reserve the EAS radio daisy chain for long-form messages."

FEMA and the FCC sought to address some of these concerns with the Integrated Public Alert and Warning System. It includes the EAS and what is now called Wireless Emergency Alerts (formerly known as the Commercial Mobile Alert System and the Personal Localized Alerting Network).

This "system of systems" approach has a goal of issuing an alert within 10 minutes that will reach 85 percent of a potentially affected population. WEA messages are supposed to override other cellular traffic with a 90-character message accompanied by a distinctive tone and vibration to all properly equipped and programmed cellphones in a designated area.



This is a development welcomed by Morgan Hoaglin at the Arizona Department of Emergency Management, who noted, "IPAWS does not depend on any one technology."

With cellphones in just about everyone's pocket, it would seem that WEA could replace the other mass notification systems. An update to that old saying may go, "You can lead a person to information that could save their life, but you can't make them receive it."

Immediately after one of the first WEA messages in Phoenix, my Twitter stream was full of users asking what had just happened to their phones — and how to prevent it from happening again. Later tweets explained how the settings could be adjusted to turn off two of the three alert categories (national alerts cannot be disabled).

A 2013 study of post-alert Twitter comments for FEMA's parent agency, the Department of Homeland Security, showed this user reaction was not unusual. The DHS consultants admit their anecdotal evidence points to a need for further study of message content, geo-targeting and both understanding and improving the response to the

(continued on page 38)

EAS

(continued from page 37)

warnings by phone users. The report mentioned support from government websites, but little mention of the system from carriers or retailers.

On Sept. 9, 2016, the FCC issued report & order as well as a further NPRM FCC 16-127. The R&O required alert messages to expand from a maximum 90 characters to a maximum of 360 characters on 4G-LTE and future networks. It added a "Public Safety Messages" category, required cell carriers to allow embedding phone numbers and/or URLs placed in WEA messages and support WEA messages in Spanish. The carriers must also maintain a log of the messages, narrow geo-targeting as possible, and send the messages without delay. The R&O concluded with enhanced provisions for testing, exercising, and raising awareness of the WEA system.

The Further NPRM included a study of ways to keep WEA consistent with advancing technology, such as multimedia, multilingual and geo-targeting possibilities.

WHERE DOES EAS FIT IN?

Even if the expectation of EAS as a first alert source is overestimated, it is still the best option for continuing information. A WEA message cannot convey information about evacuation routes or shelter locations; the information Schulz wrote about would be a proper continuing use for the EAS. Radio stations manage to find ways to stay on the air in the direst circumstances.

Broadcasters should be pushing for a procedure where a WEA message refers to local stations by frequency so users would know where to tune for official information. With the 90-character limit, an alert may only be able to say, "Check local media." Directing people to the proper local media could prove to be a lifesaver.

The author is a Ph.D. student at the University of Oklahoma's Gaylord College of Journalism and Mass Communication. He has held a variety of radio and television news and management positions in New York, Washington, Los Angeles and Phoenix. Reach him at kevin_curran@ou.edu.

Comment on this or any story to radioworld@nbmedia.com *with "Letter to the Editor" in the subject field.*

CORRECTION

In the June 21 letter "Too Much Competition," we misstated Ed DeLaHunt's location. He was writing from Park Lake, Minn., not Park Lake, Mich.

READER'S FORUM

AM IMPROVEMENT

One of the biggest problems confronting AM stations in this era has yet to be addressed by the FCC. Putting low-power FMs on the air to duplicate AMs is a nice Band-Aid but not really a solution. AM radio does still have advantages, but its biggest disadvantage is the one besetting virtually all but the Class A clear channel stations: having to be directional, especially at night (if they have much or any power to broadcast with at night), to prevent skywave interference.

George Frese, PE, the legendary engineer from Wenatchee, Wash., long ago came up with what appears to be a solution to the dual problems of siting AM towers and avoiding nighttime directionalization and nighttime skywave interference for AM stations. He did so inadvertently, with one elegant solution to a different, difficult problem.

A new AM CP issued in the breakdown of the clear channels, decades ago, was for 660 kHz — but because of FAA issues at the location and the CP's proximity to Canada, the station could not put up a tall tower for its nondirectional operation.

George, who also invented almost all of modern audio processing with his unpatented 1950s Frese Audio Pilot (about which I could tell many amazing stories), came up with an imaginative and unorthodox solution drawn from shortwave: A Paran antenna. It worked, and the station is licensed, and all these years later it still does just what it is supposed to — using 110-foot-high towers! Yes, it's a four-tower nondirectional; the station is KAPS in Mt. Vernon, Wash. I have seen these short towers, visible from Interstate 5 well north of Seattle. It exists.

The principle is that four short towers are arranged in a box shape, and all four have grounded bases. The tops of the towers are star fed from a central point in the center of the array. The station operates with 10 kW day and 1 kW night from this nondirectional antenna system.

First, solving the transmitter-site problem: If 110-foot towers work at 660 kHz, imagine how short and closely-spaced the towers could be at 1500 kHz? You could fit it in a residential back yard, and it would not stick up above the house! And even at 540 kHz the towers probably still would not be high enough even to require tower lights!

Second, as for avoiding directionalization (at least at night) and skywave interference from nondirectional operation: George decided, based on his own observation and reports, that there is not much if any skywave coming out of this array; the skywave seems to be suppressed, with the signal simply extending out along the ground. (And it does do have a good groundwave; I have heard it in the daytime nearly 300 miles away on a GE SuperRadio, across land the conductivity of which officially is listed as 4 mhos.) At night, I have never heard it from my same location on the same radio.

George thought he had solved the AM skywave problem, which would open a new world for AM stations at night — but he had no money to hire a helicopter for a vertical pattern plot around the KAPS antenna system, and as far as I know nobody has since.

Bear in mind that this is just one of the several novel and unique antenna systems for AM that George put on the air over the years, for each of which the FCC demanded a full "directional proof of performance," despite in this case its lack of directionality. The KAPS antenna system performance (minimum field at one mile, lack of directionality) was proven, and was accepted, and was licensed by the FCC. This is not speculation. It is licensed, and it works.

Perhaps Radio World would like to undertake such a vertical plot pattern measurement at KAPS and see if George was right; this solution could be presented to the FCC as a future part of AM revitalization, spurred by your magazine!

Eric Norberg
Editor, The Adult Contemporary Music Research Letter
Author, "Radio Programming: Tactics and Strategy"
Portland, Ore.

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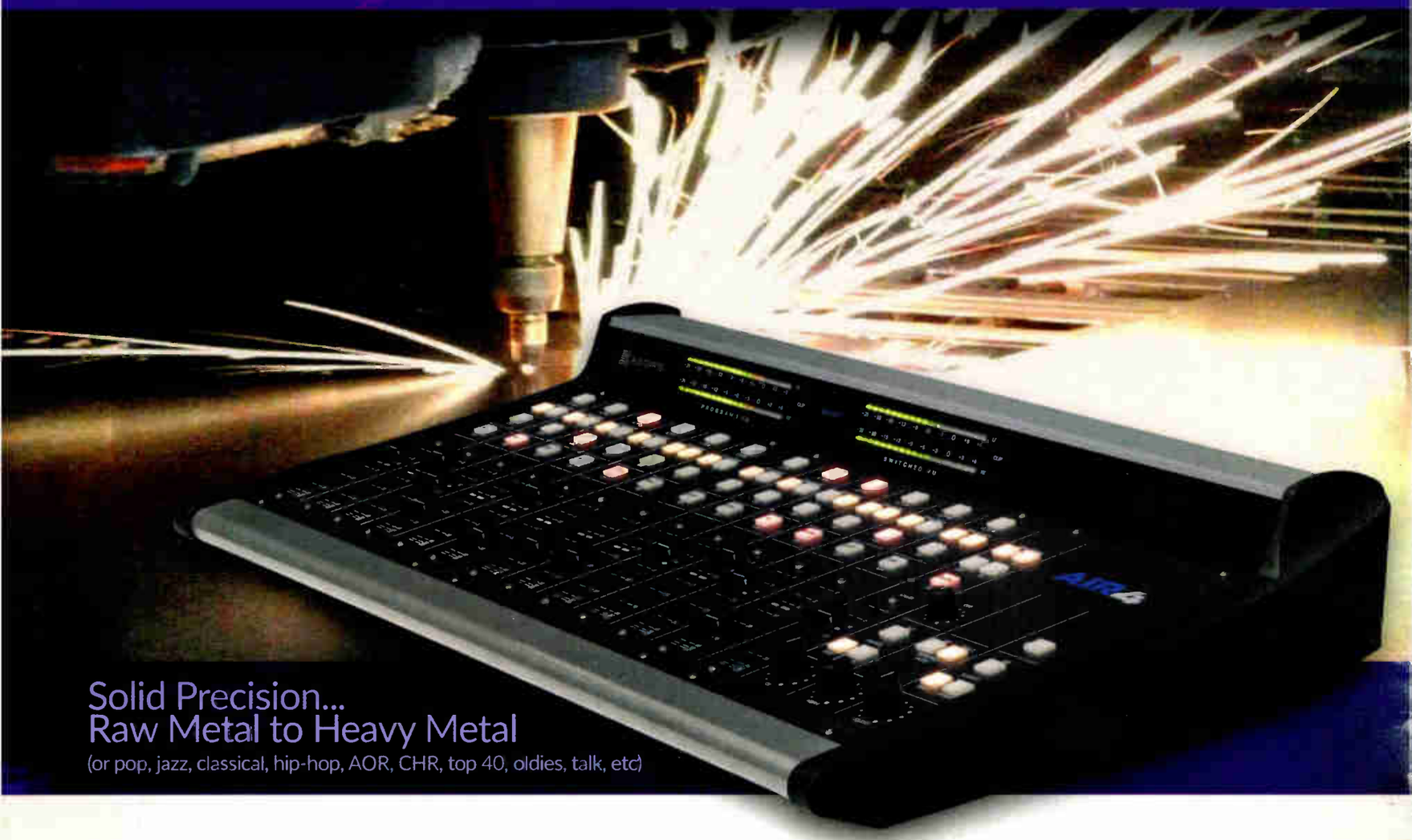

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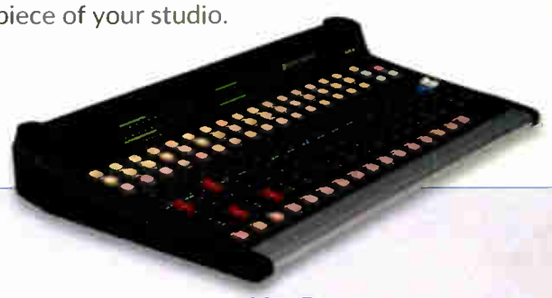

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