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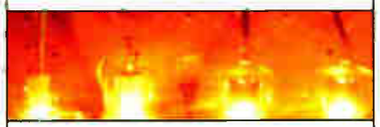
NEWS & ENGINEERING



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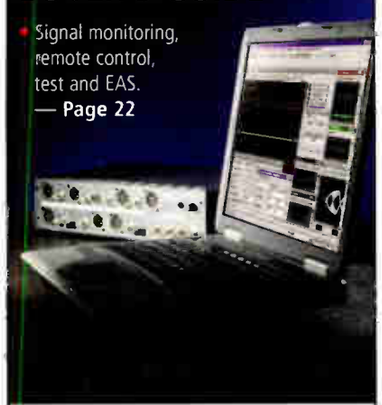

OPINION

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Radio Talks EAS, LPFM, Translators

Business Leaders Examine Radio's Place in the Internet and Mobile Realms

BY LESLIE STIMSON

CHICAGO — Internet radio's future role is a large question on the minds of broadcast managers these days, judging from discussion at September's Radio Show.

EAS, low-power issues and chips in smartphones continue to be hot-button points.

Attendance picked up at the event. NAB and RAB put the number at 2,206, compared to 1,785 last year. Though a service workers' union picketed outside the main conference hotel, the radio event was not disrupted.

Next year's show is Sept. 19–21 in Dallas at the Hilton Anatole.

A sampling of news from the event:

STREAMING IS IMPORTANT, THOUGH MODEL IS FLAWED

Radio executives may differ about how much a part of their portfolio streaming should be; but all seem to acknowledge the Web as an important part of their future.

Group heads from CBS Radio, Entercom, Cumulus and Hubbard Radio discussed Internet radio issues in the

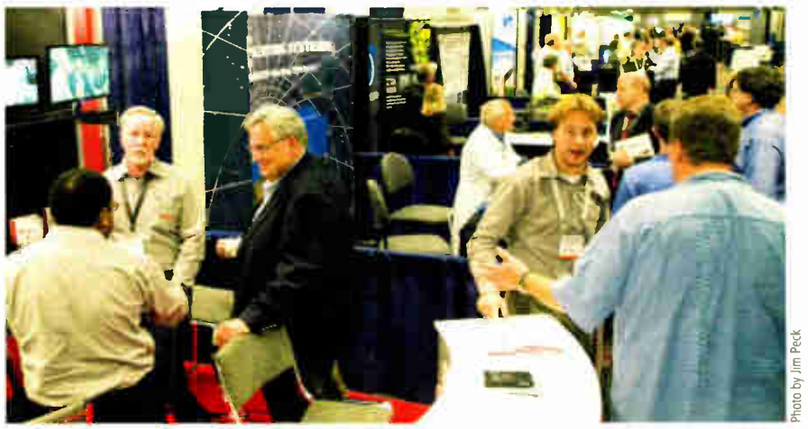

Photo by Jim Peck

The fall Radio Show reverted to a traditional exhibit floor layout in Chicago. Next year's convention will be at the Hilton Anatole in Dallas.

Is System Ready for National EAS Test?

Centeno: Industry Leadership Has Produced 'Unprecedented' Awareness

COLUMBUS, OHIO — Stations, states and regulators want to determine system performance during the upcoming national EAS test.

Broadcasters especially want to know how their station will be judged, says Manny Centeno, program manager for FEMA's Integrated Public Alert and Warning System.

"Our definition of success and one we ask the community to consider is this: The only way we can reach the ultimate goal of an effective and reliable EAS, is getting policy requirements to reflect the technical realities of the system. The national test is the first step to inform the alignment of EAS requirements to operational procedures," said Centeno in a speech to the Society of Broadcast Engineers during its National Engineering Awards Dinner.

The Nov. 9 test of the legacy EAS

(continued on page 3)

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Selected content from Radio World's "The Leslie Report" by News Editor/ Washington Bureau Chief Leslie Stimson.

NEVADA TESTS ALERTING

There's good news from Nevada about the state's first statewide EAS test — a potential harbinger for the upcoming national EAS test on Nov. 9.

"We had a wonderful experience," Adrienne Abbott, chair of the Nevada Emergency Communications Committee, told me.

Before 1 p.m. local time on Sept. 26, FEMA originated and deliver a Required Monthly Test message to Primary Entry Point stations KKOH(AM), Reno and KDWN(AM), Las Vegas, as had been planned. From there, it was re-broadcast on a total of about 200 radio and TV stations in Nevada as well as the eastern third of California and northern Arizona.

She was still compiling information in late September, but overall the test went well, Abbott said. The test was not received in a couple of isolated communities. "We know it wasn't heard because we were on the phone with the engineers," she said. One station that had completed a monthly test earlier experienced problems during the test; Abbott suspects that its EAS encoder/ decoder may have had a weak battery.

There was a conference line for participating stations during the test; Abbott says this approach was invaluable. "It was easier to communicate with them about the test and ask: 'Did you get it? What was the audio quality?' That provided great feedback."

There were some equipment hiccups as stations get used to new CAP-EAS gear. For most stations using new CAP EAS encoders/decoders, the RMT was received and went right out to re-join programming at 1:05 p.m. local time. However, some automated stations have programmed a test "hold" in their EAS gear and were surprised about how long it took to re-transmit the test, Abbott said. That occurred maybe 10 minutes later instead of two in some instances.

"We knew with the older equipment what would happen. Apparently with the newer gear it's not as cut and dried as before," she said. "I can't say whether it's better or worse, it's just different." The test was a chance to find out if the programming in the EAS unit works, she added.

Many groups were involved in the test, including stations, the Nevada Broadcasters Association, the EAS Committee of the Nevada SECC, FEMA, the Nevada Division of Emergency Management, the Washoe County Office of Emergency Management, the City of Las Vegas Office of Emergency Management and the Clark County Office of Emergency Management.
(See related story, page 4.)

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NATIONAL EAS TEST

(continued from page 1)

system "is not a one-stop shop that will fix all the challenges we face; however it is a first step in the direction of changing a system that has been left neglected for far too long. It is in the following test that we can see if the improvements we made and ideas implemented actually worked," said Centeno, who began his broadcasting career in high school as a staff announcer during the graveyard shift at a classic jazz FM station.

He has said before that FEMA's vision for improving the EAS is incremental, and that not all of the problems can be tackled at once.

Centeno reiterated three basic areas that FEMA seeks to address. The first is operation of the EAS, both at origination and the distribution of the messages. FEMA and the FCC have been meeting and discussing EAS and other alert and warning improvements with state and local partners to encourage them to use EAS effectively and in partnership with the broadcast and cable communities, he said.

"In many cases, all that needs to be done is to update EAS Plans and monitoring assignments. We have many interested and engaged EAS participants, but they need to have updated instructions and procedures when operating the EAS."

The second area FEMA has been addressing is basic technical issues, such as monitoring, audio quality, equipment configuration and maintenance.

The third area to address is updating and clarifying EAS rule making. With the help of EAS participants and leaders, he said, FEMA is creating an EAS best practices guide that it believes is comprehensive and "actionable." Read the guide at *nationaldialogue-emergencyalertsystem.ideascale.com/*

Finally, Centeno thanked SBE leaders John Poray, Scott Mason and Jeff Smith, as well as the NAB and Chris Merritt of the Ohio Association of Broadcasters, for championing cooperation on EAS.

"Launching the National Dialogue on the Emergency Alert System Website was one of the ways we started to collect ideas on technical solutions, and it was Scott, Jeff and John, among other partners, who promoted this type of engagement within the SBE membership." Centeno said the industry leadership has produced an awareness of EAS that has been "unprecedented."

— *Leslie Stimson*

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Five Tips for a Smooth National EAS Test

FEMA's Mini-Test in Nevada Offers Lessons for Your Station

Here are five points for your radio station to consider now, before the national EAS test next month.

These come from Adrienne Abbott, chair of Nevada's State Emergency Communications Committee. In late September, FEMA officials sent an EAS activation to Nevada's Primary Entry Point stations, using the event code for a required monthly test. The state's PEP stations then passed it along the chain to other broadcasters (see page 3).

The FEMA activation was the first of its kind in the continental United States and served as a warmup to the Nov. 9 national EAS test.

Abbott's post-event summary in the newsletter of the Nevada Broadcasters Association contains good advice for any U.S. broadcaster, and offers us an idea of where trouble spots might pop up on Nov. 9; because what's true in Nevada almost certainly will be true elsewhere.

She said the mini-test was a "rousing" success in terms of mechanics; but she identified challenges that prevented stations from receiving and rebroadcasting it:

Monitoring Assignments: Abbott said this is an aspect of EAS that has been overlooked for years, at least in her state. Even after efforts to publicize assignments, some stations weren't monitoring their assigned stations or had problems receiving them during the mini-test.

"The FCC Mapbook lists station monitoring assignments and is available on the [state association] website. If the FCC inspects your station, these are the stations they will expect to find on your EAS equipment," she wrote.

"Many reception problems can be resolved with the use of a good-quality, well-grounded receiver and an outdoor, tuned antenna."

The time to deal with these problems, she said, is now.

Programming: Check that your equipment is set properly so it doesn't delay the test or fail to rebroadcast it.

"Do you have the proper Event and Locator codes?" she asked. "Is your equipment in Auto Forward or Manual?" Abbott also cited cases of stations that received the test but did not rebroadcast it as required.

"Talking with the staff at these stations revealed a number of problems, mostly related to the way the equipment was programmed."

At some stations, the test was their first use of new CAP-compliant gear, and Auto Forward functions weren't set right. "Because no one was at the equipment when the test was sent, they missed rebroadcasting it within the 15-minute time limit."

One station was unaware that it was supposed to rebroadcast the RMT and in fact had not been rebroadcasting RMTs in the past. Other stations told her they were unaware of rebroadcast delays programmed into their new equipment.

"If you have new EAS equipment, check with the manufacturer to be sure you also have the latest upgrades and that the equipment is properly programmed. And remember that if you operate in an unattended mode, even for part of the broadcast day, your EAS equipment must be set to Auto Forward tests and activations."

Photo by Adrienne Abbott

Manny Centeno of FEMA talks to local media about the Nevada test.

Time: At least one station got the test but did not rebroadcast it because its gear was not set for the proper time. Check your equipment weekly to be sure that it displays the proper time. Check the manufacturer's website for info on time settings, including tech bulletins and correct Daylight Saving Time implementation. "And check your logs against the EAS Activity Report to see whether you might have a time problem."

Equipment Failure: In Nevada, problems with equipment cropped up in several cases. She urged stations to make sure that they have the latest upgrades and programming changes from their respective manufacturers.

Communication: "Don't walk away and depend on the equipment to perform properly."

Abbott said tests like the Nevada mini-test and the national test are designed to show how well the equipment performs and whether you can rely on it in an emergency.

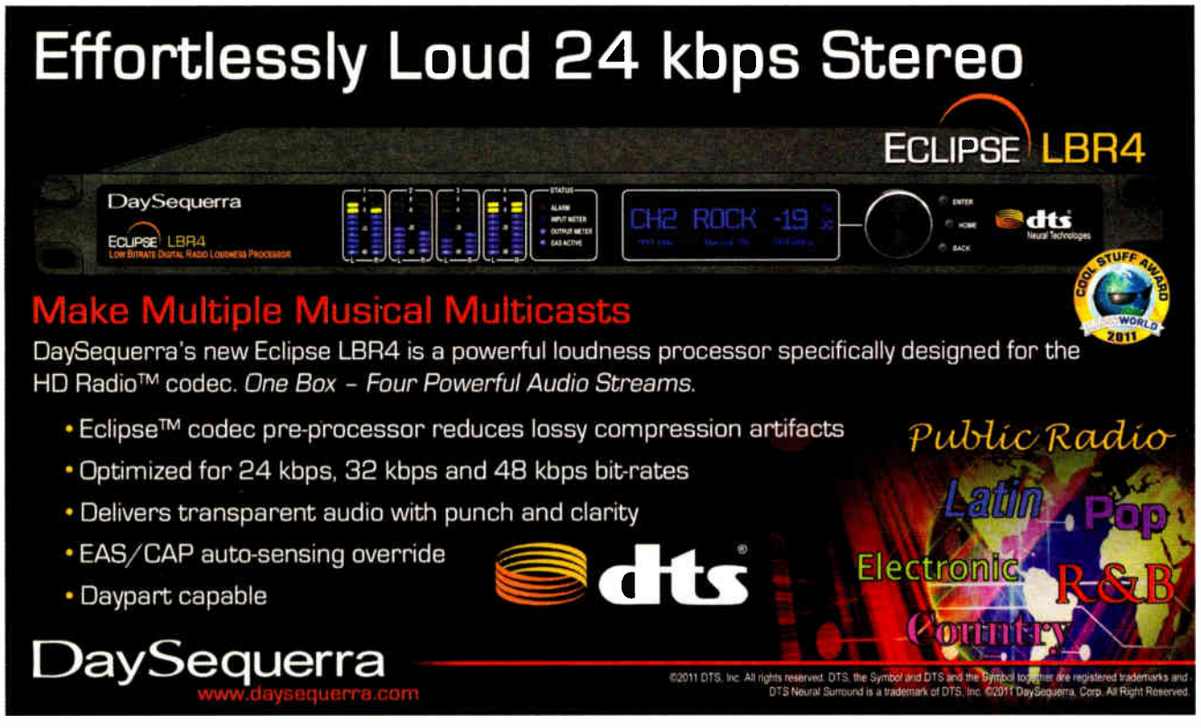
"As a broadcaster serving your community, you should care enough to be there to see that the test comes in and that the test goes out. You should know what to expect from the test and when to expect it."

The Nevada Broadcasters Association provided a conference line for engineers to monitor the progress of the test. Abbott said the communication and feedback were "very valuable" — in fact, a conference bridge will be part of future RMT routines in Nevada.

As usual, Adrienne Abbott offers prompt, useful advice. If you have questions about your own state's EAS plans or monitoring assignments, contact your state chair; if you aren't sure who that is, visit *http://fcc.gov/pshs/services/eas*.

FROM THE EDITOR

Paul McLane



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NEWSROUNDUP

AM'S FUTURE: Radio archivist Art Vuolo asked group executives at the recent Radio Show to comment on AM's future, noting that the service soon will turn 100. CBS Radio President/CEO Dan Mason said he's concerned about AM.

"I've read comments where the FCC would like to have an analog sunset of AM radio, like we did for television," Mason said. "IBOC was designed as a transitional system." AM's future "is going to be an NAB issue," he predicted, because it will be difficult for large- and small-market owners to agree how to approach it.

Hubbard Radio President/CEO Bruce Reese said that although AMs have distribution options such as streaming and FM translators, the band offers "inherent physics problems." He said, "I think at some point it's better to convert AM to just digital and a lot of the problems that have made them unattractive ... go away."

ADVERTISER EXPERIENCE: IBiquity has been pushing HD stations to enable the Artist Experience data feature, in which audio is paired with visual images and text. Beasley

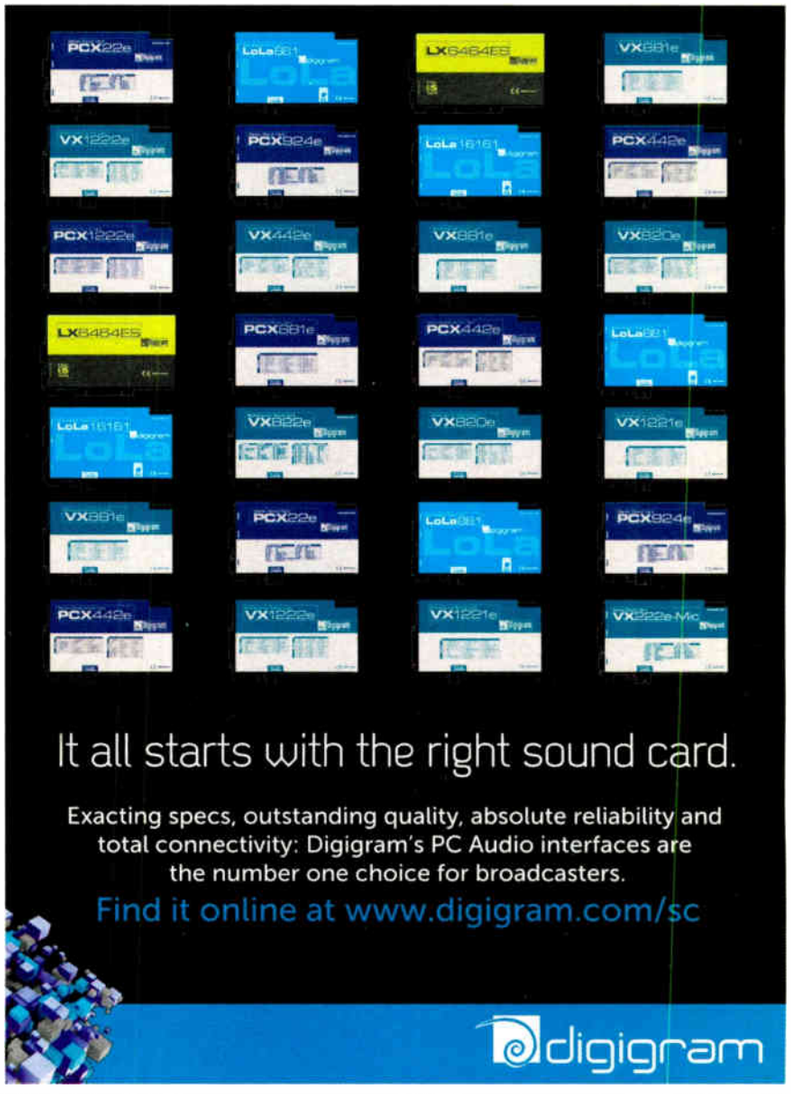
Broadcast said it will be the first to extend the concept to advertising. Interactive media technology company Quu worked with Jump2Go on technology that enables radio advertisers to extend their reach visually to listeners on RDS and HD-equipped radios. At the Radio Show, Quu demonstrated its "Advertiser Experience" content management system, which helps stations rotate promos during music, jock talk or ad time. Quu says its suite enables listeners to interact with on-air content via station websites, mobile apps and RDS/HD Radio-equipped radios.

GARMIN NAV: The first Garmin personal navigation device with HD Radio data-only ships to retailers this month and will list for around $400. Traffic data for the NUVI 3490 LMT is distributed in the HD Radio signal of stations that belong to the Broadcaster Traffic Consortium. The NUVI 3490 LMT is Garmin's flagship Personal Navigation Device. The digital data pipe can transport more data at a faster pace than analog FM, say iBiquity and the BTC, so the unit can provide faster updates and more detailed overage of alternative routes around an accident. Updates are made every 30 seconds, up to 10 times faster than traditional traffic receivers, according to Garmin. Garmin HD Digital Traffic will also be available as an upgrade to other Garmin products through an adapter.

RADIODNS: At the fall Radio Show, RadioDNS demoed "hybrid radio," with the goal of combining broadcast radio and IP to create a better radio experience. Nick Piggott of the UK's Global Radio chairs the RadioDNS project. In a demo with Clear Channel Radio and Cox Radio stations, he showed how the technology can switch between a radio station's over-the-air signal and IP streaming signal using mobile broadband. The demo used the FM radio included in a Sony Ericsson smart phone, which was also connected to the AT&T 3G mobile broadband network. He used a special hybrid radio "app." It selects the FM signal when possible, but when that signal becomes weak, it switches to the IP streaming signal. As the broadcast signal improves, it switches back. Listeners can choose which station they want to listen to, rather than which delivery technology, such as FM analog, HD Radio digital or an IP stream.

WINSTON LOYD: Winston Loyd, former engineer for New York's WABC(FM) and WPLJ(FM), died in September in Matawan, N.J. He was 88. He retired in 1987 as chief engineer after 35 years. He also had worked for ABC on the TV side.

FM PETITION: The FCC accepted comments on a petition from a station owner who says short-spaced commercial FMs should be able to upgrade their facilities more easily. Matt Wesolowski owns Class A FM WYAB in Flora, Miss., serving the Jackson market. Wesolowski asked the FCC to eliminate its hypothetical allotment site requirement for commercial FMs.



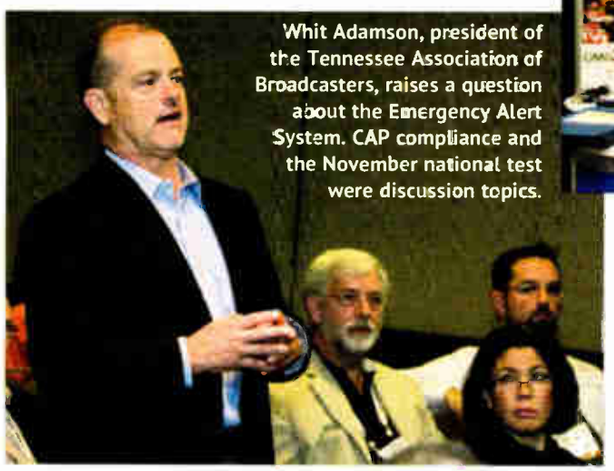
World Radio History

Radio Show: Flavors of Chicago

Radio's future in consumers' dashboards was a topic of much discussion. Here, HD Radio is seen in a Hyundai in the iBiquity booth.

The NAB Public Service Initiatives department assists stations in their commitment to communicating information to audiences regarding 'health, education, safety, volunteerism and civic discourse.' Allison Kreutzjans is shown.

NPR Labs discussed its research into HD Radio service applications, advanced propagation modeling and accessible radio technologies — here, a text-to-Braille demo.



Whit Adamson, president of the Tennessee Association of Broadcasters, raises a question about the Emergency Alert System. CAP compliance and the November national test were discussion topics.

Bob Pittman was named CEO of Clear Channel Communications not long after he appeared at the fall convention. During the show he defended radio's reach and questioned Pandora's business model.

Bob Pittman photo © NAB/RAB, all others by Jim Peck

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The labor group Unite Here organized a strike at the Hyatt during convention week; no significant disruption of show activities was reported.

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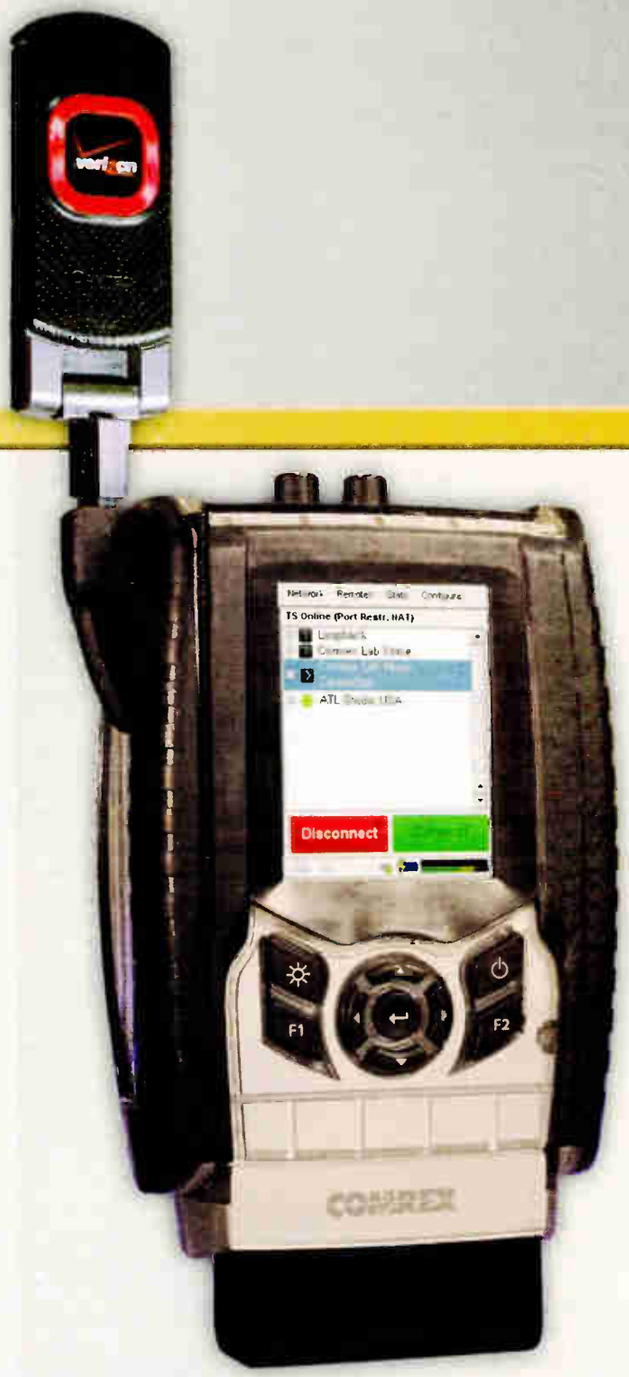

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RADIO SHOW

(continued from page 1)

Leadership Breakfast.

"Is Pandora's business model good? Yes," said CBS Radio President/CEO Dan Mason. But, he continued, soon every radio operator "will have the opportunity to do the same kind of personalized" services, as more group owners decide to stream, or personalize its offerings.

Mason stressed that streaming is part of a healthy cash flow at CBS. However, he said, CBS entity Last.FM, its online radio and social-networking site, "is part of what we do. It's not the big picture."

The streaming business model is expensive compared to broadcasting's one-to-many model, said Hubbard Radio President/CEO Bruce Reese. He noted that as streaming consumption expands, operational costs go up, whereas broadcasting costs remain the same regardless of the number of listeners.

"Until that changes, we won't get a good business model; but we do it and try to make the product sound great," said Reese.

He complimented the personalized audio channels that CBS Radio and Clear Channel Radio offer. Overall, Reese sees a lot of experimentation but doesn't see streaming bringing significant revenue for radio.

Photo by Leslie Stimson

Pandora Media founder and Chief Strategy Officer Tim Westergren says local ad dollars are migrating to Internet radio.

Photo © NAB/RAB

Leadership Breakfast panelists, from left, Entercom Communications' David Field, Cumulus' Lew Dickey, CBS Radio's Dan Mason and Hubbard Radio's Bruce Reese discuss growth opportunities.

WESTERGREN: AD DOLLARS START TO LEAVE BROADCAST FOR INTERNET RADIO

Executives spent lots of time discussing Internet radio after Pandora Founder/CEO Tim Westergren declared that the future of radio *is* Internet "radio."

Speaking at the Radio and Internet Newsletter Summit on the eve of the convention, Westergren said Pandora is seeing the beginning of a shift in advertising dollars as money migrates from traditional broadcast to Pandora's personalized music experience. In other words, Web radio is now part of the local radio ad buy in markets like Duluth, Minn., and Waukegan, Ill., to name a couple he mentioned.

"We're seeing car dealerships starting to buy Pandora," along with the hospitality and grocery industries, Westergren said. "Internet radio is beginning to draw advertising dollars because it's targetable. It's a richer experience, which leads to higher click-through rates."

Technology is driving the change, he said, highlighting devices like Livio Radio's Internet radio car kit, about which RW wrote about in the Oct. 5 issue.

Noting that Pandora's sales staff is growing, Westergren reiterated his trademark statement that Pandora's goal is "nothing less than having personalized radio on every computer, in every car, gym and home in the country."

Clear Channel executives, however, are not convinced that Pandora or other personalized music services are going to spell the demise of over-the-air radio. The radio group launched the iPhone application for its iHeartRadio streaming music service before the show.

The latest version of iHeartRadio continues to offer streaming from some 800 local stations, but Clear Channel Radio is highlighting its new "custom stations" capability. It will draw from a library of 11 million songs, and be offered commercial-free through the end of 2011. Clear Channel Radio pointed out that its iHeartRadio has access to 10 times the songs that Pandora has.

GROUP HEADS TACKLE HD MARKETING, CONVERSION

Several industry executives believe HD Radio marketing should be improved; and they urge stations to convert to HD and to implement all its data capabilities, particularly Artist Experience, the ability to synch images with the audio.

Speaking at a breakfast with peers from CBS Radio, Entercom and Hubbard, Cumulus President/CEO Lew Dickey said HD Radio has "a bit of a marketing issue. If you ask the man on the street about HD, you would not get the answers you'd like."

While noting that "penetration takes a long time," Dickey said: "We've got to be digital, and everything is headed in that direction. Now, it's incumbent on broadcasters to come together and make sure we have interesting interfaces in the car."

The executives agreed with a Ford executive's recent assessment that radio needs to convert to HD to remain relevant in the dash. Jim Buczkowski is a Henry Ford Technical Fellow and director of Electrical and Electronic Systems Research and Innovation for the car manufacturer. In a letter to the industry he said consumers have come to expect the same consistent "look and feel" from their in-car media experience as

(continued on page 10)

Photo by Jim Peck

IBiquity Digital displayed six cars featuring factory-installed HD Radio receivers. The vehicles from Ford, Hyundai, Kia, Subaru, Volvo and Volkswagen received HD signals in the exhibit hall. Some receivers included data features like Artist Experience and in-vehicle navigation.

World Radio History

Itching for a new console? This one's half the scratch.

So, it's time to upgrade your studio. Hey, let's be real - it's way past time. You knew those analog consoles were only good for 10 years when you bought them... 15 years ago. They need resuscitation so often, you keep a defibrillator in your tool kit.

Still, your GM says it'll cost too much to replace them. That's when you make like MacGyver and whip out your secret weapon: Radius, the new IP console from Axia. You show him the pictures. You tell him what Radius can do, with its 4 program buses, automatic mix-minus, instant-recall console snapshots, one-touch Record Mode, convenient talkback and rugged machined-aluminum construction. You show him the built-in Ethernet ports you'll use to eliminate the miles of expensive cable in your ceilings, and you can tell he's already counting the money he'll save.

Then you hit him with the haymaker: at just $5,990, Radius costs less than you'd expect to pay for some flimsy, stripped-down, feature-free board with less brainpower than your wireless mouse. After he picks his jaw up off the floor, you get to tell the jocks about their cool new Axia consoles. And go home a bonafide money-saving, airstaff-pleasing Engineering hero, smiling with the knowledge of the envious looks you'll get at the next SBE meeting...

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World Radio History

RADIO SHOW

(continued from page 8)

they experience with their iPods, smartphones, Internet radio and other digital technology, and he urged stations especially to implement Artist Experience.

Hubbard Radio President/CEO Bruce Reese said, "HD is our brand. This is who we are." When drivers turn on the radio in their new Ford, "We can't be 97.1 FM [analog] when our competitors are putting pictures and graphics up there."

ALLIANCE PUTS GAS PEDAL TO AE, PHONE CHIPS

iBiquity Digital and NAB's FASTROAD project are working on various aspects of persuading carriers and manufacturers to integrate FM HD chips in cellphones and other mobile devices, and on combining broadcast with IP to work in concert as a backchannel.

Few stations have implemented Artist Experience so far. That's a problem, according to iBiquity, Ford and several radio group executives whose employers are part of the HD Alliance. They say more receivers are coming on the market that promise a richer visual experience.

The alliance has formed an HD Radio Technical Standards Task Force, headed by Emmis Communications Senior Vice President/Chief Technology Officer Paul Brenner, who's also president of the Broadcast Traffic Consortium, and CBS Radio Senior Vice President of Engineering Glynn Walden. It is aimed at determining what member stations need in order to implement HD features supporting Artist Experience — be that an FM power increase, Dynamic Program Service Data or other engineering needs.

Separately, with smaller, less power-consuming HD chips available, iBiquity President/CEO Bob Struble anticipates "multiple handsets" containing HD Radio chips will be available in 2012, he told Radio World at the show. Artist Experience also is a step towards interactive mobile, said Struble.

The NAB FASTROAD technology advocacy group, meanwhile, is supporting projects "to close the backchannel loop," he said, to combine aspects of broadcast and IP delivery over mobile handheld and car devices to support interactive ads and other content.

The pitch to carriers: Let radio help your congested wireless networks by off-loading some content onto a radio chip in a mobile device.

IS SUMMER 2012 LPFM WINDOW REALISTIC?

The FCC is reviewing public comments in its LPFM/FM translator proceeding. The agency has proposed a tiered, market-based approach to determine how many more LPFMs and FM translators can fit in top markets.

Media Bureau Chief Peter Doyle said at a regulatory session that, judging by initial comments, there appears to be broad support for the commission's overall approach, "though there are differences of opinion over how we license LP opportunities or settlement procedures."

"Bottom line, I think we're in reach of a solution that will have broad support," Doyle said.

But Fletcher Heald & Hildreth attorney Howard Weiss, also on the panel, has a client who has "given up" trying to get an FM translator approved.

Photo by Jim Peck

Of the LPFM/translator proceeding, FCC Audio Division Chief Peter Doyle said 'I think we're in reach of a solution that will have broad support.'

"If you're in a major market, you're locked out," he said, under the current proposal. Part of the proposal calls for dismissing pending FM translator applications in markets where there's no available spectrum for LPFMs. The proposal does help broadcasters in small markets, Weiss said.

Congress, Doyle said, gave the commission "certain principles to balance competing demands," and flexible settlements are proposed in the Notice of Proposed Rulemaking. Nevertheless, he said the agency is sympathetic to critics of its proposed approach "and will do our best" on the issue.

Clear Channel Communications Senior Vice President of Government Affairs Jessica Marventano voiced one of the common broadcast criticisms about the plan; she said the FCC used a city center grid in its proposal but that a more useful approach in determining a radio market might be to use Arbitron Radio Metros.

She agreed with Weiss that tension exists on this issue between broadcasters in large vs. small markets. Translator applicants, who've had paperwork on file since 2003, "have been waiting a long time," said Marventano. Translators have value, she continued. "They can help stations economically. And just because someone is an LPFM doesn't mean they're superior to a full-power station."

The FCC has stated that it hopes to open a filing window for LPFM applications by summer 2012. Asked by an attorney in the audience whether the FCC really could do so, given its focus on broadband issues, Doyle said the timing "is up to the commissioners" but he's excited about the opportunity to solve the problem.

"Part of what I wanted to do in the NPRM in July was to keep up the pressure on all parties to move forward." Doyle does believe it's possible to keep to the summer goal.

If that happens, "It means we will have initiated additional translator licenses before that time," he said.

AD BIAS POLICY PROVES TRICKY

The commission is hearing from some broadcasters about why they can't be absolutely sure their ad contracts do not contain anti-discrimination language.

A new FCC policy, which took effect with the current renewal cycle, is aimed at stamping out alleged "No Urban/No Spanish" ad buy dictates by advertisers. But some station owners find the FCC's new certification requirement onerous.

The rolling license renewal cycle has begun. Oct. 3 was the deadline for stations in Florida, Puerto Rico and the U.S. Virgin Islands to file FCC Form 303-S license renewal applications. Applications for licensees in the District of Columbia, Maryland, Virginia, West Virginia and the Carolinas were due earlier. The next batch, due Dec. 1, is from stations in Georgia and Alabama.

Of the initial 800 or so stations that applied for license renewal in the first two batches, about 50 left the certification box unchecked, according to the FCC's Doyle.

"Some have told us they don't use long-term contracts or paper contracts. Others have told us they just discovered the new rule. Some have told the FCC we didn't give enough notice," he said

(continued on page 12)

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RADIO SHOW

(continued from page 10)

during a regulatory session.

The commission issued the new policy in March.

Anne Swanson of Dow Lohnes advised station owners to get an early start on their renewal paperwork. "You have to file your application four months before your license expires. We recommend stations start gathering paperwork eight months in advance."

TRANSLATOR NO-NO DEFINED

Sometimes licensees go overboard in trying to move their translator closer to a metro. Doyle defined what constitutes FM "translator hopping."

During a discussion of the commission's tiered, market-based approach to determine how much spectrum remains in the top 150 markets for new low-power FMs and FM translators, he said "some licensees have decided to walk their translators across other states."

That ignores a commission rule that a translator must be within the station's 60 dB contour, he said. The agency would not grant an application to move a translator in a market in which there's little to no remaining spectrum for LPFMs, he said, under the proposed approach.

Doyle had touched on serial translator hopping at last year's convention; he delved deeper this time. Asked by an attorney in the audience to define the criteria for such a "hopper," Doyle said: "It's not a subtle pattern. [It's] where a licensee files a translator license application, and one day later files to go silent, and the next week files a modification application."

On another regulatory item, the FCC has extended until Nov. 2 its comment deadline on a draft Programmatic Environmental Assessment of its Antenna Structure Registration program. A collective groan came from attendees when moderator Kathy Kirby of Wiley, Rein suggested the final topic for the session: birds vs. towers.

According to environmental groups, "Fifty million birds may be ready to die on your doorstep," joked Howard Weiss of Fletcher Heald & Hildreth. In the debate, which has stretched over several years, environmentalists say broadcast towers kill birds; broadcasters dispute that.

Among broadcasters who've spent lots of money in projects to get stations on the air, the issue "is going to be a difficult problem" for some, Weiss predicted.

The Wireless Bureau is reviewing publicly filed comments, specifically a compromise between broadcasters and environmental groups involving different levels of bird kill prevention measures depending on tower height. To build towers more than 450 feet high, "you'll get caught up in an environmental assessment and the FCC will have to seek notice on your construction proposal," requiring a lot more time for the process, Weiss said. The procedure isn't as involved for towers between 450 to 350 feet tall, and for smaller towers.

"The burden of proof has shifted from 'birders,' who were required to show there was a problem, to the FCC," Weiss said. Now, broadcasters would be required to show there's not a problem. He figures some sound or lighting changes may be the solution. How else can a station convince environmentalists, he asked rhetorically, "other than to just not build it?"

Photo by Jim Peck

Engineering executives Jim Stagnitto of New York Public Radio, Glynn Walden of CBS and Paul Shulins of Greater Media.

STUDIO TRENDS: SMALL CONSOLES, COST CURBS

Radio station studios of the future will have smaller consoles and more flexible studio designs to meet changing needs and to keep costs under control. So said engineers assembled for the session "The Modern Multiplatform Radio Station."

CBS Radio Senior Vice President of Engineering Glynn Walden asked rhetorically, "Is it heresy to ask in some stations if the console is obsolete? Can an automation system be programmed to automate a router to create an environment to give talent the ability to concentrate on entertaining without having to deal with technical baggage?"

Greater Media Director of Technical Operations Paul Shulins agreed, saying in some cases, big consoles are in the way — even being used as storage for computer keyboards resting on top.

An ergonomic challenge is what to do about the multitude of LCD monitors now being used in stations, several panelists said.

Engineers also discussed where the next crop of technical talent is going to come from and recruiting methods. Cumulus Media VP Engineering and Information Technology Kline said, "We advertise to keep a bank of résumés for when we do have a job open up."

New York Public Radio married IT and traditional broadcast engineering to create a new department with four people on-call 24/7. "We decided we needed someone on the spot for problems," said WNYC/WQXR Director of Engineering Jim Stagnitto. The four "are experienced in all of our systems, even the digital recorders we send out with newspeople."

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New Life for Those Old FIMs

Convert 'Em to Run on Standard 9V Instead of 67.5V Batteries

BY ROBERT W. MEISTER

TECHTIPS

The Nems-Clarke 120 and RCA WX-2 Field Intensity Meters (FIMs) use five common 1.5V D-cells for filaments (four for the receiver, one for the calibrating oscillator) and two 67.5V NEDA 200 (Eveready #467) "B" batteries for plate power (one for the receiver, one for the calibrating oscillator).

This article describes how to convert these meters to use common 9V batteries instead of the more expensive and harder-to-get 67.5V batteries. Each "B" battery will be replaced by a series string of seven 9V batteries.

The negative terminal of the calibrating oscillator's "B" battery is grounded. The receiver's "B" supply also develops bias voltage inside the FIM. For this reason, the receiver battery's negative terminal is *not* grounded, so you need two isolated power sources.

It's likely that the FIMs will operate properly on 72 volts (eight 9V batteries in series) however I didn't want to push my luck, and they work great with the nominal 63 volts.

Batteries in an RCA WX-2A Field Intensity Meter. The WX-2C and WX-2D meters don't have the hold-down clamps or fiber spacers.

THE ECONOMICS

The #467 batteries are rated for 67.5V at 550 mAh. They're constructed of 45 1.5V cells connected in series. End-of-life is 0.8 volts per cell (a total battery voltage of 36 volts). These batteries cost $30–$50 each. Some suppliers offer free shipping, so check around.

Common 9V alkaline batteries are rated for 9V at 625 mAh. They're constructed of six 1.5V cells connected in series. End-of-life is 0.8 volts per cell (a total battery voltage of 4.8 volts). Seven batteries in series will provide a nominal 63 volts and will be good for many hundreds of measurements. You can buy these for as low as $1.50 each.

The one-time cost to convert the meter is about $10 plus half an hour's time. A full set of 14 batteries can be bought for as little as $21, much less than $60 or more for the stock "B" batteries, and if you're out in the field and the batteries die, you can buy new ones anywhere. Shelf life is about the same too.

Parts required:

- 14 9V battery connectors with leads, Mouser part number 123-5114-GR. These cost $0.60 each in 2011. I used these because they are constructed of hard plastic rather than just a soft vinyl covering. This makes them much easier to attach and detach from the batteries.
- 14 9V alkaline batteries, commonly referred to as NEDA 1604 or 1604A. These can be bought in bulk (industrial packages) on popular auction sites.
- One foot of 1/16 inch ID (size before shrinkage) heat-shrink tubing, cut into 12 one-inch long pieces.

CONSTRUCTION

The battery connectors have four-inch-long red and black wires permanently attached. Slide a piece of heat-shrink tubing over one red wire and twist and solder it to the black wire of another connector. Fold the soldered joint over and slide the heat-shrink tubing over the

World Radio History

splice. Build a string of seven connectors (six splices) in series. Try to arrange the entire assembly as a string that looks like a long "W". You should have one red wire at one end and one black wire at the other end remaining. Shrink all the tubing when you're done.

INSTALLATION

You might as well remove the D-cells, clean the screw terminals with a brass wire brush, and install new alkaline batteries while you've got the compartment open.

Remove any existing "B" batteries from the FIM. Identify the unit's battery terminals and keep them paired correctly (my WX-2A had four loose battery wires and terminals while the others had two pairs of wires and terminals held together with fish paper). The positive terminal of the original BATTERY is the smaller (male) contact, so the positive terminal of the meter wiring HARNESS is the larger split (female) contact.

To date I've performed this modification on an RCA WX-2D, an RCA WX-2C and an RCA WX-2A.

Attach the red wire from one 9V battery string to the positive harness contact by soldering it to the rivet in the center. This way you can still use original batteries if you ever want to by just unsoldering the little wire. Similarly, solder the black wire from the 9V battery string to the negative harness contact. Wrap the FIM's battery contacts with electrical tape. Repeat this procedure for the other pack.

Using electrical or masking tape, build six pairs of 9V batteries with the terminals all oriented the same way but leave two batteries separate. Each string uses seven batteries: three of the taped pairs and one single battery. Untangle the string of connectors and attach them to the batteries. Be careful not to short anything out, especially to the chassis. Do this for both strings.

There is sufficient room inside the battery compartment for all these batteries where the "B" batteries were. Lay the meter face down with the battery compartment fully open, then place pairs of batteries inside with the wired connectors facing the top, ending with the single battery along the top above the others. The FIM's battery terminals can be stuffed above everything else.

Squish the wires down so they won't be pinched when you close the battery compartment. I didn't need to add foam or other packing material to keep the batteries from moving. Shut and latch the battery compartment, check the four battery voltages on the meter for an appropriate reading, and you're done.

The photo on page 16 shows the batteries in an RCA WX-2A Field Intensity Meter. The WX-2C and WX-2D meters don't have the hold-down clamps or fiber spacers. Put electrical tape over the hold-down clamps to prevent the exposed sides of the battery terminals from shorting out to them (I learned this from actual experience one day and was surprised when one 9V battery actually sizzled and blew apart).

OPERATION

With only 63 volts instead of the 67.5V, the battery voltage indications on the FIM will be slightly lower than what you might be used to. The FIMs are rated to operate with 50–70 volts, so you should still have plenty of useful life with the new 9V batteries. When each 9V battery drops to 7 volts, you'll be at 49 volts total and they should all be replaced.

To date I've performed this modification on an RCA WX-2D, an RCA WX-2C and an RCA WX-2A. The Nems-Clarke 120E essentially is identical to the RCA WX-2D and should be just as easy. Even after six months of exhaustive use repairing and testing these meters, there's still plenty of life remaining in the batteries.

Do you like this kind of article? Let Radio World know at *radioworld@nbmedia.com*.

Robert W. Meister is an amateur radio operator (WA1MIK) and FCC licensed contract radio engineer in Southern Connecticut. He can be reached via email to WA1MIK@comcast.net.

World Radio History

Rebuild That Relic of an AM Transmitter

Old Betsy Can Still Be a Lifesaver, So Why Not Take Good Care of Her?

BY MARK PERSONS

Many people think old AM transmitters are worthless.

If a high-level, plate-modulated tube transmitter is replaced by a shiny new

TECHTIPS

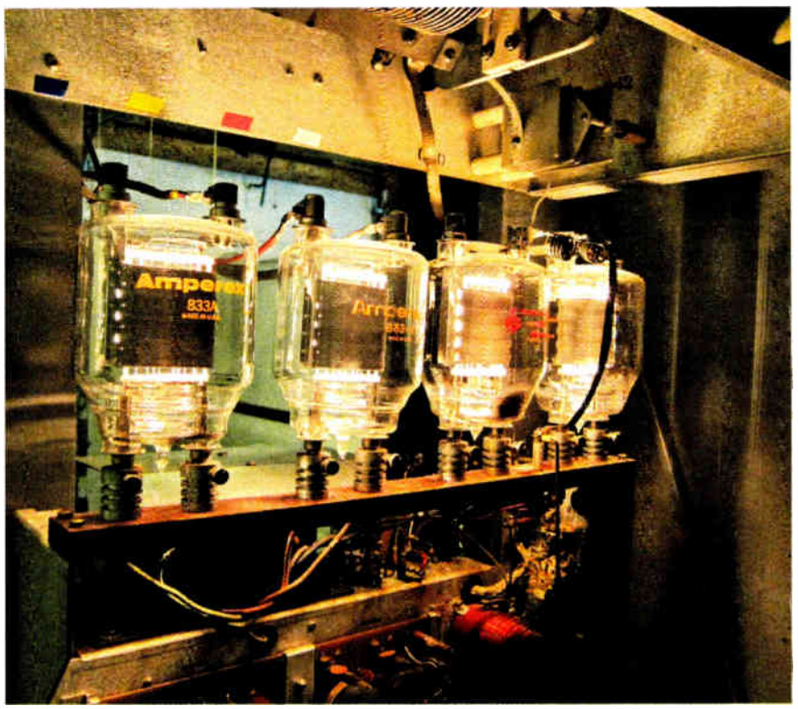
solid-state transmitter, why should the old one be kept? Heck, you might get $500 for the relic.

Well, I am here to tell you that the new whiz-bang transmitter should be backed up by something that runs when trouble strikes.

One station owner told me the worst management decision he ever made was to get rid of his old transmitter after the new one arrived. He paid for that decision by being off the air for three days.

Solid-state transmitters need to see a 50-ohm load with little reactance in order to run properly. Old tube transmitters can run into a "coat hanger," as many veteran engineers would say. If the AM antenna is misbehaving, a tube transmitter can be your savior while antenna repairs are made.

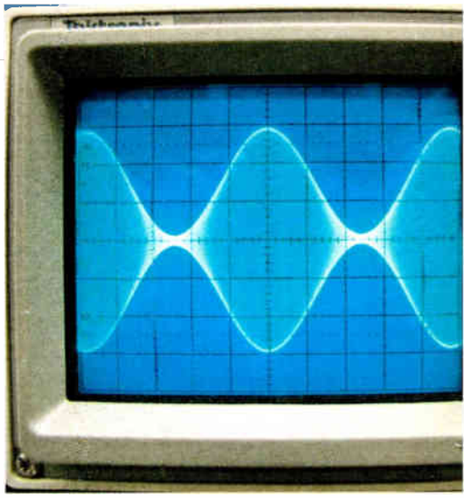
Most transmitters sold today are touted as being very reliable because a power amplifier module can fail and the transmitter will stay on the air at reduced power. That is fine until there is a logic problem, a power supply problem, a driver problem, an output network problem or some other show-stopper.

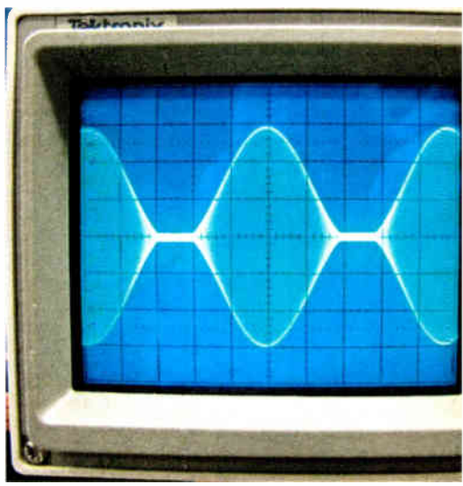


833A Tubes

Having grown up in a tube transmitter era, I really appreciate the simplicity of transmitters from the 1960s. Probably the best example in my mind is the Gates, now Harris, BC-1G. It is a 1,000-watt transmitter using 833A tubes that really do glow in the dark. One of my clients bought two of these for use as backups for his newly purchased solid-state transmitters at two new AM stations he constructed in recent years.

Warning! If you decide to take on a project like this, and if the transmitter you are going to work on has PCB-filled capacitors or PCB-filled transformers, you really want to replace them before turning the power on. The same goes for mercury vapor rectifier tubes. Anything else in an old transmitter is harmless except for the 2,500 or more volts when the high voltage is turned on.





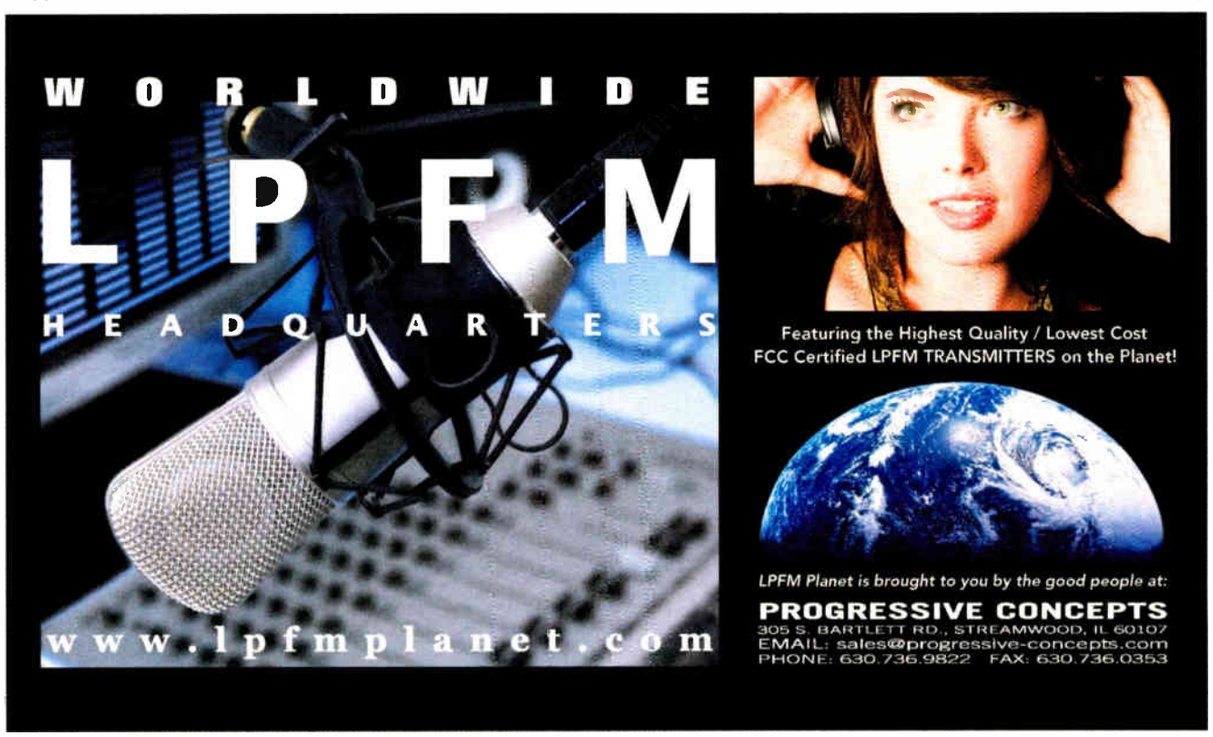
SWEAT-REDUCTION FACTOR

The first part of a transmitter rebuild project is to test the transmitter and make repairs necessary to get it running to factory specifications on the original frequency into a dummy load. Be sure to spend some time cleaning and replace any questionable components that you can spot with your eyes.

Most transmitters from the 1950s through the 1970s came with a tuning chart in the instruction book. Capacitors values are listed for every frequency on the dial. Also shown is the number of turns necessary on each of the tuning coils for each frequency, or group of frequencies.

If your project involves changing frequency, you will need a crystal for the RF oscillator. Back then, they were known as "fundamental" crystals that oscillated at the frequency at which the transmitter was intended to run. Later transmitters used less expensive crystals that were two or four times the operating frequency of the transmitter. That higher frequency was divided down to the final operating frequency.

Fundamental crystals are available from International Crystal *www.icmfg.com* for operation at 1 MHz and above, or from JAN crystal *www.jancrystals.com* for any channel on the AM band.



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I start a tune-up at the crystal oscillator before turning on the high voltage at the lowest transmitter power setting. Once things look right at low power, I go to high power and really make it sing.

On AM transmitters, there is more to making them run than getting power at carrier. I use an oscilloscope on an RF sample port at the output of the transmitter to watch the modulated envelope when an audio oscillator at 1 kHz is connected to the audio input of the transmitter.

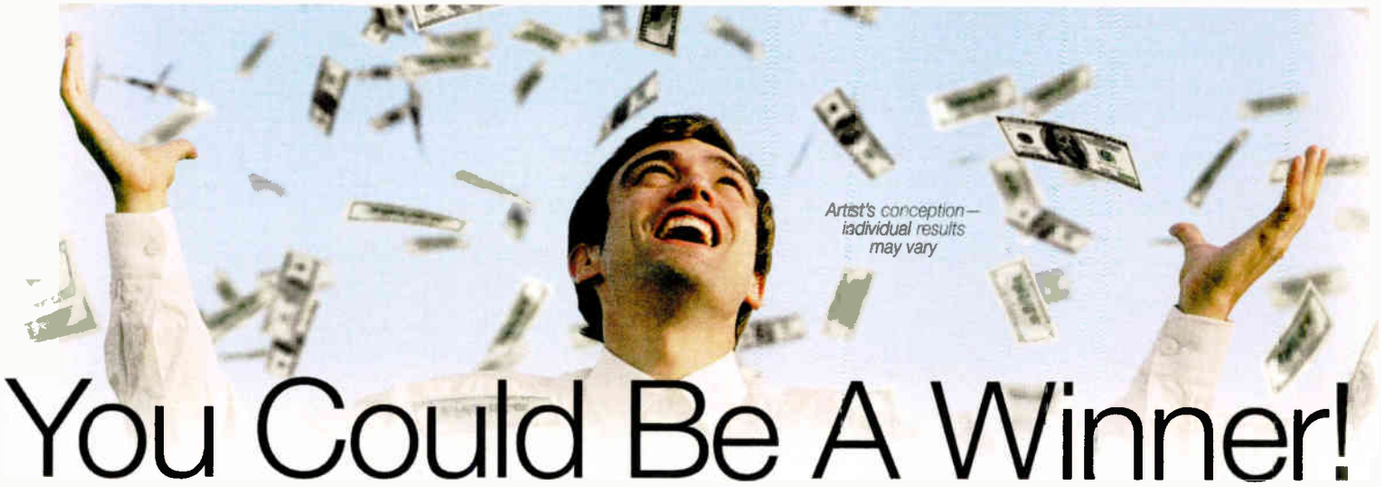
Tubes with good emission give low-distortion results as shown on the "100 percent modulated photo." Running regular programming audio tells me almost nothing about the audio performance of a transmitter. The lower photo shows the audio turned up an additional 2 dB. You see the carrier go down to zero for an extended period of time and the positive peaks go up with the additional audio. That is +125 percent positive modulation.

If the transmitter design is less-than-great or the tubes are a bit low on emission, you might have to be satisfied with 100 percent positive modulation. I write this assuming the transmitter will be used on the air only in emergencies.

Best to run the old transmitter at least once every three months. You will really appreciate the value of a backup transmitter the first time you use it on the air. Sure, it is not as energy efficient, but it will reduce the sweat on your brow by a factor of 100 when it is in on the air.

Bauer 707

Mark Persons, WØMH, is certified by the Society of Broadcast Engineers as a Professional Broadcast Engineer and has more than 30 years experience. His website is www.mwpersons.com.



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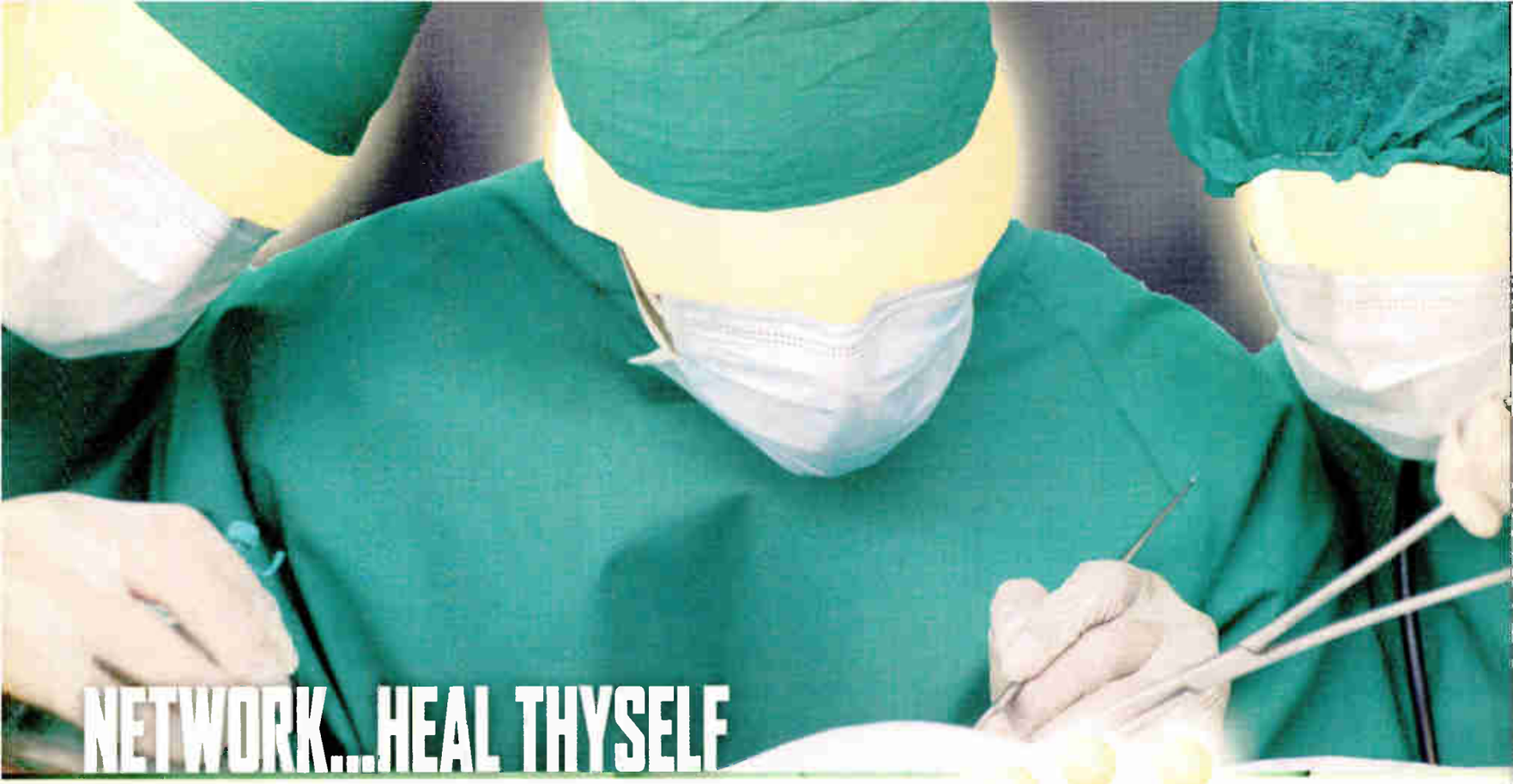

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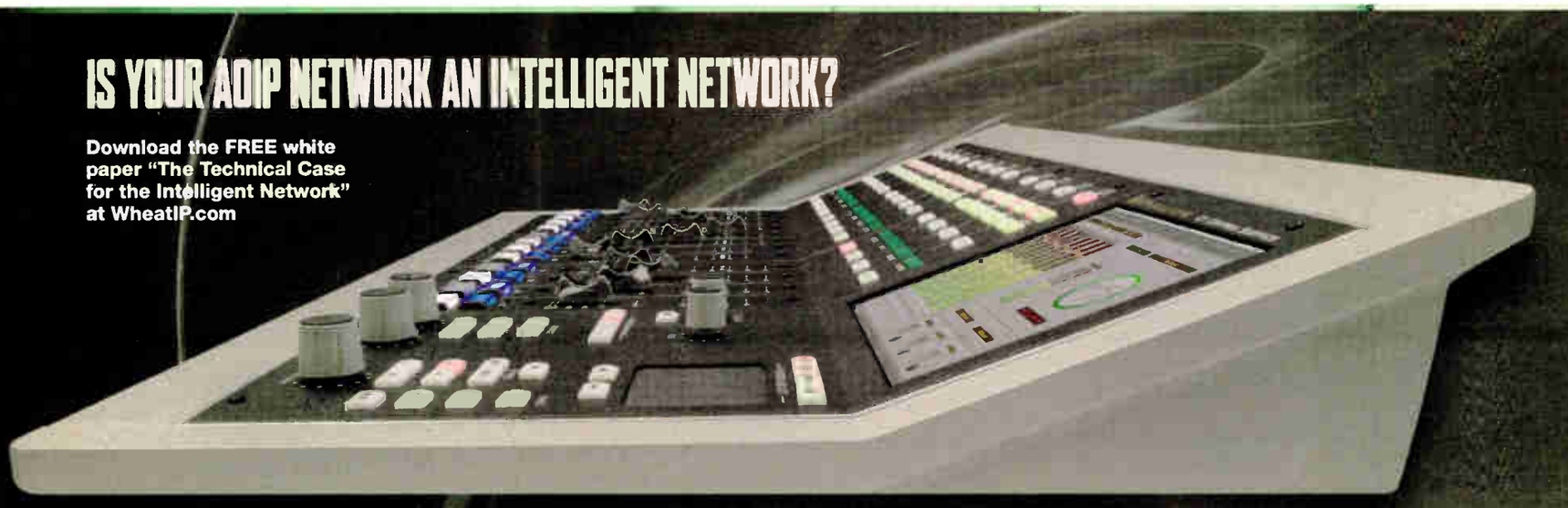

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AUDIOARTS MODULAR WHEATNET-IP NETWORKABLE CONSOLE

Here's how easy it is to setup the new IP-12 console: Unbox it. Plug it in. You're ready to go. But don't let its simple setup fool you. It's one very powerful little console...

First, its modern, modular design moves all audio, logic and control outside the control surface and into a single rack-space audio interface/mix engine (called a BLADE). This gives you much greater mixing/processing capabilities as well as the ability to network when you have more than one console. Imagine simply calling up any audio sources on any of your consoles anywhere in your facility. And, if you've already got the WheatNet-IP Intelligent Network, it fits right in.

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AUDIOARTS

World Radio History

DASDEC II Finds a Home in Chicago

Moody Broadcast Likes Feature Set, Options

USERREPORT

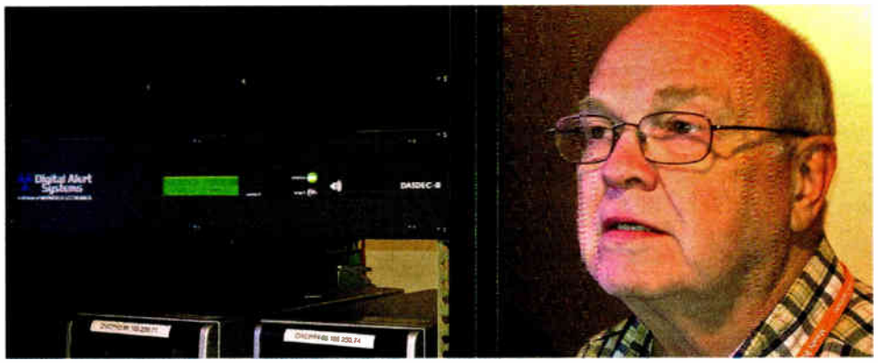
BY GORDON S. CARTER, CPBE, DRB, CBNT
Staff Engineer
WMBI (AM/FM)

CHICAGO — Like almost every other broadcast engineer in the United States, I was faced with the task of configuring and installing a CAP-compliant EAS device. The choice of which unit to use had already been made by our director of engineering, and one day he asked if I would tackle the setup and installation of the unit. The DASDEC II from Digital Alert Systems had already been purchased based on several of its features.

FEATURES

WMBI(AM/FM) broadcasts separate programming on AM, FM/HD1, HD2 and HD3. The ability to independently control weekly and monthly tests on these stations was an important consideration. Some other features of the unit are NTP time (no more drifting EAS clocks), computer-retrievable logs (no more printers unless you really want one), Web interface for setup and remote control, permissions based on user log-in, internal AM/FM/NWS receivers (optional), interface to external devices and multi-station capability.

The DASDEC II is deceptively simple-looking. The front has only a two-line LCD display, one push-button, two lights and a speaker. The rear panel has more, but is essentially a computer chassis with two expansion slots, three F connectors and some audio and GPIO connections on Euroblock connectors. There are up to four RJ-45 network connections on the rear as well, depending on the configuration.



The real power of this box lies in its software.

Depending on the options you select, the unit may have up to three receivers in it. The receivers are configurable in software, and can be used as either AM, FM or NWS (weather) receivers. The system also will interface to external devices such as BetaBrite signs, external audio switchers, video character generators (for our TV associates) and various automation systems.

As you have probably figured out, the real power of this box lies in its software.

At about 160 pages, the instruction manual can be intimidating. However, it's worth your trouble at least to skim through it before attempting to set up the unit. The manual explains many of the software options and how they interact with other settings. This can be especially helpful if you are using your DASDEC II in something other than a basic single-station operation or are interfacing it with other devices.

Setting up the DASDEC II requires some thought and patience. Most of the setup options are logical, but there are a few items that could use some clarification.

For instance, the actions for GPI1 and GPI2 use different terminology for the same actions. Digital Alert Systems says this will be addressed in a future release of software.

Even though there are some issues, the people at Digital Alert Systems have been helpful in addressing them. They have been willing to answer any question regarding the unit or its setup that I have had. Once we got past these few issues, the setup was easy, though detailed, and the unit seems to work as advertised.

Since we have still not received the license authorization for the CAP features, and there are no CAP servers online at this point, I cannot comment on the CAP features of the unit. The EAS features appear to work as promised.

For information, contact Bill Robertson at Digital Alert Systems in New York at (585) 765-1155 or visit www.digitalalertsystems.com.

TECHUPDATE

SAGE REFINES ENDEC SOFTWARE

Although the FCC has extended the compliance date for CAP to June 2012, the majority of radio stations have acquired equipment. Sage Alerting Systems says a significant number have selected the Digital Endec model 3644.

The 3644 is Part 11 certified and supports legacy EAS. Users can continue to use the new blue box as a replacement for old EAS equipment, even though the FCC has delayed final CAP rules. The 3644 also has passed FEMA's CAP conformance test and is in daily use in several states that have CAP distribution systems in place.

Sage continues to refine its software, and makes it available on its website for download and flash installation into the Endec. A recent addition is support for FEMA's new national CAP distribution server using the ATOM protocol, available as a free software update from Sage. With the 3644 Endec is installed in thousands of locations, Sage says, it has received many ideas for new features and ease-of-use enhancements, and Sage plans to roll these into future releases.

The final FCC rules on CAP remain pending, but the CAP protocols themselves have now been standardized for more than a year, and changes are expected to be primarily in procedures for use of CAP by stations, such as display of CAP data in video crawls and text-enabled radios, and in how the Governor's Must Carry provisions are to be implemented. For any stations taking advantage of the implementation delay, Sage continues to recommend that buyers consider only a combined EAS/CAP device, such as the Sage Digital Endec.

For information, contact Sage Alerting Systems in New York at (914) 872-4069 or visit www.sagealertingsystems.com.

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World Radio History

Deva DB4000 Watches Your Audio

Spanish Broadcaster Finds FM Monitor Covers All the Requirements

USERREPORT

BY GUILLERMO HERNÁNDEZ
FM Sites Manager
Radio Nacional de España

MADRID — Recently, Radio Nacional de España, the national broadcaster of Spain, acquired a DB4000 FM monitor from Deva Broadcast Ltd. When we had been shown the DB4000 we realized its potential in measuring and notifying us of any change in our transmission. We asked to test one.

Normally we have four programs on air at most of our transmitter sites. With around 240 sites, that means 960 transmissions on air 24 hours per day. Some of these sites have large numbers of potential listeners thanks to advantageous sites, high-power transmitters and high-gain antennas. Because we are a public radio system we must always broadcast a quality signal. the DB4000, which can follow an unlimited number of signals, is a good tool for us test.

USEFUL FEATURES

For us an important feature of the DB4000 is the control of all the RDS categories. We utilize special applications like TMC, so the availability of an alarm for RDS level loss is crucial.

The rackmounted DB4000 has a display and a touchpad that is adequate if you don't have a PC. Using a PC, you can access the DB4000 Device Manager application. It will give you a quick overview of RF level, MPX deviation peaks maximum and minimum, left and right stereo channel and also the RDS level. When you look into the tabs and start exploring the program you can appreciate the intuitiveness, depth and accuracy of the data displayed.

The Band Analyzer provides a picture of all the frequencies in the FM band. Opening the RDS tab, you will find useful information about the configuration of the RDS, groups received and alternative frequencies.

The FM Spectrum tab shows the spectrum; that will be stored in a log in the Log Manager. The MPX Deviation tab shows the response curve (kHz in function of time percentage), positive and negative.

The DB4000 can issue alarms via SMS, email and SNMP using preset threshold and values information and follow schedules. It can report values configured with up and down limits or mark the out-of-range value.

Additional components — essentials, in my own opinion — include a GSM modem and DB90 Audio IP Box.

The Audio IP Box creates an IP audio stream for the DB4000 Device Manager so users can listen via the Internet directly to the DB4000 tuner.

We can say that the DB4000 is a perfect tool for looking after your transmission. It will measure your signal and detect problems in order for you to solve as soon as possible.

For information, contact Todor Ivanov at Deva Broadcast in Bulgaria at 011-359-56-820027 or visit www.devabroadcast.com.

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New EAS Rules

Questions?
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SAGE

Sage Alerting Systems, Inc
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Phone 914 872 4069 info@sagealertingsystems.com
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World Radio History

Site Sentinel 16 Keeps an Eye on Washington Plant

Multicultural Radio Broadcasting Finds That Broadcast Tools Box Delivers as Advertised

USERREPORT

BY M.H. GILBERT
Regional Chief Engineer
Multicultural Radio Broadcasting
KARI(AM) and KVRI(AM)

BLAINE, WASH. — In a climate of small budgets, we all deal with the question, "Will it work as advertised?"

The Broadcast Tools Site Sentinel 16 does the job and doesn't break the bank

doing what was promised. One could spend a lot more money and get less in the long run.

Okay, I like the unit; but you're asking why you would want one.

The first thing that comes to mind is the internal setup. Like many of my colleagues in the engineering field I have a heavy dusting of gray on the rooftop, and was not raised on a computer.

For the Site Sentinel 16 just follow the simple setup procedure in the supplied instructions with the unit and any need to call the company IT wizard is gone.

The next consideration is the system of wiring connections for the Site Sentinel 16. There's no need to attach some form of connector to the end of the control or metering wires, since the conductors are cinched down inside of the plug-in Euroblock screw terminals.

My final comments are about the performance of the Site Sentinel 16. For the past year our unit has operated flawlessly under the demands of four transmitters that are diplexed on seven towers that require constant monitoring day and night.

It's nice to know if a problem does come up, the email notice from the site is a moment away from your cellphone or computer.

We have a small plant in Blaine, Wash. Our site is probably just like yours.

Yes, you can turn the transmitters on and off, monitor your transmitter power, change patterns, and keep tabs on the phase and ratio of each tower.

What will impress you, the guy in charge of all this equipment, is the simple fact that it works.

As for management they will like the combination of price and performance.

For information, contact Don Winget at Broadcast Tools in Washington at (360) 854-9559 or visit www.broadcasttools.com.

Relio, GoldenEagle Work For GPB Media

Public Broadcaster Can Monitor and Operate Radio and TV Sites From a Single Location

USERREPORT

BY JEFFREY WHALEY
IT Broadcast Engineer
GPB Media

ATLANTA — At GPB Media we were looking to get away from third-party monitoring of our transmitters because of the high costs involved. It was decided we would consolidate monitoring at our Atlanta Technical Operations Center because it was expanding its operations to 24 hours seven days a week.

We chose Audemat's GoldenEagle FM for monitoring at our transmitters because nothing else on the market provided the features and flexibility available with this unit. Adding the company's Broadcast Manager Software Suite allowed us to realize our goal of centralized monitoring; again, we found the feature set unrivalled.

Later, when we were looking for a way to monitor our return feed silence alarms and other critical signals at the TOC, we felt that Relio, Audemat's remote facility control unit, was the only choice that would give us the flexibility and expandability we needed. With these pieces in place and working together we realized we had hit the trifecta in broadcast monitoring.

The GoldenEagle signal monitoring unit is the workhorse of the system. It is easy to set up and operate. The interface is intuitive, ensuring that parameter setting for alarm thresholds is a straightforward process. Checking the modulation and streaming of the HD Radio audio is part of our workflow whenever we have major alarms, and the GoldenEagle's interface enables us to do this with ease. The I/O option allowed us to add our tower lights, generators and backup audio to the alarms we send.

We also have added the ability to turn the transmitter on or off through the GoldenEagle. This was implemented using ScriptEasy software, which comes with Audemat's monitoring units. We also set up recordings at various times of the day to do quality checks.

The Broadcast Manager allows us to tie our nine television transmitters and 18 FM transmitters together and monitor

everything from a central location. It provides a map of our transmitter sites complete with colored indicators; this allows us quickly to see any critical errors on a large LCD monitor in the TOC. The ability to customize which alarms go to specific engineers allows us to send only the emails relevant to each engineer.

We also added the SMS message option, which we use to send SMS messages to the engineers on critical alarms. This added layer on critical alarms helps us ensure that nothing falls through the cracks. The database allows us to look at historical data for each site to determine if patterns are developing and where to focus repair efforts.

The Relio remote control unit allows us to set up alarms from our silence sensors, EAS feeds and STL links. With a little help from the Audemat staff we were able to write alarm scripts with ScriptEasy that send outputs to a light panel and buzzer to let us know whenever we lose our return feed from a transmitter. Of course we always check the GoldenEagle to verify what is really going on. With this method of monitoring we never send out an engineer on a false alarm because we know exactly what's going on at the transmitter site with the GoldenEagle. We have the option of changing what we monitor with the Relio and, if we decide to add another input or output, it just requires a little time with ScriptEasy.

For information, contact Tony Peterle at Audemat/WorldCast Systems in Florida at (305) 249-3110 or visit www.audemat.com.

World Radio History

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World Radio History

Alabama Chooses New EAS Network

FM Alert Satellite/IP Operation Passes First Required Monthly Test

USERREPORT

BY LARRY WILKINS
Alabama EAS Coordinator/
ABIP Inspector
Alabama Broadcasters Assoc.

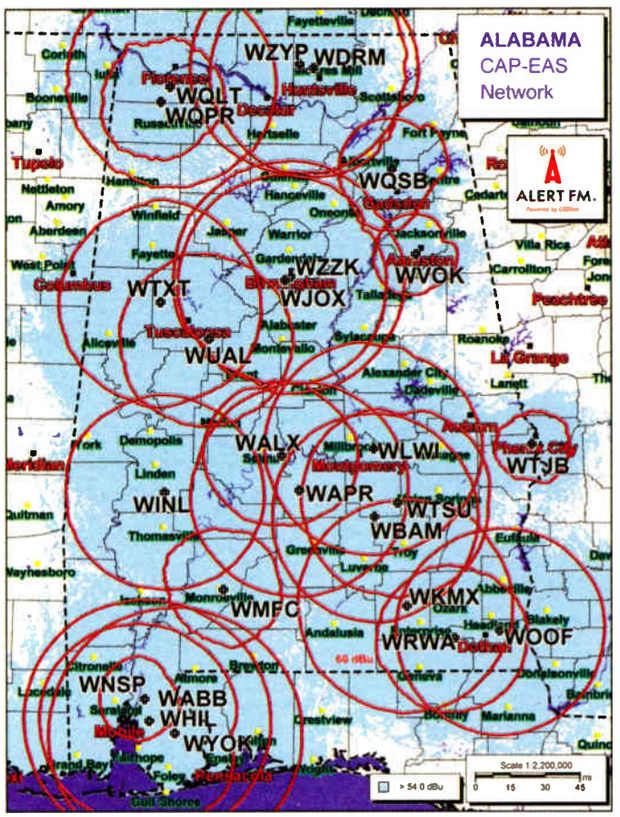
HOOVER, ALA. — During the transition from EBS to EAS in 1996, the state of Alabama was still using the "daisy-chain" method of distributing EAS alerts. A couple of years later we discovered that a number of states had started other means of distribution.

According to FCC rules, all broadcast stations and cable systems must monitor two sources capable of relaying messages from the White House. The key word here is "sources." That could mean radio stations, Internet, subchannels, satellite, etc.

The state decided to use the services of two statewide networks already in place: the Alabama Public Television Network (APT) which has nine transmitters that cover almost the entire state; and the Alabama Digital Satellite Network (ADSN), a regional sports network, which had more than 60 downlinks across the state.

NEW APPROACH

A revision to the state plan required all stations to monitor these two sources for EAS alerts and test. This distribution method worked very well for a number of years.



Recently, ADSN was purchased and move out of the state, leaving the state with only one distribution network. Sharon Tinsley, Alabama Broadcast Association (ABA) president, and I met with several companies to discuss possible solutions to the situation.

We decided to use the services of Global Security Systems, based in Jackson, Miss. GSS already had GSSNet, their satellite data delivery system, online at a number of stations in Alabama as part of their Alert FM system. Therefore, it only made sense to build on this network.

To facilitate to monitoring two sources for EAS messages, the Alabama Emergency Management Agency divided the state into eight operational areas. Based on these eight areas, ABA designated two full-power FM stations in each of the areas to install GSSNet downlink equipment. Equipment also was installed at two public radio networks, both of which have multiple stations around the state. To date, there are 23 markets set up with the GSSNet satellite equipment. The GSSNet equipment broadcasts to the new Sage Alerting Systems CAP/EAS units by means of multicast IP. I have been busy traveling to these stations to program the GSS units with the stations new Sage Digital Endec EAS equipment.

In August, we ran our first Required Monthly Test (RMT) using the GSSNet system. The comments from the field were all positive. The system uses GSSNet Alert Studio, a secure Web interface, for message origination, which allows alerts to be sent from any location. Alerts are sent using the CAP protocol, which is then converted to audio with the text-to-speech converters in the Sage Digital Endec units. As an alternative, you can also attach audio files to the message. This is useful should the governor need to send an alert using his own voice. JPEG photos can also be distributed with the alerts. Alerts may be sent to all counties for statewide alerts or a selected number of counties for regional types of events.

Training sessions have been held with personnel at the Department of Public Safety responsible for issuing Amber Alerts and the Emergency Operational Center, which handles alerts from the governor's office.

The entire startup project was funded by the Alabama Broadcasters Association with no cost to the broadcast stations. Additional expansion of the network is being planned for the future.

Overall the Alabama Broadcasters Association is satisfied with GSSNet and its Alert Studio application. We would recommend it any state for CAP-EAS message delivery.

For information, contact Jim Lowery at Global Security Systems in Mississippi at (866) 896-5180 or visit www.gssnet.us.

TECHUPDATE

AARLON: CONTROL AND ACQUISITION

Aarlon is a broadcaster's remote control and data acquisition system with a browser interface accessed via TCP/IP. It handles relaying transmitter site information including temperature, video and real-time audio. It also provides 24 status (contact closure) indications, 16 meter or voltage readings along with 34 NO or NC relay command control functions.

Readings and functions are sent to any computer via password-protected Internet browser connection.

The system also has a voice modem to allow POTS callers (via password) to gain access to the same IP-based graphic information and commands via DTMF tones, with voice responses from Aarlon as the user seeks information or enacts commands.

Aarlon has two on-board computers that process command relays, meter readings and status levels, and handle video and audio serviced up by the site.

For information call Bill Cordell at (713) 722-0169 or visit www.aarlon.com.

PRODUCT SPOTLIGHT ADVERTISEMENT

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World Radio History

TECHUPDATES

BROADCAST DEVICES INTRODUCES DPS-100D DIGITAL RF POWER METER

Broadcast Devices has introduced the DPS-100D, an RF power meter suitable for measuring both digital and analog RF signals.

The system includes an RF sensor with backlit display and a precision coupler. It is offered in transmission line sizes N-type 7/8-inch, 1-5/8-inch, 3-1/8-inch, 4-1/16-inch, 6-1/8-inch, 8-3/16-inch and also waveguide.

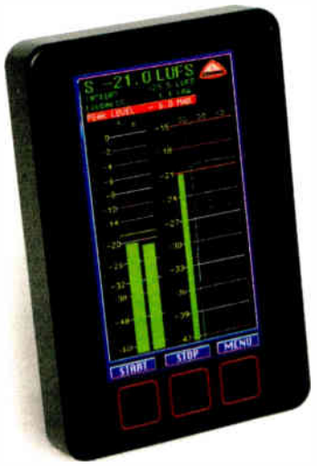
Design features of the DPS-100D include true RMS detection, simultaneous forward and reflected power measurements, SNMP, SMTP, TCP/IP, UDP, SNTP, HTTP Web-enabled, Ethernet, RS-485, CAN and USB.

It includes the following remote control functions: two configurable VDC proportional power outputs; two Form C configurable interlock/status relays; two configurable external GP inputs for fault reset; and six configurable general-purpose inputs for lock-out, tag-out, patch panel, external interlock strings, etc.

The DPS-100D is accessible via browser. The user can change parameters and view the site's vital information. The system is expandable and can be configured to accommodate sites of any magnitude. Additionally the DPS-100D can be interfaced to the Broadcast Devices SWP-200 RF switch controller to offer a system solution for tower management, master antennas and main/standby transmitter systems. The DPS-100D system is suitable for existing sites or new installations

For information, contact Broadcast Devices in New York (914) 737-5032 or visit www.broadcast-devices.com.

DK-TECHNOLOGIES INCORPORATES REVISED ITU 1770



DK-Technologies incorporated a recently published update of ITU loudness recommendation into its loudness metering products.

The main improvement introduced by this revision of ITU-R BS.1770 is the inclusion of an explicit "loudness gate," similar to that featured in the EBU R128 Loudness Recommendation. This gating method offers advantages to users because it covers all types of program material including speech, pop and classical music, sports and drama.

Among DK-Technologies products that now comply with the revised ITU algorithm is the recently introduced DK Meter, a compact audio loudness meter about the size of a smartphone, designed to meet demands from the market for cost-effective stereo and 5.1 metering, including loudness.

Two versions of the meter are available: the DK1, which is suitable for anyone working in stereo, and the DK2, aimed at the burgeoning 5.1 surround sound market.

Meters in DK's line are complaint with ATSC, EBU R128 and ITU BS1770/1771 loudness recommendations. Customers with MSD or PT0 600 series audio meters are being offered a free software update that will enable them to use the new recommendations.

For information, contact DK-Technologies/Lift AV in Washington state at (425) 242-7339 or visit www.dk-technologies.com.

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World Radio History

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Hardware and software products for processing, encoding and streaming your audio content.

AUDIO LOGGING

PC Software for archiving and logging all of your stations audio.

World Radio History

TECHUPDATES

KINTRONIC SHIPS VSU-1

The Model VSU-1 voltage sampling unit from Kintronic Labs is a new voltage sampling unit. It was developed in response to the FCC rulemaking that permits Method of Moment proofs of performance of directional antenna arrays using towers with electrical height greater than 105 degrees.

The initial installation of the Model VSU-1 voltage sampling units was at WAOK(AM) in Atlanta. At that location the question was of the reliability and survivability of the units placed directly in shunt across the tower feed of each tower in a high lightning environment.

According to Kintronic, the units were installed in January of this year and have continued to provide stable antenna monitor readings even in the presence of a direct lightning strike on one of the towers.

The design can be configured to accommodate peak operating voltages of 40 kV and can be adapted to a range of sample voltages for multiple pattern and transmitter power levels. Operation in a diplexed directional antenna system is possible depending on the frequency difference.

According to Kintronic Labs the use of voltage sampling to facilitate MoM proofs has several advantages. It enables servicing of the sample system at the ground level and eliminates the need for sample loops; it enables proofs of arrays with one or more sources of re-radiation, such as nearby power lines, at a fraction of the cost of a full proof; it offers an alternative to the high cost of moving sample loops to facilitate an MoM proof; and an MoM proof of any array that qualifies can be completed at a small fraction of the cost and time required for a full proof.

For information, contact Kintronic Labs in Tennessee at (423) 878-3141 or visit www.kintronic.com.

NEW EAS INSERTION DEVICE FROM TTL

Titus Technological Laboratories offers a new EAS audio/data insertion device, the PDI-323.

It uses sealed relays to pass audio or data passively through the device on three channels. Upon remote command a secondary source is transferred to the outputs, bypassing the audio or data from the primary source. By placing the PDI-323 in the program chain EAS audio immediately is transferred to the program channels.

The PDI-323 features XLR connectors for the inputs and outputs. Either analog or AES/EBU audio can be transferred this way. The PDI-323 is controlled by an external closure. This closure is monitored for short to ground, open or legitimate trigger from the EAS triggering device. In the event of a failure of the triggering line the PDI-323 will not put the secondary source onto the program line.

Local testing and triggering of the PDI-323, as well as full loop and system monitoring, are via the front panel. Daisy-chaining of other units is possible with the remote trigger output. Remote status also is provided. An internal power supply completes the unit, using a PowerCon-type connector for reliable operation.

An optional AES/EBU daughterboard will take analog audio from the secondary source and place a serial digital audio signal onto the program channel. This option allows the user to insert an AES/EBU EAS audio signal into a serial digital audio chain.

For information, contact Titus Technological Laboratories in Connecticut at (800) 806-8851 or visit www.tituslabs.com.

DAYSEQUERRA M2.2R, M4.2R TAKE ON HD RADIO

According to DaySequerra its Model M2.2R and M4.2R Modulation Monitors give broadcasters the tools they need to monitor and alarm their analog AM/FM and HD Radio broadcast transmissions.

The M2.2R includes six programmable dry, floating alarm relays, RBDS display, FM analog component monitoring including SCA and pilot injection levels, multiplex output for external SCA decoders, Ethernet interface for streaming PAD data or remote control and DaySequerra's Remote Dashboard software program, which lets broadcasters remotely tune the unit, alarm key signal parameters and log their data.

DaySequerra's proprietary PLM (Performance Loss Module) in the M2.2R employs heuristic algorithms, which it says cannot be fooled by pink noise or tones, and will generate alarms when real program silence is detected in HD Radio or analog broadcasts.

The M4.2R has many of the features of the M2.2R but at a lower price. It stores 20 AM and FM presets and tunes AM, FM and HD Radio multicast channels HD1 through HD8. The digital audio output works even when tuned to an analog station. The company says its sensitivity and IF rejection make the M4.2R suitable for extreme RF environments.

The M4.2R box is 1RU, half the size of the M2.2R. Its display has left and right audio LEDs as well as peak level LED indicators. It has the capability to store multicast stations as FM presets and has a new "scrolling data" mode, which sequentially displays selected HD Radio channel PAD fields.

Both the M2.2R and M4.2R will stay locked to the user-selected broadcast including any multicast HD2 through HD8 after power loss or loss of signal; if you set it to HD2, it will not revert back to HD1 with a loss of signal, but simply go silent until the signal is reacquired.

For information, contact DaySequerra in New Jersey at (856) 719-9900 or visit www.daysequerra.com.

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CIRCUITWERKES UNVEILS SITESENTRY4

The SiteSentry4 is a Web-based remote control with integrated audio streaming capability.

The unit has four analog metering inputs and two status inputs. In addition to the standard metering inputs, there is a true stereo silence/audio sensor and an onboard temperature sensor. Six relay outputs (two are DPDT) can be operated in momentary or latching mode. Sixteen alarms with 87 possible triggers controlling a field of 33 actions make the SiteSentry4 capable of handling complex situations automatically.

The SiteSentry4 includes the ability to decode ShoutCast/icecast MP3 or Ogg Vorbis audio streams. Received audio streams may be routed through the DPDT relays for putting on the air as backup sources when a main audio failure is detected. The SiteSentry4 also includes the ability to encode ShoutCcast/icecast-compatible audio streams using the open source Ogg Vorbis format, which is a high-quality alternative to MP3 that uses less bandwidth to achieve superior results. The SiteSentry4 can be used to encode or decode audio streams but not both simultaneously. Switching between transmit and receive is a one-button click. Audio I/O is unbalanced, stereo.

The SiteSentry4 supports SMTP and can send emails and SMS text messages that alert users of alarm conditions. Emailing and texting can be sent from the SiteSentry4 hardware without external monitoring software.

The system supports dynamic IP redirect services like dyn.com and www.no-ip.com. With redirects, users don't need static IP addresses and can find their units by name instead of by typing an IP number. The SiteSentry4 firmware is field-upgradable. When new features are added or when a bug is found, users can flash upgrade the units in the field with the latest firmware.

For information, contact CircuitWerkes in Florida at (352) 335-6555 or visit www.circuitwerkes.com.

I/O EXPANSION FOR BURK ARC PLUS AVAILABLE

Burk Technology says that upgrading legacy ARC-16 installations to the ARC Plus is easier and more cost-effective now.

The Plus-X Dual IP-8 Adapter connects directly to existing IP-8 interface panels, eliminating the need to rewire. The Dual IP-8 Adapter connects to the ARC Plus over Ethernet, allowing easy installation regardless of the distance to the remote control. By using existing IP-8s, the Dual IP-8 Adapter eliminates the need to add new I/O, reducing the cost of an upgrade project.

Using the Plus-X Dual IP-8 Adapter allows ARC-16 users to gain the benefits of a modern remote control system. The ARC Plus includes Web and smartphone access, and onboard macros. With its 256-channel capacity, a single ARC Plus can replace multiple ARC-16s.

Combined with AutoPilot 2010 software, broadcasters can upgrade multi-site ARC-16 operations as scheduling and budgets allow. AutoPilot works with the ARC Plus, ARC-16, GSC3000 and VRC2500, allowing simultaneous management of multiple remote controls from a single application.

For information, contact Burk Technology Massachusetts at (800) 255-8090 or visit www.burk.com.

World Radio History

TECHUPDATES

FOR DSCOPE III, A LOUDNESS TEST SUITE

Prism Sound's new test suite for its dScope Series III audio analyzer allows anyone using or considering buying one of the many audio loudness meters on the market to test whether the meter is compliant with the latest ITU recommendations for measuring audio loudness.

The test suite, developed in conjunction with Qualis Audio, comprises signals whose parameters change dynamically so as to stress individual portions of the measurement in isolation. Each of the 16 tests in the suite can then maximize its sensitivity to the specific implementation errors it was designed to detect.

The signals were developed using mathematical models of the algorithm, including various intentional implementation errors, and were optimized to give the largest difference between readings obtained by correct and incorrect implementations

Prism Sound's test suite is available for testing the ITU-R BS1770-2 compliance of any loudness meter. If a loudness meter gives the expected results for all of the tests, there is a very high likelihood that the implementation is compliant with BS1770-2.

It may be downloaded as a dScope III script and supporting files from *www.prismsound.com*, or as a series of WAV files and documentation from *www.qualisaudio.com*. More complete documentation of the tests and their expected results are included in the download package. Any new tests will be added as they are developed.

For information, contact Prism Sound in New Jersey at (973) 983-9577 or visit www.prismsound.com.

BELAR UPDATES MONITORING OPTIONS

Both Belar Electronics Labs' FMCS-1 and FMHD-1 may be updated in the field using Belar's WizWin software.

Recent updates include the ability to monitor alarm conditions using email alerts. The

company encourages engineers to check its website for the latest software updates.

The FCC recently issued a public notice allowing Modulation Dependent Carrier Level, or MDCL, AM transmissions. Belar's AMMA-2 was designed to monitor MDCL signals and has been used internationally by the IBB and VOA in their high-power MDCL AM stations.

For information, contact Belar Electronic Labs in Pennsylvania at (610) 687-5550 or visit www.belar.com.

NTI ADDS SPECTRAL LIMITS OPTION TO XL2

Neutrik Test Instruments offers a Spectral Limits option for the XL2 handheld audio analyzer.

The option adds higher resolution analysis, as well as allowing testing against user-created limit tolerance curves for "Go/No Go" checking of frequency response or other parameters.

Characteristics of a single device or link, or the entire signal chain may be tested against expected performance limits using either the real-time analyzer or an FFT spectrum analyzer function.

Spectral Limits adds a 1/6 and 1/12 octave resolution real-time analyzer to the measurement tools, as well as a more flexible setup for creating, storing and recalling test setups for comparing performance against stored limits. The NTI Spectral Limits option for XL2 may be user-installed on any NTI XL2 analyzer.

For information, contact NTI Americas in Oregon at (503) 684-7050 or visit www.nti-audio.com.

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Tower vs. Tower: A Question of Rules

FEATURES

How Did That Wireless Tower Get There?

Here's What Happened When a Surprise Structure Popped Up Near KLIZ(AM)

BY MARK PERSONS

TECHTIPS

The following email exchange was between Dane Ericksen of consulting engineers Hammett & Edison in San Francisco and Radio World contributor Mark Persons, shared with permission.

Mark, I just read your excellent "How Did That Wireless Tower Get There" article in the Sept. 1 issue of Radio World.

However, I think you will find that the correct rule section for a 700 MHz band operator is Section 27.63 of Part 27, not Section 73.1692 of Part 73.

A 700 MHz band station is, of course, a Part 27 Miscellaneous Wireless Communications Services station, not a Part 73 Broadcast Station. Section 27.63 applies even for area-licensed services.

Similarly, an area-licensed service cannot erect an over-200 foot AGL tower, or a facility near a Radio Quite Zone or FCC Monitoring Station, without obtaining prior approval.

There is a matching Section 22.371 that applies to Part 22 Public Mobile Radio Services stations (e.g., cellular).

Dane, thanks for the additional information.

In this case, the wireless tower is 180 feet, which is well below the 200-foot rule. On the high end of the AM broadcast band, a 199-foot tower is quite large in terms of wavelength and can become a significant re-radiator. In my opinion, the rule should be rewritten to apply to any tower over 50 degrees of electrical height at the AM frequency involved. Hopefully that is not too complicated for a wireless provider to figure out.

Thanks Mark. I would add the following:

Section 22.371 is a tower proximity rule, not a tower height rule. Further, while all towers exceeding 200 feet AGL in height require an Antenna Structure Registration (ASR), towers of 200 feet and less may still require an ASR if they are within 20,000 feet (about 4 miles) of an airport runway and penetrate an imaginary 100:1 slope extending outwards from the nearest runway point. Any difference in ground elevation between the runway AMSL and the tower site AMSL must be taken into account.

Of course, most commercial mobile radio service (CMRS) towers are short, since a too-tall CMRS antenna would cause interference to the adjacent cells. But if it's a tower for a conventional Land Mobile station, then the more height, the better. But in that event the structure would come under Part 90, not Parts 22 or 25. There isn't an equivalent Part 90 rule section that I can find.

So there are two, independent requirements at work here, one based on proximity to an AM array, the other based on height.

If a CMRS tower does trigger the "within 3 km to a DA AM" condition, the Hammett & Edison approach is to model the impact of the new tower to the DA array; most of the time it's predicted to be less than a 1 percent change to the pattern, in which case we still send the required notification to the AM station, but do not recommend measurements. Most AM stations accept this.

In the occasional situation where the modeling does suggest that there will be an impact to the AM array, we then recommend to the wireless carrier that it have us do both "before" and "after" measurements, to demonstrate that after construction and detuning of the new tower the AM array pattern has not been impacted. If only "after" measurements are done, this could leave the cellular carrier on the hook for fixing an out-of-tune pattern.

For a DA2 AM station, before and after measurements can be a non-trivial undertaking and require temporary daytime operation with the nighttime pattern, so the approach of first modeling the impact and only recommending measurements where needed has benefits to both the wireless carrier and the AM station.

An AM station licensee can always insist on measurements if it wants, but we have found most directional AM licensees do not do so when there is a credible basis for predicting no measurable impact.

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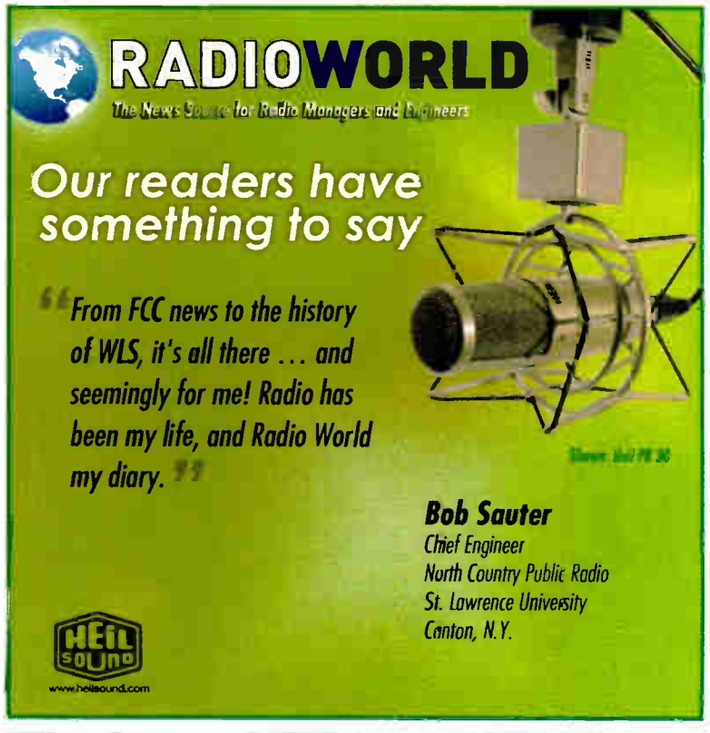

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READER'S FORUM

WITH APOLOGIES TO BILL DOHERTY

Your article ("KRLD's Dougherty Transmitter," July 1) discussed "the Western Electric 407A2 50 kW water-cooled Dougherty transmitter at KRLD in Dallas."

When I took my FCC first class radiotelephone test in 1969, I vividly recall — and still think about — not knowing what a Doherty amplifier was. Back then, there was no Internet to search, the test pool was not posted and I could not find out what a Doherty amplifier, circuit or transmitter was. Not one of my engineering friends had heard of it; however none of us had ever had the fun of working with an old W-E transmitter.

These days, a quick Google search turns up hundreds of thousands of hits for both "Doherty" and "Dougherty." But you've got to be careful; just as the Internet is full of information, it's also full of misinformation.

From what I can tell, the correct spelling is Doherty, named after William H. Doherty, 1907–2000. Several well-respected references seem to bear out that spelling.

Bob Meister
Hamden, Conn.

REMARKABLE PERFORMANCE

You spelled Bill Doherty's name wrong! You can find out more about him at his Wikipedia listing, under William H. Doherty.

KRLD's Doherty Transmitter. One reader asks about the box at right.

I have seen several recent articles regarding "load pulling" amplifiers for digital use that employ the Doherty principles.

The WECO Dohertys, like the later CEMCO ones, were capable of astounding performance (even though they did chew up AC power). Many of them would not only pass the old FM proof requirements for distortion and frequency response, but they could, if properly adjusted, easily create 150 percent or more positive modulation peaks.

The most astounding Dohertys ever made were designed by Bill Brennan (for WBAM, WAPE and WVOK) who, like Doherty, was a Harvard graduate. The transmitters he designed and built were among the few "handmade" 50s. The other notable example I am aware of was the KFBK Chireix "outphasing" design (renamed Ampliphase by RCA).

Below is another nifty picture of a first-generation WECO 50 kW Doherty, at KIRO, complete with National Guardsmen in tin hats and James B. Hatfield (Sr.) sitting at the control console.

This was taken by a commercial photographer and has his stamp on the back so it is an original print but the photography studio has long since vanished. The photo is undated but is obviously sometime in the 1942–1945 period, probably early on.

KIRO was at that time the most powerful station in the Northwest and certainly was considered to be a critical communications facility. It's on Maury Island, not exactly an area lending itself to high security. Hence the gentlemen in the tin hats, who I am told were National Guard or its 1940s equivalent.

It was at this transmitter site that the acetate recordings of CBS network feeds were made, preserving for history most of the broadcasts back to the United States from London of Edward R. Murrow who, of course, was from Washington state. (The I-90 floating bridge across Lake Washington is the Lacey V. Murrow Bridge, named for Ed Murrow's oldest brother, who was a civil engineer and director of the state highway department.)

Benjamin Dawson
Hatfield & Dawson Consulting Engineers
Seattle

A 50 kW Doherty is visible at KIRO in a 1940s photo. James B. Hatfield Sr. sits at the control console.

WHAT'S THAT BOX?

Thanks for the KRLD pic and info. I sure hope you continue with the articles.

What is the "box" on the lower right of the photo?

Fred C. Shetler
Port Royal, Pa.

John Schneider replies: My thanks to Benjamin Dawson and Bob Meister for correcting me on the spelling of Doherty.

The big device on the lower right is a large monitor speaker baffle. It has a small control panel with knobs, probably volume and tone controls, so it is presumably an amplified speaker. I don't know who the manufacturer was, but I have seen this speaker in several old radio photos dating back to the mid-'30s.

PS — I plan to keep publishing the old radio photos as long as Radio World wants them!

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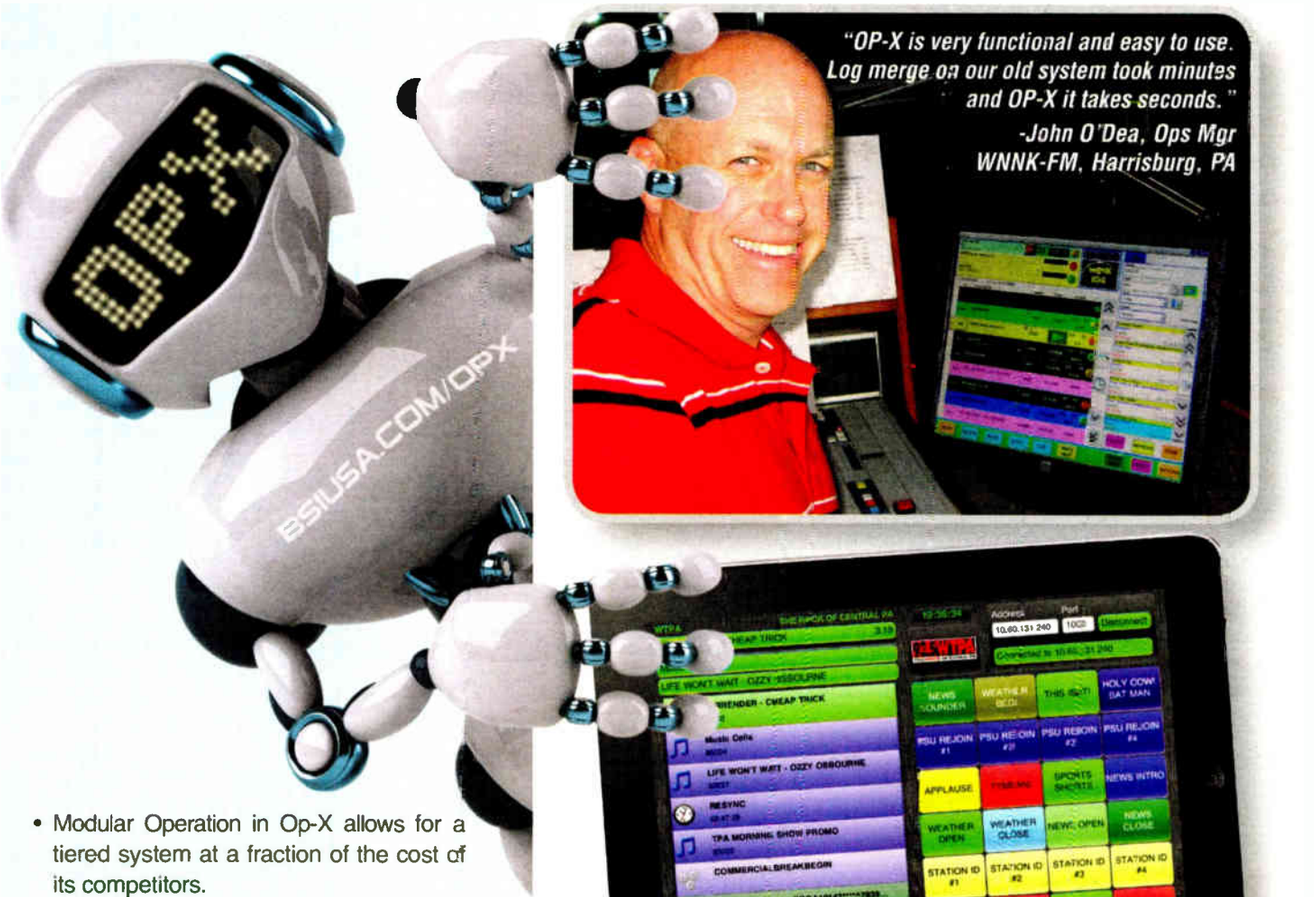

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