ENGINEERING MAGIC — Page 4

NewBay Media

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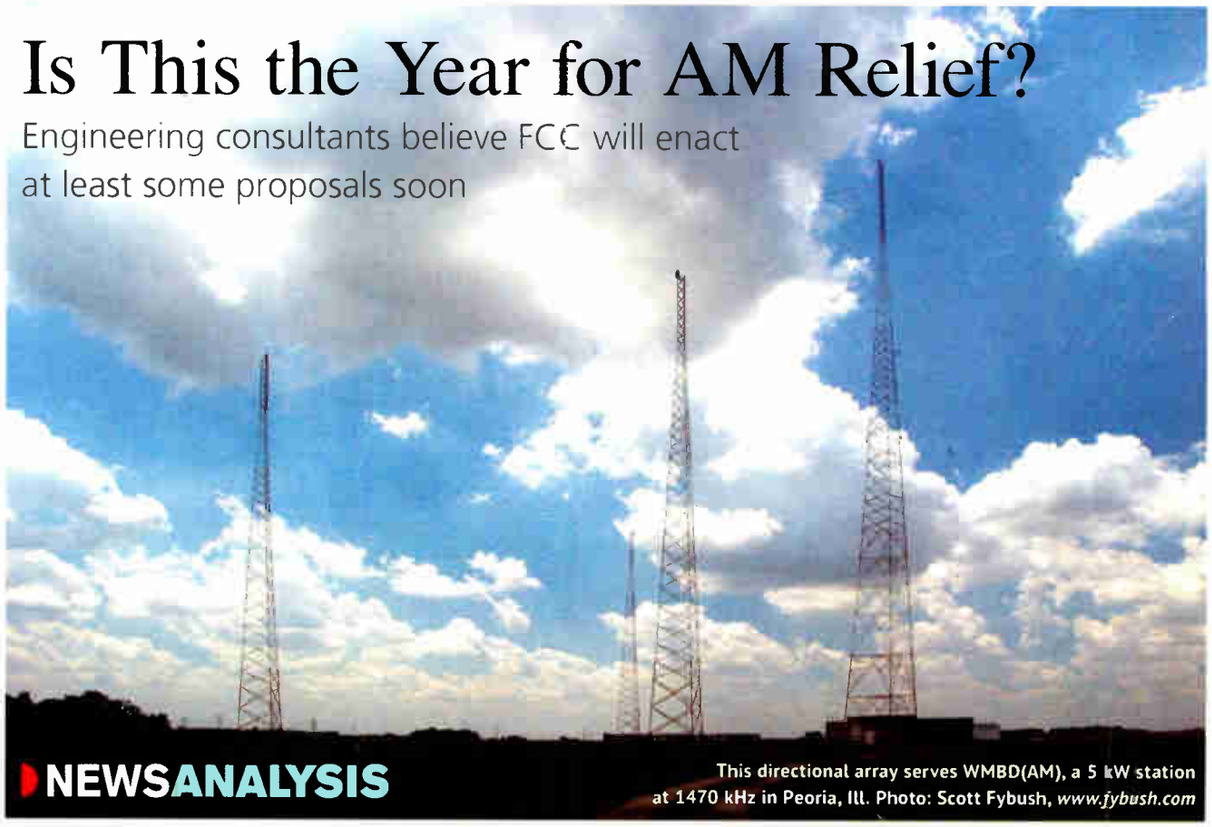
Is This the Year for AM Relief?

Engineering consultants believe FCC will enact at least some proposals soon



NEWSANALYSIS

This directional array serves WMBD(AM), a 5 kW station at 1470 kHz in Peoria, Ill. Photo: Scott Fybush, *www.fybush.com*

BY RANDY J. STINE

The Federal Communication Commission continues to review comments on the AM revitalization rulemaking proposals it made last fall. AM observers expect the commission to move forward quickly with at least some of those steps.

The Media Bureau suggested six remedies to promote short- and long-term AM sustainability in its Notice of Proposed Rulemaking. More than 200 public comments were filed to MB Docket 12-249; the commission heard from broadcast owners, equipment companies, engineers and public interest groups, among others.

The FCC acknowledges that the band suffers from technical limitations and interference that have contributed to a migration of listeners to higher-fidelity audio platforms, such as FM, satellite radio and others.

The prevailing opinion of AM observers interviewed for this story is that some, if not all, of the proposals will be enacted, possibly as soon as this year. Indeed, Commissioner Ajit Pai recently called on his colleagues to act on the proposals by the end of October, saying: "Given the static facing the AM band, we can't afford to delay."

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Low-Power Radio Is Incomplete

An original LPFM petitioner says the service has unfinished business

COMMENTARY

BY DON SCHELLHARDT

This commentary is substantive, but it's also personal. Low-power FM radio has been my primary passion in life for the last 16 years. In 1997, I joined electronics technician and inventor Nickolaus Leggett in a Petition for Rulemaking to the FCC (RM-9208, later merged into MB Docket 99-25). This made me one of the first two parties to propose LPFM. In 1998, when the FCC began deliberations on LPFM, I co-founded, and led, The Amherst Alliance, an Internet-based citizens' group that lobbied for LPFM.

In 2011, Congress enacted the Local Community Radio Act, mandating a major expansion of the LPFM radio service. At that time, I promised myself that I would phase out of LPFM activism and move on to other issues once the FCC had completed LCRA implementation.

Now LCRA implementation has been largely completed. So far, however, my personal transition away from activism on low-power radio has been more limited than planned. I have resigned as president of the Amherst Alliance, started to write a book and taken on certain American Indian landowners as paying clients on various federal issues; still, I remain concerned with unfinished business.

Power levels: The LPFM power levels are too narrow. Because the FCC will not license LPFMs below 50 watts, many potential LPFMs are too large to "fit" in the crowded spectrum of urban areas. Meanwhile, because the FCC also declines to license LPFMs above 100 watts, viability is problematic for some potential LPFMs in small towns and rural areas.

An LPFM station remains possible for least 80 percent of America's population, but what about the rest of us? The U.S. military has a slogan: "Leave no one behind." The Left of Center equivalent is the slogan: "Solidarity forever." Personally, I feel a moral obligation to include those Americans who have been left out.

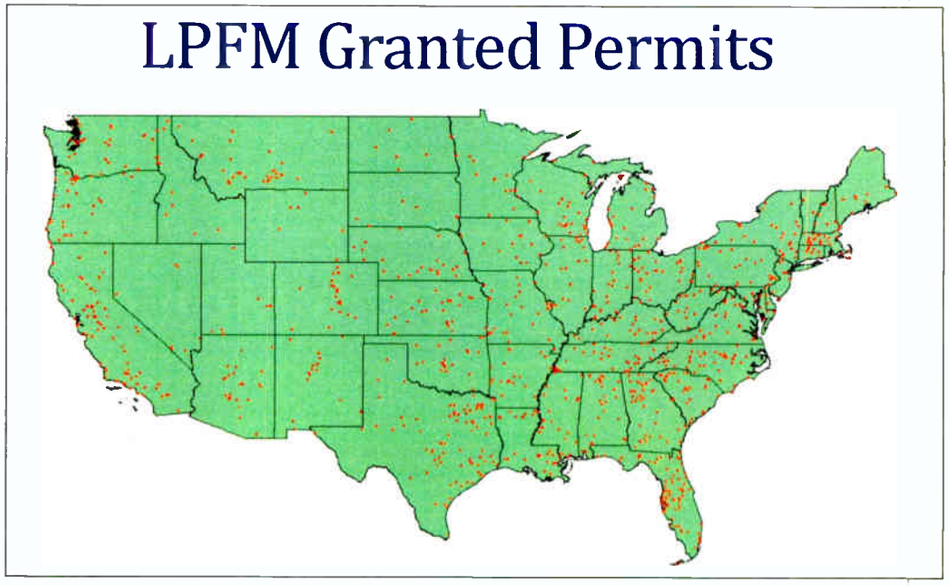
250 watt LPFMs: On Dec. 19, 2013, Nick Leggett and I filed a Petition for Rulemaking. It would allow selected LP100 stations to upgrade to 250 watts. There are two caveats. The LP100 must be located in a "small town or rural area," defined as a proposed service area that falls completely outside of any Standard Metropolitan Statistical Area, with locations inside Micro Standard Statistical Areas being acceptable. The LP100 must demonstrate it has been on-air for a "shakedown cruise" of at least two years, with a clear record of technical competence and regulatory compliance.

With respect to LP250 siting, a debate may be brewing inside the LPFM movement. Leggett and I, among others, stand by the original Amherst Alliance vision that LP250s should serve small towns and rural areas. Today, however, REC Networks and The Prometheus Radio Project seem to back licensing LP250s anywhere — including even urban areas, where they might blur the local focus and "crowd out" a greater number of smaller LPFMs.

LPFMs below 50 watts: Michelle Eyre Bradley, owner of REC Networks (*www.recnet.com*), has agreed to "take the lead" on a future petition to the FCC to allow the commission to authorize LPFMs below 50 watts, at least in selected areas.

The agency has clearly concluded — wrongly, in my opinion — that urban 10-watt LPFMs are too small to be viable. Therefore, the question arises: If 49 watts become the upper limit for a new class of LPFM station, what power level (presumably, above 10 watts) will be the lower limit?

My own "fallback" recommendation is 20 watts. This is the wattage at which Radio Mutiny of Philadelphia, the former "pirate" radio station that evolved into The Prometheus Radio Project, proved itself viable, and influential, for several years.



The FCC had granted more than 1,200 low-power additional FM applications as of early June — as shown in this commission map. The Audio Division expects the number to grow to 1,500 to 1,800 by year-end. In 2000–01, the commission granted 1,325 LPFM CPs; of those, some 774 were on-air as of March 31.

Low-power AM: Last decade, in response to a Petition for Rulemaking by The Amherst Alliance, The LPAM Network and others, the commission opened Docket RM-11287. Public comments were sought, and received, on possible licensing of low-power AM stations. Ultimately, however, the petition was neither granted nor rejected.

Now, however, the FCC is considering Docket 13-249, proposals for revitalization of the AM band. In this proceeding, reopening of Docket RM-11287 has been urged by Nick Leggett, William Walker, president of the LPAM Network (*lpam.net*) and me.

All of us endorsed an April 28, 2006 proposal in Docket RM-11287, reflecting a consensus of LPAM advocates at the time, which would pattern AMs after 10-watt Travelers' Information Stations. Other commenters in Docket 13-249 endorsed LPAM as a general concept, while Jim Potter of Missouri proposed LPAMs of "150 to 300 watts."

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World Radio History

Engineering Offers Moments of Magic

BY GREGORY MUIR

The author is principal engineer for Wolfram Engineering in Great Falls, Mont.

Paul, I liked your "From the Editor" column in the June 4 RW magazine regarding the feeling of working in the radio business. Although it has mainly turned into an investment or profit center these days, there is a certain romance some people still possess about this craft. And I, being in later years of life, choose not to be excluded from that group.

About seven years ago while directly employed by a western regional broadcasting firm, I had to attend to a transmitter problem at a remote site in the vast expanses of Montana. Upon arrival I witnessed the formation of a thunderstorm to the east. A quick photo (right), and I was off to see what had happened in the building.

The failure took time to fix, and some time had passed before I finally left. As I was driving away from the site, I happened to notice the setting sun to the west in my rearview mirror. Again I had to stop and catch a photo (above) of the event. As I did, I said to myself, "This is another part of the magic of this work."

That evening I still had the same feeling, so I sat down and wrote an email to the GM expressing my thoughts about my interest and enjoyment in the engineering aspects of my work. I included these two photos and hit a bit on the romance of the work away from all of the irritating trappings of meetings, paperwork and such.

The next morning I was met with a reply email, which was CC:'d to me from the CEO to the local GM, who had forwarded it to his superior. In essence it was written as if he was trying to indirectly say, "... has Greg gone off the deep end? Should we expect to see him next standing in the lobby with an automatic weapon?" I had to laugh.

But this reply clearly indicated to me that management did indeed miss the point of what radio used to be and now seldom is: an art in which we took personal pride, not just an income or a way to build up a business and then sell it for a profit. It was something that we used to live and breathe and treat it as if it were alive and needed to be fed and cared for. It was something that had live DJs 24/7 and personality, not just repeating music and numerous commercials presented in a Chinese water torture style to fill the financial coffers in an endless fashion.

Needless to say, I didn't reply to that email to explain that I was not yet qualified for a rubber room. I knew these people probably would not understand, nor would they ever. And all of this brings to mind what I read in an essay written by Jack Lessenberry, political analyst with Michigan Radio (with some artistic license):

"The old saying is that [working in and loving radio engineering is] like wetting your pants while wearing a dark suit; it gives you a nice warm feeling, and nobody notices."

... at least, nowadays for many of us engineering types ...

Regards,
Greg Muir

Share your photos that capture the romance, adventure or challenge of working in radio. Email Editor in Chief Paul McLane at radioworld@nbmedia.com.

NEWSROUNDUP

PPM: Nielsen delayed issuing the Portable People Meter ratings in Los Angeles by eight days because of two instances of quality concerns. One case involved an employee from KSCA(FM). Nielsen told Univision a media affiliated household connected to a Univision Radio employee from the station was in a PPM panel. Univision Radio President Jose Valle said in a statement that Univision investigated and terminated the unnamed employee based on its findings. Both households at issue had been installed in the L.A. PPM panel for what Nielsen characterized as "an extended period." Nielsen will review L.A. PPM ratings data going back a full year.

LPFM: The FCC has granted more than 1,200 low-power applications to date and dismissed hundreds of others. The Audio Division expects to have a total of 1,500 to 1,800 new LPFM construction permits granted by year-end.

NAB: Gordon Smith, the president and chief executive officer of the trade lobby, signed a contract extension that will keep him at NAB until Dec. 31, 2018. The former two-term U.S. senator from Oregon joined NAB in November 2009.

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AM REVITALIZATION

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The six proposals include:

- opening an FM translator filing window exclusively for AM licensees and permittees;
- modifying daytime community coverage standards for existing AMs;
- modifying nighttime community coverage standards for existing AMs;
- eliminating the so-called Ratchet Rule;
- permitting wider implementation of modulation-dependent carrier level control technologies; and,
- modifying AM antenna efficiency standards.

Observers contacted for this piece, including AM veteran Ron Rackley, a principal engineer at duTreil, Lundin & Rackley, expect the FCC to introduce new rules later this year.

The commission's next step after reviewing comments would be to issue a Report and Order, but there is no timing requirement to the procedures, according to an agency spokeswoman. She said the commission does not comment on current proceedings.

Observers think some ideas are uncontroversial and likely to be approved. These include the special one-time application window for AM owners who wish to obtain FM translators, one per AM license — though many respondents told the FCC that this would do nothing to improve the signal quality in the AM band itself. The FCC in 2009 authorized AMs to rebroadcast on FM translators in certain circumstances, for improved daytime and nighttime service. Approximately 10 percent of AMs use cross-service translators, according to the revitalization NPRM, out of 4,725 licensed AMs in the FCC database.

Bill Croghan said many of the FCC's proposals "are just the commission catching up with the real world."

Another change many observers predict is elimination of the "Ratchet Rule." This effectively requires AMs that want to modify signals to "ratchet back" their radiation in the direction of other stations, resulting in an overall reduction in the amount of skywave interference to certain other AMs.

Most commenters have agreed that the rule should be repealed, saying it inhibits AM facility modifications. Rackley said eliminating the rule is a foregone conclusion.

ADDITIONAL PROPOSALS

Whether the commission will consider additional proposals beyond those six is unknown.

Other ideas have been discussed in the industry; but observers question whether any are realistic enough to win serious FCC consideration.

Some commenters question the future of hybrid AM IBOC. One of those, Burt Weiner, president of Burt I. Weiner Associates, a broadcast technical services firm, wrote: "The current form of AM digital transmission known as IBOC should be revisited. Close examination will clearly show that in its relatively brief history it has been more destructive than beneficial to the AM broadcast band as a direct result of the sever interference it causes to adjacent-channel signals."

Other commenters, like Clear Channel Media & Entertainment and the National Alliance of AM Broadcasters, expressed support of a move to all-digital AM. However, several others touted the advantages of Digital Radio Mondiale as one potential digital broadcast alternative that could help revitalize the band and urged the commission to consider DRM testing.

A notion that has received much discussion is the idea of migrating AM stations to the spectrum now used by TV analog Channels 5 and 6, just below the current FM band; this merits consideration, according to some commenters.

Others laud the idea of rejuvenating AM stereo transmission, improving AM receiver performance and/or cutting down on RF interference emitted

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World Radio History

AM REVITALIZATION

(continued from page 5)

by unlicensed and/or licensed devices.

But Rackley believes converting TV 5 and 6 will remain a far-fetched idea because "TV spectrum remains in play during the broadband Internet spectrum reallocation."

So too, is asking the FCC to do more to "regulate the myriad sources of AM interference," something the agency "is not about to do," said Rackley. He said the commission "was strongly encouraged to do that in the 1980s, and made it clear that they would not do it. They are not about to mandate requirements for implementing new technology in AM receivers, either."

AM radio, he said, "needs to see rule changes that allow improved service in the noisy environment with existing receiver technology at this point."

Another broadcast commenter said it would not be practical to track down and treat every offending device that creates interference, adding, "Receiver manufacturers have little incentive to produce better receivers given the general lack of interest in AM." Receiver-makers have told RW they believe the AM sections of their devices perform well, and there's no reason to redesign those chips and modules.

Many of the publicly filed comments reflect a sense of urgency.

"I expect the FCC will adopt all six proposals in some way or another," said Stan Salek, senior engineer with consulting engineering firm Hammett & Edison, Inc. Most beneficial, he feels, would be the one to ease daytime coverage standards by allowing existing AMs to reduce their coverage footprints.

The FCC requires a commercial AM to provide daytime coverage to its entire community of license, even though the agency routinely has waived that for licensees who can demonstrate 80 percent coverage within the station's 5 mV/m contour.

Salek said relaxation of coverage rules would allow licensees more latitude in selecting transmitter sites that serve their desired populations; it would also increase diplexing opportunities.

"Elimination of the Ratchet Rule and relaxation of minimum efficiency requirements will also be helpful, but perhaps to a lesser degree," he said.

FM TRANSLATOR

But garnering wide support is the idea of the special translator window.

Salek believes that finding available translator frequencies will be challenging, especially in the wake of the recent LPFM filing window that so far has produced some 1,200 construction permits.

Tom Osenkowsky doesn't believe any of the AM proposals are a magic bullet.

Bob Gehman, president of Kessler and Gehman Associates, a telecom and broadcast engineering consulting firm, said it's doubtful FM translators will be available in larger markets, but they could be helpful in smaller areas. "There's probably something in the bag for most stations, especially those that have a need to relocate their transmitter site. The elimination of the Ratchet Rule will allow more stations to make changes."

Also seen as beneficial is the proposed wider implementation of modulation-dependent carrier level control technologies. Transmitter control techniques are used that vary either the carrier power level or both the carrier and sideband power levels as a function of modulation level. The practice allows AM licensees to reduce power consumption while maintaining audio quality and coverage areas.

The FCC allowed AM broadcasters to use MDCL, by rule waiver or experimental authorization, in 2011. Since then, 30 permanent waiver requests and 16 experimental requests have been granted, according to the NPRM. The FCC says AMs using MDCL have reported significant savings on electrical costs. The proposal would allow AMs to begin using MDCL control technologies without prior FCC authority, provided the licensee notify the commission of the operation change within 10 days.

The move will save power and lower costs, Gehman said, though "savings could be as little as $1,000 a year for 1 kW stations." He added: "The daytime and nighttime community coverage relaxation could help stations who need to relocate their transmitter site and can't comply with the current requirements at any reasonable priced sites."

Bill Croghan, chief engineer for Lotus Broadcasting in Las Vegas, said many of the FCC's proposals "are just the commission catching up with the real world."

"None are a lock, but updating to the community of license standards and AM antenna efficiency are good ideas," Croghan said.

Bob Gehman is dubious that FM translators will be available in larger markets.

Consultant Tom Osenkowsky, who specializes in AM antenna and feeder system design and contributes to Radio World, said the FCC fixes offer "no magic bullet."

"Revitalization of the AM broadcast service must start with the broadcasters. The typical reaction a broadcaster has when revenues decrease is to cut expenses," said Osenkowsky. "This usually involves replacing live programming with satellite or Internet-delivered content. Placing this type of programming on an FM translator or VHF band station will not draw listeners."

LOW-POWER RADIO

(continued from page 3)

Translator localism: LPFM stations can be licensed directly. The commission, however, can also allow translators to become something akin to LPFMs. This idea first surfaced in a Petition for Rulemaking filed on April 27, 2006, by several small Midwestern broadcasters, led by Randal J. Miller of Miller Media Group in Taylorville, Ill.

In the petition, the group asked the FCC to allow translators the option of airing locally originated programming. The agency invited and received public comments on the petition, docketed as RM-11331. Although the commission neither granted nor denied the petition during the ensuing years, the FCC has kept RM-11331 open for the submission of additional comments.

Not all LPFM advocates endorsed such translator localism, but a solid majority of Amherst Alliance members voted to file strongly supportive comments. Within the LPFM community, the dividing line seemed to be whether the LPFM advocates viewed their highest priority as promotion of LPFMs in particular — or promotion of broadcast localism in general, even if the exact forms are varied.

On April 27, 2011, in its own Petition for Rulemaking, The Amherst Alliance filed a refined version of the original proposal. Public comments on the Amherst alternative were not solicited, but the Media Bureau posted it as Docket number PRM11MB.

Photo by Wesli Dymoke

Author Don Schellhardt is a longtime advocate of LPFM and LPAM.

Amherst noted that the current version of the Local Community Radio Act does not permit a secondary service station, whether a translator or an LPFM, to rise to primary service status. Neither, however, does the LCRA prohibit the FCC from subdividing the secondary service class into smaller sub-groups, with some sub-groups "outranking" others inside the same class.

To encourage more locally originated programming on all secondary service stations, including both translators and LPFMs, Amherst proposed to allow locally focused stations to have a priority over other secondary service stations in spectrum allocation. A phased-in commitment to minimum levels of locally originated programming would be required.

In summary, all of this unfinished business can probably be resolved within two years, or less, if the commission is motivated and supporters are vocal.

Don Schellhardt is a longtime advocate of LPFM and LPAM. He has been a government relations attorney since 1975. Reach him via email at djslaw@gmail.com.

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

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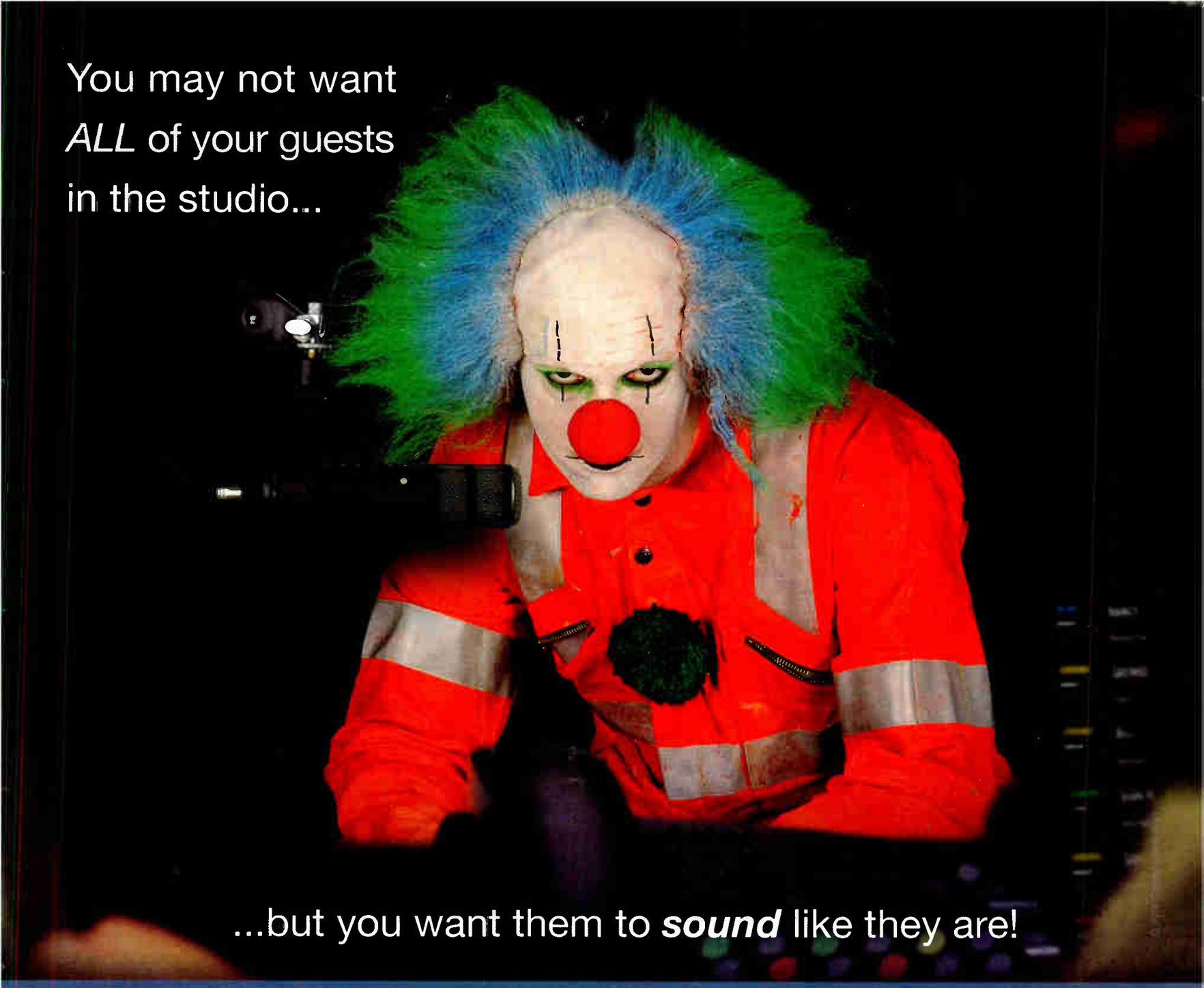
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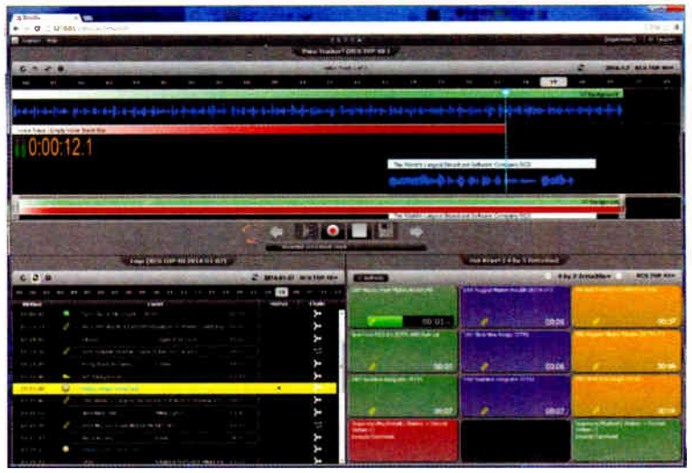

Broadcast software developer RCS is thinking mobile these days (who isn't?).

Selector2Go is a feature of the GSelector scheduler tailored for the Web. Selector2Go works on contemporary browsers and across platforms and mobile devices. This includes most Windows and Mac computers, as well as the majority of current smartphones and tablets, including the iPad and iPhone. Data flow is kept small to enable faster performance, even on mobile networks like 3G. Selector2Go gives users core scheduling, schedule editing functionality and essential analysis details of rotations.

Zetta2Go (shown) is an application that allows the control of a Zetta automation/play-out system from an Internet browser. Using a tablet or smartphone a user can view and fire off hot keys for a station, from a laptop or remote desktop a user can control much more.

Aquira 2Go lets users stay in constant contact with the traffic team back at the station. The company says that the benefits speak for themselves: easy and convenient access — interact with Aquira from any location with Internet access; better customer service — access data fast and deliver a prompt and accurate service to your clients; controlled security — see only your own proposals and your own clients; increased efficiency — no rekeying data required.

INFO: www.rcsworks.com

GENELEC THINKS SMALL FOR NEW MONITOR

Genelec's petite 8010 is the latest member of the 8000 powered monitor series.

It is a two-way monitor with a 3-inch bass driver and a 0.75-inch tweeter. Both are driven by 25 W Class D amplifiers. Inputs are balanced XLR and RCA. There are a number of mounting options.

DIP switches provide basic EQ settings. Specs are roughly 74 Hz – 20 kHz. Price: $440 each.

INFO: www.genelec.com

ESE MAKES THE TIME

The ES-971 (shown) is a four-digit display featuring 7-inch red LED displays in a wall-mount enclosure. It accepts ESE, SMPTE LTC, EBU or RS-232C ASCII timecode. The ES-971 automatically determines which code is received. If receiving ESE Time Code from a timer, the unit will display minutes and seconds. The ES-971/NTP-C offers the unit the ability to read NTP and/or receive Power over Ethernet (PoE). Both units also offer optional blue or green LEDs.

The ES-289E timecode-based NTP server provides a practical method of putting accurate time information onto a network by reading ESE or SMPTE/EBU timecodes. The NTP output is provided on a 10/100 baseT Ethernet connector. A voltage-controlled temperature-compensated crystal oscillator is used to maintain the accuracy of the timecode outputs when lock is lost. The ES-289E is IPV4/IPV6-compatible. NTP clients can authenticate the NTP server with MD5 or SHA1 Symmetric Key Authentication.

The HD-491/SD is an HD and SD SDI timecode decoder/generator. The HD-491/SD accepts an SDI signal, decodes the RP-188 or D-VITC and produces either a SMPTE or EBU LTC output. Simultaneously, the unit produces an ESE timecode output that can be used to drive new or existing clock systems. The HD-491/SD can also be used as a translator/timecode converter (for shuttle speed applications) or can be jammed and used as a generator (real-time applications).

INFO: www.ese-web.com

GORMAN-REDLICH UPGRADES ALERTING EQUIPMENT

Gorman-Redlich says that a welcome feature for users of its EAS equipment who are tired of paper printouts of logs is the CAP-DEC 1's ability to store and organize logs electronically on the unit's internal storage device rather than requiring a printer to be attached to the device for immediate printouts. Logs can later be transferred to alternate storage media or printed at the user's convenience. Units may be shipped from the factory with the logging capability included and set up, or may be field-upgraded by the user.

The Gorman-Redlich CRW-S NOAA Weather Radio Receiver has added LED signboard support to its feature list. This feature augments the alerting ability of the system by working in tandem with onboard relays capable of triggering lights, sirens and PA systems. Also beneficial for remote installations where the unit is physically separate from the primary users, the CRW-S will display alert details in different colors to indicate varying degrees of event severity.

In addition, it is equipped with SAME decoding and digital tone decoding that processes the 1050 Hz signal tone for automatic audible and visual alarm signals in the event of emergency situations. The CRW-S has rear terminals for remote control and an F connector for antenna.

INFO: www.gorman-redlich.com

World Radio History

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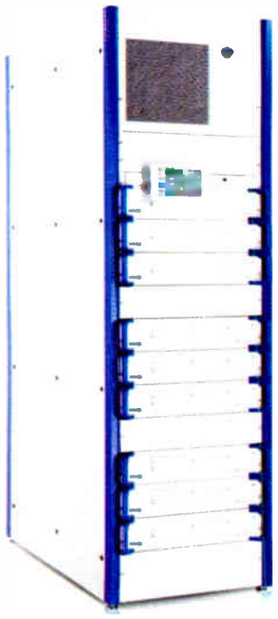


ROHDE & SCHWARZ HIGHLIGHTS ADVANCES

Rohde & Schwarz says its THR9 FM liquid-cooled high-power transmitters maximizes energy efficiency and minimizes space requirements.

The company also points out that the THR9 FM provides FM output power up to 40 kW per rack while delivering up to 75 percent efficiency to reduce energy costs. The transmitter's liquid cooling system and multi-TX design, which enables multiple transmitter integration, saves space. MultiTX involves integrating multiple transmitters into a single rack. A THR9 rack can support as many as four 10 kW transmitters, says Rohde & Schwarz.

The THR9 ranges from 5 kW to 40 kW, is digital ready and supports dual-drive configurations, N+1 configurations or a combination of the two. System configurations of up to 3+1 are possible in a single THR9 rack. Internal components are designed to be energy-efficient.

INFO: www.rohde-schwarz.com

NEUTRIK TOUGHENS MULTIMEDIA CONNECTORS

Interconnects specialist Neutrik USA has beefed up some of its chassis connectors for durability. While these connectors started as consumer products, the proliferation of digital media has brought them into professional applications.

Neutrik USA President Peter Milbery said, "The challenge of integrating consumer-based connectivity into professional products is ongoing. If anything, the trend towards BYOD (bring your own device) makes integration even trickier and the need for ruggedization even more pressing."

The company now offers improved HDMI 1.x, USB 2.0, FireWire 400 and 9- and 15-pin D-sub mounts. They are available in nickel or black finish. They will mount in Neutrik D cutouts.

The HDMI and USB units provide IP65 water and dust ingress when used with similarly-rated Neutrik cable assembly connectors. The shells are also designed to provide a lock rather than the connector tongues and sleeve themselves.

Neutrik has matching cable assemblies.

INFO: www.neutrik.us

AKG RELEASES NEW HEADPHONES

There's no debate that AKG has been a major player in the headphone market for decades. The latest is the K812.

The K812s are an open back design with a 53 millimeter transducer with a 1.5 Tesla magnet in each earcup. It is not a foldable design but the ear pads are replaceable. The detachable cable is three meters (app. 9 feet). It boasts a "frequency range" of 5 Hz "up to 54 kHz guaranteed." Impedance is 36 ohms.

Director of Marketing and Product Development for AKG Kent Iverson said: "K812 is the result of an intensive five-year research and development program to achieve, as near as possible, the perfect headphone." He called it "the best-sounding headphones AKG has ever released."

INFO: www.akg.com

SONIFEX UPDATES SILENCE DETECTOR

Broadcast equipment maker Sonifex recently introduced something not usually seen these days: a new silence detector.

The RB-SD1IP (shown) silence detector is an upgrade of the RB-SD1 but has added Ethernet and USB capabilities.

Ethernet connectivity allows setup and control via a browser-based GUI together with a real-time viewing of signal levels and alarm statuses. SNMP V1 is implemented so that the unit can be controlled by existing network management systems, and GPI pins enable the generation of SNMP traps on behalf of other, non-networked, hardware. A front-panel USB port can hold a prerecorded message that the unit can play out in the event that both main and auxiliary signals fall silent.

The company also has introduced the RB-MS4X3 quad three-way passive microphone splitter, one of three new passive splitters. Sonifex says that each of the four banks is designed to split a single microphone or line source to up to three destinations, using Neutrik XLR connectors. Cable connections are located on the rear panel, with recessed controls and indicators available to the user on the front panel, allowing quick access to setup parameters. Sonifex says that it uses high-quality audio transformers that are capable of accepting input levels of up to +18 dBu, making the splitter useful in both microphone and line-level splitting applications. A 30 dB pad can be applied to the input, allowing a line-level signal to be interfaced into a microphone input with suitable levels and the correct termination.

Another new splitter is the RB-DDA6A3, a digital distribution amplifier for distributing AES3id digital audio, repeating both the audio data and the status information of the input while re-normalizing to standard digital audio levels. It has a single BNC AES3id audio input that is distributed to six BNC AES3id audio outputs.

INFO: www.sonifex.co.uk

BURK BUILDS ON ARC

Burk Technologies is beefing up its ARC line of remote control and monitoring equipment.

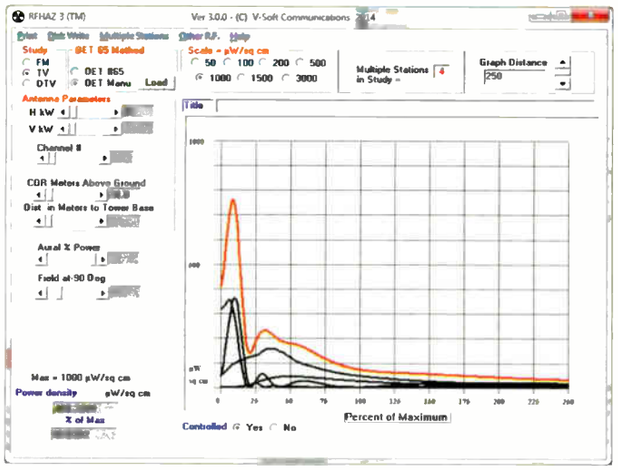
New is the ARC Solo (shown). Designed for simple and uncomplicated site, it offers the power of the ARC Plus with the simplicity of the ARC 16 in a single package. Standard features include RSI speech interface for dial-in/dial-out control, as well as IP interface for computer and smartphone control. Built-in I/O includes 16 metering, 16 status, and 16 relays.

Also, the company's well-known ARC Plus Touch remote control system is now shipping with Version 5 hardware and firmware. New in this version is the RSI Recordable Speech Interface option, replacing the familiar ESI. The RSI provides telephone control, including a broadcast-specific vocabulary and the ability to record custom phrases.

INFO: www.burk.com

World Radio History

V-SOFT PLOTS RF HAZARD



Radio frequency emissions are a fact of life with broadcast facilities, and they can be dangerous. But broadcast personnel often have no idea how much RF is in the air.

V-Soft has released RFHAZ 3, its latest RF hazard compliance software. This version is based on the FCC's OET #65 guidelines.

Users of RFHAZ 3 will find it studies antenna arrays up to 16 bays, 50 microwatts/sq. cm. to 3,000 microwatts/sq. cm and uses antenna manufacturer-provided patterns or allows for editing of those patterns. It can also handle multiple stations and multiple arrays.

INFO: www.v-soft.com

DIGITAL ALERT CALLS ON M

EAS system specialist Digital Alert Systems has a new member of the DASEOC family. The M series is an integrated EAS and CAP encoder and decoder.

The boxes are FCC-certified and FEMA IPAWS-conformant and will deliver, according to the company, "all four EAS and CAP functions: CAP message origination, EAS encoding, CAP monitoring and EAS decoding."

It adds that "Simultaneous alert origination to both EAS and CAP servers avoids message duplication, and the single-unit, single-interface approach assures that emergency managers won't need to purchase separate and disparate systems."

The company says that the DASEOC M series should be compatible with Web, satellite and wireless systems along with third-party applications and services.

INFO: www.digitalalertsystems.com

AVT STRUTS MAGIC STUFF

AVT has a new pair of telephone hybrids, the Magic TH1potsGo (shown) and MAGIC TH1ipGo.

According to AVT, the one-channel systems need no complex settings before operation and are easy to control during use. The Magic TH1ipGo hybrid is configured with the HD Voice option, which permits calls from HD voice-compatible telephones to be received and sent at a quality of 7 kHz.

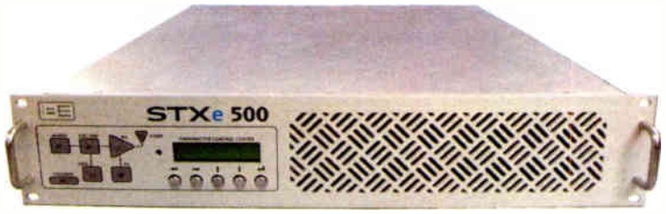
HD Voice is available for other AVT hybrids and talk show systems as well. Magic TH2plus, Magic TH6 and Magic THipPro, for a maximum of 16 lines, complete the firm's telephone hybrid range.

AVT Magic hybrids also feature Pretalk Streaming Upgrade, which allows the transmission of the audio signal via LAN to the pretalk PC. This feature is particularly important when there are not enough audio interfaces available, or if the pretalk location is distant from the telephone hybrid, explains AVT. The voice disguise option allows users to alter the caller's voice so that it is not identifiable — appropriate for talk shows on sensitive topics. The company also offers ISDN, E1 and IP audio codecs with G.711, G.722, ISO/MPEG Layer2/3, aptX and AAC-LD coding algorithms.

INFO: www.avt-nbg.de

BE STXE COMBINES EXCITER AND TRANSMITTER

Broadcast Electronics says that its STXe 500 is an analog FM, FM+HD and HD-only digital exciter/low-power transmitter. It features IP connectivity, fully-rated output into 1.5:1 VSWR, an extensive remote GUI interface and compatibility with single-frequency networks, including external 10 MHz and 1 PPS inputs.



In addition, the STXe500 is compatible with Broadcast Electronics' adaptive pre-correction and crest factor reduction technology, VPe. It is compatible with the new 192 kHz digital composite input. The remote control interface is SNMP II-compatible for maximum interface flexibility and security. Internal control communications is done using CAN bus technology, providing maximum resistance to interference, especially in high-RF environments like crowded transmitter sites. CAN bus is the standard for automotive control interfaces.

INFO: www.bdcast.com

JK AUDIO DEBUTS AUTOHYBRID IP2

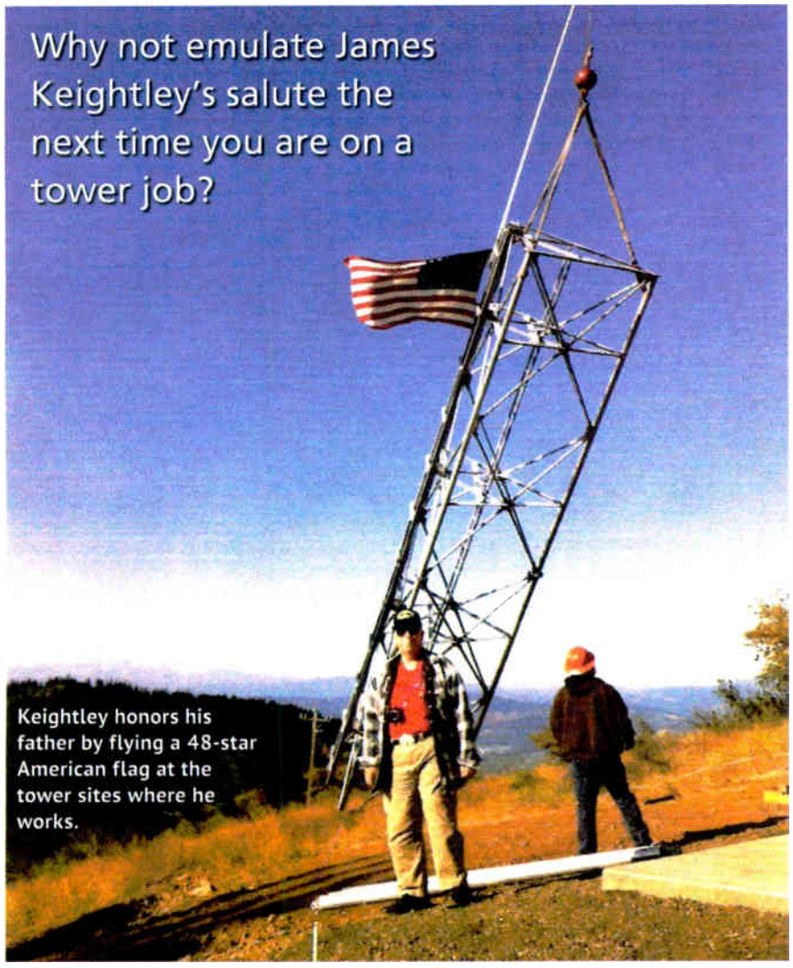
The JK Audio AutoHybrid IP2 pulls double duty, acting as an IP hybrid and an IP codec. It will function as a two-line hybrid for voice calls and as an IP codec for passing line-level stereo audio.

It uses G.711 and G.722 codecs, so it supports the higher-quality HD Voice codec. It has auto-answer and conferencing functions for the hybrid as well. XLR connectors allow for bringing in and sending line-level audio. An internal Web server allows for PC operation. A remote jack allows for interfacing with the JK Audio Interchange Intercom Phone Bridge for intercom operation.

INFO: www.jkaudio.com

World Radio History

A Spectacular Way to Celebrate the Fourth



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

Our *Workbench* column about electrical service panels titled "This Box Could Kill You" reminded Frank McLemore of a safety tip he was taught while working a college summer job at a steel mill.

The rule at the mill was: "Always operate the switch with your left hand." Can you guess why? I'll answer later in this article.

In honor of Independence Day I share a picture from James Keightley, who provides small-market broadcast engineering services.

James raises a flag when he supervises the erection of a broadcast tower. This flag is special to James; it's a 48-star banner that once draped the casket of his late father, a U.S. Army veteran.

James has constructed nine sites in the last few years. When a final tower section goes up, his dad's flag rides along. It flies as long as the tower workers — Broadcast Tower Services of Portland — are aloft; and when the project is complete, they bring it back to him.

On one particular job, the rigger who returned the flag to James was a vet. While aloft he used the breeze to assist him in a military fold of the flag; he then placed the flag inside his shirt and climbed down. As he approached James, he took the flag from his shirt, held it military style, extended it to him and said, "In memory of Cpl. William Smith Keightley, United States Army, Corps of Transportation, World War One."

"In memory of Cpl. William Smith Keightley, United States Army, Corps of Transportation, World War One."

As you might imagine, James broke down.

The rigger must have done some heavy-duty Internet research to have come up with that unexpected information; and it was entirely correct.

Reach James Keightley at *keightleycompany@gmail.com*.

Buc Fitch tells us that Marlin P. Jones Associates is at it again with their latest offering in digital meters. This is the cheapest AC power meter Buc has encountered, useful for small subtenants.

You probably have a small tenant or two at your transmitter site — perhaps the local pager or cab company, or two-way user — whose AC power consumption should be separately metered. This panel meter costs about a tenth the price of an Osaki mechanical wattmeter, which go for close to $200.

The MPJA flexible snap-in panel meter can measure 120 or 240 volts, at flows of up to 20 amps. In addition to measuring AC volts and current, the meter measures watts, watt-hour and operational time (run time). On the website *www.mpja.com*, search for item 31367 ME. It was $15.95 when we looked.

Reach Buc Fitch at *fitchpe@comcast.net*.

(continued on page 15)

World Radio History

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Baby Snooks in CBS Master Control

Fanny Brice crosses paths with radio

ROOTS OF RADIO

BY JOHN SCHNEIDER

Any time that the precocious and bratty Baby Snooks got her hands on something at CBS in the 1940s, it was not likely to survive intact. So the thought of her having free rein in the control room would have sent a chill up the spine of any network engineer or executive.

At least, that was the idea behind a publicity photo that shows comedian Fanny Brice in character as Little Miss Snooks in the CBS Radio Master Control room in Columbia Square in Hollywood, Calif.

Fanny Brice was a famed singer and performer, later portrayed by Barbra Streisand in the 1968 movie "Funny Girl." Brice was a big name in the Ziegfeld Follies in the teens, '20s and '30s, and also was seen and heard singing in films and on records. Her hit song "My Man" was heard on Victor Records and was later the theme song for the movie of that name.

Brice developed the character of the annoying toddler Baby Snooks for a "Follies" sketch, and first brought it to radio in 1938. In 1944, CBS created the "Baby Snooks Show," featuring Brice as Snooks and Hanley Stafford as her suffering father. The popular program was a mainstay of the CBS evening lineup until Brice died suddenly of a cerebral brain hemorrhage in 1951.

The Columbia Square building was the CBS radio palace and West Coast headquarters — the home of KNX radio and the origination point for most of the network's programs. It was constructed in 1938 at 6121 Sunset Boulevard in Hollywood, just a few blocks from the giant NBC Radio City studio complex at Sunset and Vine.

CBS invested 2 million Depression-era dollars in the construction of its West Coast state-of-the-art facility. Designed by architect William Lescaze in the imposing International style, it was really a complex of several interconnected structures surrounding a central plaza. The streamlined six-office tower facing Sunset Boulevard with its giant illuminated "CBS" letters was a Hollywood landmark for decades. The main floor studio complex at Columbia Square had four broadcast studios (Studios 1 to 4); Studio "B," which seated 400 guests; and the imposing Studio "A" Columbia Playhouse, where live broadcasts played to audiences of up to 1,050 persons.

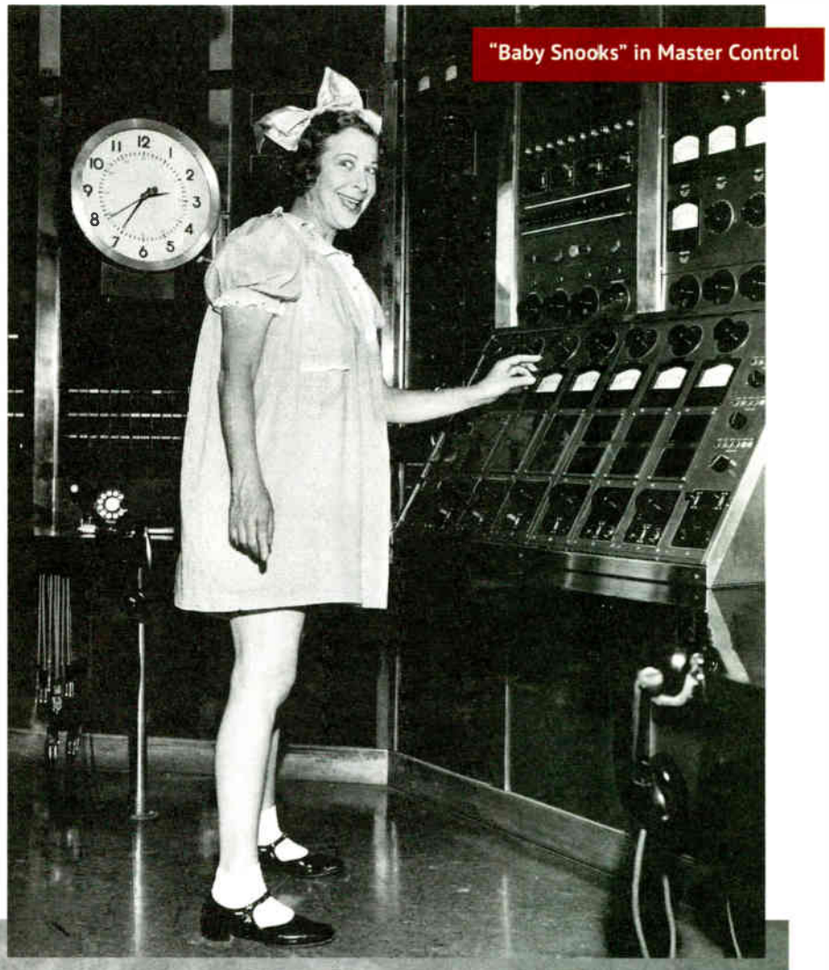
Each studio had its own control room, and the larger studios also had private VIP viewing rooms for advertisers and guests. New techniques were used in the studio construction, including floating walls, special acoustic designs and treatments and large, sloping glass windows for the control rooms.

The master control room seen in the first photo was on the second floor, at the end of a long hallway. Visible through a large plate glass window, it was seen daily by tourists who paid 40 cents a head to tour the building. The massive audio mixer seen in the second image would have received the different programs from each of the studios and routed them down one or more of several equalized phone lines that led north to San Francisco, east to Phoenix and northeast to Salt Lake City and then onward to the rest of the country. There were also separate feeds for the CBS local station KNX; to KMPC, which carried some overflow network programs; and a shortwave feed that reached KGMB in Honolulu.

A television studio was added to the complex in 1949, and Columbia Square saw great activity during the early 1950s as a production center for early network television. But TV quickly outgrew the space, and CBS's network production moved to CBS Television City in 1952 and CBS Studio Center in 1967. KNX left the building in 2005 to occupy new studios on Wilshire Boulevard, and in 2007 KCBS(TV) and KCAL(TV) moved out, ending Columbia Square's life as a broadcast facility.

The building today sits mostly vacant and now belongs to a developer that plans to turn it into a retail complex with an adjoining 22-story apartment building. If successful, it will join a few other iconic radio studio buildings that have found new life repurposed as modern office buildings. In that sense, it will have fared much better than NBC's Radio City studios in Hollywood, which were demolished in 1964.

John Schneider is a lifelong radio history researcher. Write the author at jschneid93@gmail.com. *See other photos from his collection. Click on the Roots of Radio tab at* radioworld.com *under Columns.*



"Baby Snooks" in Master Control

CBS Columbia Square in Hollywood

World Radio History

WORKBENCH

(continued from page 12)

Knowing my love of useful gadgets, Adams Radio Group's Las Cruces Chief Engineer Roger Moyer displays the Z-Creeper in Fig. 1.

Fig. 1: The Z Creeper saves your back, and your bottom, when working on equipment.

Fig. 2: The Z Creeper also unfolds into a comfortable mechanic's creeper.

This 40-inch mechanic's creeper can be folded into a "Z" shape to provide a wheeled low-rise seat, ideal for working on transmitters or under the console. If needed, the seat can be unfolded for use as a standard mechanic's creeper, Fig. 2. The 3/4-inch powder coated frame is designed to carry a 300-pound load and costs less than $70 on *centurytool.net*.

Thanks, Roger, for sparing our backs — and our rear-ends.

Reach Roger Moyer at *rmoyer@arglc.com*.

Why did the grizzled supervisors at Frank McLemore's steel mill insist on a left-handed approach to a utility panel?

Turns out that mill had had a fatal accident prior in which a worker pulled the lever to the "off" position, and there was an arc that exploded the foundry dust inside the box. The switch cover/door was blown off, striking the man in the head and killing him.

When you face your switch, the control lever is on the right side of the box; by using your left hand when you actuate the switch, you force yourself to stand to the side rather than directly in front. Not a bad idea to ensure your safety.

Frank McLemore was a contract engineer in the Columbus, Ga., area and now handles the ABIP Alternate Inspections for the state of Georgia. Reach him at *fmclemore@bellsouth.net*.

Massachusetts-based consultant Lew Collins also emailed us about that May 21 power box column. Lew questioned why the fuses did not limit the current as they were supposed to do. We put our faith in the over-current protective device, whether it be a fuse or a circuit breaker. In this case, something went wrong.

Lew speculates that the real problem was the age of the device in question.

Lew Collins is at *lewisdyecollins@aol.com*.

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 44 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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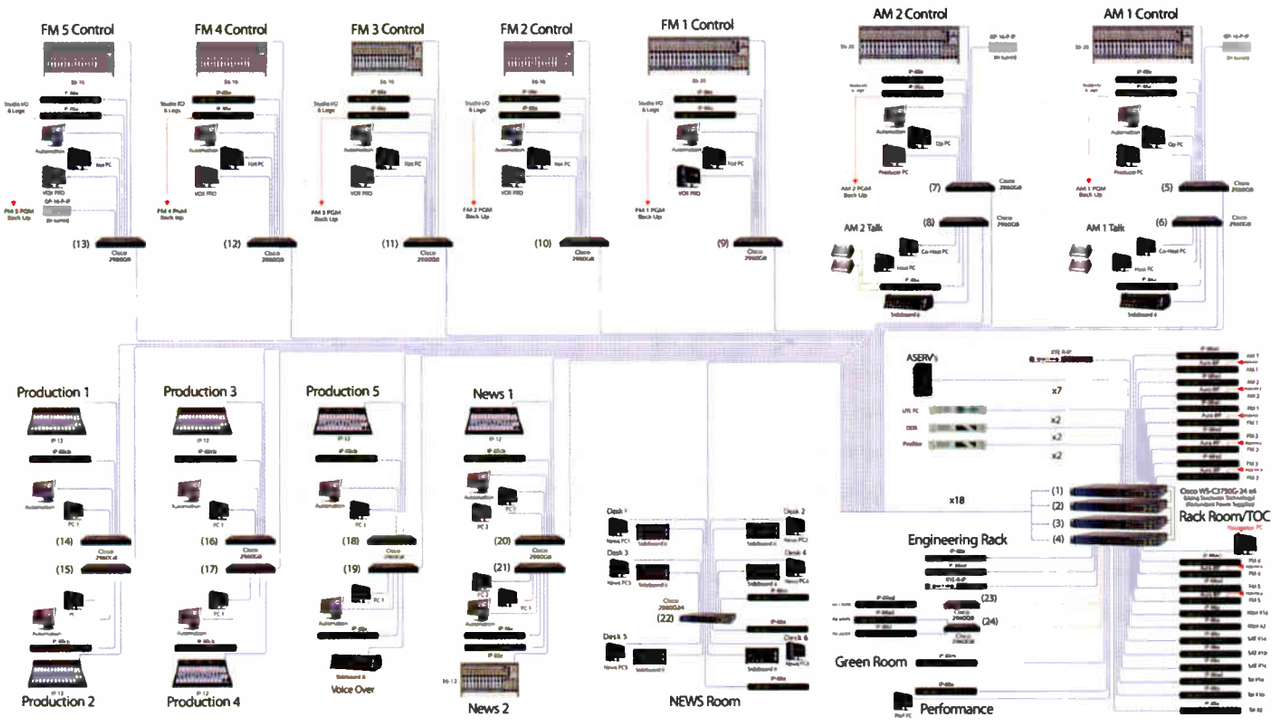


In This Business, Anything Can Happen. Is YOUR Network Ready?

It's disaster season, and the last thing you should have to spend your valuable time tracking down is a faulty cable.

That's why our WheatNet-IP Navigator software provides real-time notification of any communication failure with any component of the network. But let's say the single cable between the TOC and on-air studio does go bad. No problem. You have a backup studio or two at the ready – one of the benefits of an audio network like WheatNet-IP that's distributed throughout the facility. And if you're really in a bind, you can always run the station using little more than a single WheatNet-IP I/O BLADE – it has an operating system, I/O, silence sensing, GPIO and mixing inside – plus you can reboot the entire system off of that one BLADE.

NOTE: the station pictured in the flow chart above is in Portland, OR

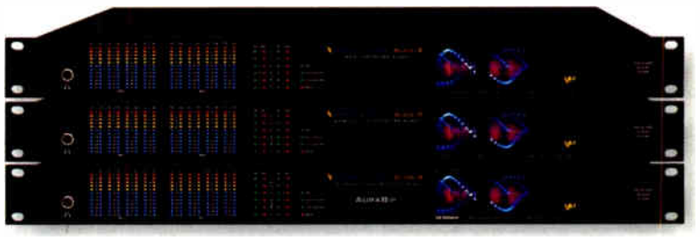
For more ideas on recovery, go to INN12.wheatstone.com

Get Out and About: IP Audio Extended

While it's still not practical to transport uncompressed linear audio over the public Internet...

...you can get coded audio across the Internet by interfacing the Tieline Genie stereo IP audio codec to our WheatNet-IP audio network. We've partnered with Tieline so the Genie has a built in port specifically for connecting into the WheatNet-IP system and sending six channels of audio over the public Internet. Audio performance is highly reliable, and latency is minimal. To find out about this and other ways to extend your WheatNet-IP audio network beyond the studio walls...

Click here to learn more: INN12.wheatstone.com



We've Got AES67 Compatibility Built In

Did you know that our newest I/O BLADEs for the WheatNet-IP audio network are AES67 compatible?

We added AES67 compatibility for interoperability with other AES67-compliant devices and signals into the WheatNet-IP Intelligent Network. Check out this great discussion with AES' Bob Moses about AES67...

Click here to learn more: INN12.wheatstone.com

OK, this spread is an advertising space paid for by Wheatstone. But hopefully you'll find it informative, entertaining and compelling.

World Radio History

Dr. Benway's Good Deed

Pirate operator uses promo T-shirt sales to support Wounded Warriors

PIRATE RADIO

BY CHRISTOPHER FRIESEN

Something strange happens on 6925 kHz on the weekends. This slice of frequency, just below the 40-meter amateur radio band, is normally reserved for government fixed and mobile services and contains very few, if any, active stations. But on Friday or Saturday evenings, it may suddenly spring to life with music, chat and commentary as if it were in the AM or FM broadcast band, as shortwave pirate radio operators begin their broadcasts.

The front and back of Undercover Radio's station T-shirt. Proceeds from shirts sold through booster.com will go to Wounded Warrior Project.

"There is a small group of pirate operators who, in truth, should really be called hobby broadcasters," says a pirate radio operator who calls himself Dr. Benway.

"We are not the evil, swashbuckling, pillaging pirates that some make us out to be. We are ordinary citizens who love to broadcast as a hobby."

Many of these ordinary citizens have other causes they are passionate about as well. Dr. Benway, while flying his modulated Jolly Roger, has even begun to use his on-air activities to support a charity that helps wounded soldiers returning from conflict overseas.

If propagation conditions are good, listeners in North America can use an off-the-shelf shortwave radio to receive his, and many other, buccaneer broadcasters who weigh anchor and set sail on oceans of ionosphere noise from their secret locations somewhere in the "middle of nowhere." Many pirates report that they've been heard all over North and South America, Europe and even into Australia and New Zealand.

Listeners might hear something like this monologue broadcast by Dr. Benway's station "Undercover Radio." It's a flashback to a psychedelic experience from his past:

"Orange fireflies danced all around me, and suddenly, I was transported to a different place and time. Somehow, it was a more modern time, a sad time. A time of modernization. And a time of the slow death of our harmony with Mother Nature. And I watched, but I resisted this modern time. I was trying to hold on to the old ways. But in my heart I knew it was a losing battle."

SCARED OFF

Most North American pirate radio operators who broadcast in the shortwave bands do so between 6850 kHz and 6935 kHz. Some stations will occasionally transmit Morse code, Slow Scan Television or radio teletype, but most stick to amplitude modulation or single-sideband modes, so they can be heard by the largest audience possible.

Stations on the air these days sport names like Pirate Radio Boston, Partial India Radio, Renegade Radio, Twangy Radio, WBNY: Radio Bunny and The Crystal Ship.

Ragnar Daneskjold is one of five editors of the "Free Radio Weekly," an email newsletter that reports listener loggings of shortwave pirate stations. A few years ago he explained the appeal of listening to pirate radio in an email. "Some of the most interesting, creative material in media can be found on pirate radio," he wrote.

Like many of his fellow shortwave pirates, Dr. Benway, who declines to give his real name, has been at this for a long time. His first foray into pirate radio, in the late 1970s, ended when his signal overloaded the family TV set and he blew the transmitter he had borrowed from his neighbor.

"It wasn't until the mid-'80s that I picked up the mic again and began broadcasting on shortwave as Progressive Music Radio," Dr. Benway said in an email. "After a few adventures with that station I was scared off the air by a close call with the FCC.

"One evening in the middle of a broadcast I was sitting in my car and noticed a large van shooting across the parking lot straight at me. The occupants inside the van were pointing straight at me. Then I realized the van had government plates on them. It was the FCC!

"I hit the gas and took off with gear flying everywhere and the large antenna whipping around. I went straight towards them and passed right by them. They were making the turn after me so with major adrenaline pumping through me I flew down the back streets of the neighborhood at top speed. Eventually, I came to a stop at the curb, tore the antenna off the car and stashed the gear in the hatchback area. Luckily, the van never came down that street. I made my way back home and sat waiting for a knock on the door," he said.

"Luckily, the knock never came but it scared me right off the air until the '90s. The current station, Undercover Radio, was born in 2003 and operates sporadically on the shortwave bands, and just above the AM broadcast band on 1720 with occasional broadcasts on 1710. All other frequencies are very crowded, and I really don't want to interfere with licensed stations."

FREE SPEECH

Pirate radio operation violates federal law, specifically the Communications Act. It generally comes in two forms, low-power FM (not to be confused with licensed LPFM) and shortwave.

The Federal Communications Commission posts recent actions against pirate radio operators on its website. All of its successful enforcement activity appears to be directed toward FM pirates, many of which make the news when they are busted, often in densely populated areas like southern Florida, New York and parts of California.

No shortwave stations are listed in the actions.

This lack of enforcement may help embolden pirate operators who broadcast on shortwave. Breaking the law certainly doesn't deter Dr. Benway. He justifies operating his pirate radio station by appealing to the Constitution and asserting what he sees as his First Amendment rights.

"I believe I am exercising my right to free speech," he said. "Our forefathers could never have envisioned the technologies that would follow, but I believe that they would agree that free speech would apply to all forms of media."

The FCC does not agree, however, and neither does the Supreme Court. In a posting on their website, the FCC addresses this claim directly.

"A number of inquiries received at the commission are from persons or groups who believe that there is a First Amendment, constitutionally protected right to broadcast. However, the Supreme Court of the United States has repeatedly ruled on this subject and concluded that no right to broadcast exists," the FCC website says.

According to a letter to Congress from FCC Chairman Tom Wheeler, also posted on the FCC website, most of the resources devoted to enforcement actions are focused on low-power FM pirates in large urban areas where the interference is most problematic. The technical complexity of tracking stations, resources that are already stretched thin, and the lack of complaints against shortwave pirate

World Radio History

stations explains why the FCC rarely takes action against them.

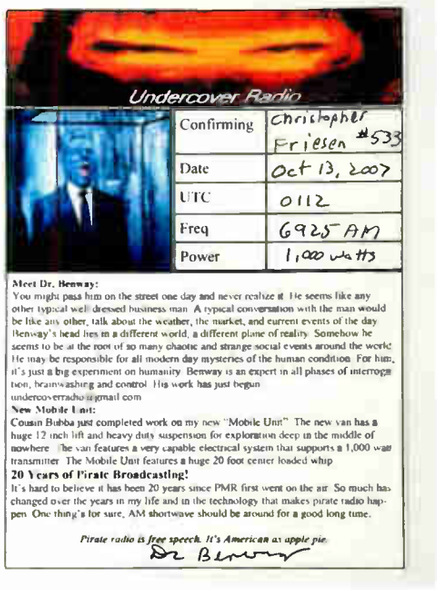
NATURAL FIT

Recently Dr. Benway began offering T-shirts, featuring his station logo, for sale on the fundraising website *booster.com*. While the shirts promote the station, the proceeds, Benway says, will go to the Wounded Warrior Project to help veterans who have been injured in combat overseas.

This type of fundraising is unusual for a pirate radio operator, but there is nothing illegal about selling shirts and *booster.com* handles all the orders and shipping, making the entire process anonymous.

"I selected the Wounded Warrior Project Inc. because I have been involved in other efforts with them over the years," he said. "It just seemed like a natural fit. Pirate operators fight for free speech, and our warriors fight for the freedom of our country."

The Wounded Warrior Project serves warriors and their families through a holistic approach, nurturing the mind and body of injured soldiers. According to the WWP website (*woundedwarriorproject.org*), it hopes to "foster the most successful, well-adjusted generation of wounded service members in our nation's history."



A QSL card from Undercover Radio.

Contacted about this fundraiser, Wounded Warrior Project declined to comment or answer questions about how it would like people to assist in raising funds or about accepting money raised by a presumably illegal radio station. Its website does offer several ways to get involved with the organization:

"Wounded Warrior Project invites you to honor and empower Wounded Warriors by becoming a Proud Supporter and hosting your own fundraising campaign. WWP has various ways you can become a Proud Supporter to make a difference in the lives of wounded service members and their families."

Dr. Benway's mobile pirate radio operation is depicted on a giveaway CD.

These ways include volunteering, participating in a sponsored charity event, engaging in social media and by supporting their sponsors.

So far, using his own unique fundraising methods, Dr. Benway has managed to raise around $300 for Wounded Warrior Project, and he says, he has extended sales of his station T-shirt to try to raise more.

"It's a really nice shirt at a great price, and it would be amazing to see boosters send a substantial check to Wounded Warrior Project," Dr. Benway said.

Undercover Radio's shirt fundraiser is visible at *www.booster.com/ucr*. For information on Wounded Warrior Project, visit *www.woundedwarriorproject.org*.

Christopher Friesen wrote about spy "numbers stations" in January and radiosport in May. See radioworld.com, *keyword Friesen.*

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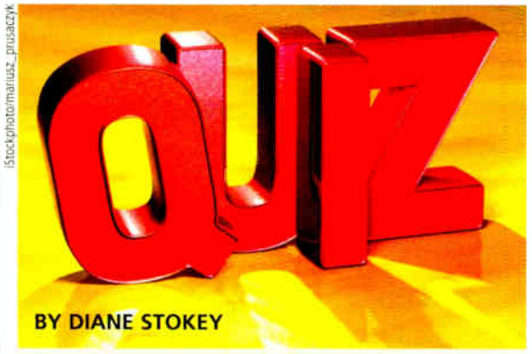

iStockphoto/mariusz_prusaczyk

Nuts and Bolts Engineering Trivia

In last month's issue, Diana Stokey tested your broadcast engineering knowledge with our quiz.

Compare your answers here to see how you did — and don't forget to let Radio World know your score. Write to us at *radioworld@nbmedia.com*.

1. What is Raspberry Pi?

It is a credit card-sized computer board, designed to encourage a new generation of PC users to discover and develop their programming skills. When connected to a monitor/TV and keyboard, with the right programming by the user, it can be used for many things that your traditional PC does. It's not a simple plug-and-play PC. It doesn't have Windows or similar packages installed, so it isn't a like-for-like replacement for a normal laptop or desktop computer.

2. If a Fresnel zone is not clear of obstacles, what can be the effect on signal transmission?

Phase cancellation, which reduces the power of the arriving signal.

3. What general factors determine Effective Radiated Power?

Transmitter power, antenna gain, any losses such as in transmission line.

4. What is NEMO?

The acronym is often said to mean Not Emanating from Main Office in the world of telco. But nemo came to be used in early radio to refer to remote broadcasts, and historian Donna Halper has written that it was an accidental exclamation by an engineer at WEAF.

5. How many different amplitude levels can be represented in a 32-bit audio sample?

c) *4,294,967,296*

6. What is the punch-down color code order for a TIA-568B wiring interconnect cable?

White with Orange Stripe
Orange with White Strip
White with Green Stripe
Blue with White Stripe
White with Blue Stripe
Green with White Stripe
White with Brown Stripe
Brown with White Stripe
(Ordered from pin 1– 8)

7. What does ASRN stand for and what is it?

Antenna Structure Registration Numbers — The ASR program requires owners of antenna structures to register with the FCC (and receive a registration number) any antenna structure that requires notice of proposed construction to the Federal Aviation Administration. In general, this includes structures that are taller than 200 feet above ground level or that may interfere with the flight path of a nearby airport. The antenna structure owner must obtain painting and lighting specifications from the FAA and include those specifications in its registration prior to construction. The ASR program allows the FCC to fulfill its statutory responsibility to require painting and lighting of antenna structures that may pose a hazard to air navigation.

8. What property can be defined as the orientation of the electric field wave as it propagates away from an antenna?

Polarization.

9. A wattmeter in a transmission system indicates there is 50,000 watts of forward power going up the line and 25 watts being reflected back to the transmitter. What is the return loss?

33.01 dB.

10. A foam-filled transmission line has the following characteristics: inductance per unit length = 0.2594μH, capacitance per unit length = 98.65 pF. What formula should be used to solve for the speed at which electromagnetic waves propagate through the line? What is the speed?

The formula for solving is $V = 1/(LC)^{1/2}$

197,681,701 m/s. (That is meters per second.)

11. What is AVWS?

a) Audio Visual Warning System — It is an all-weather, day and night, low-voltage, radar-based obstacle avoidance system that utilizes current obstruction lighting products and does not require additional equipment in an aircraft. AVWS activates obstruction lighting and audio signals to alert pilots of potential collisions with obstacles such as power lines, wind turbines, bridges, and towers. The obstruction lights and audio warnings are inactive when there is no air traffic in the area of the obstruction.

12. Some FM antennas are tuned by placing a piece of dielectric material at a strategic location near the antenna to match the antenna to the line and transmitter. Why do we not just add this material at the input of the line to match the transmitter and avoid climbing the tower?

Reflections from the mismatched antenna down the length of the transmission line would increase the power loss each time a reflection propagated up and down the line. If the matching is done at the antenna, transmission line loss is not a contributing factor to loss due to the mismatch.

13. What is "angry IP" used for?

The Angry IP app will scan every IP address to see if they are active, as well as the name of the computer using the IP address and the user who is accessing it.

14. How is null fill generally achieved in multi-element side-mounted FM antennas?

Adjusting power distribution between elements.

15. A circle of a given diameter centered on the normalized locus of a Smith chart represents what quantity(s)?

SWR Circle

16. Using a Smith chart, determine the input impedance seen at the input of a 108° lossless line having a characteristic impedance of 50Ω terminated in an impedance of 80+j40Ω.

b) 23 j0

17. What are two of the most common uses for a quarter wave 3 dB hybrid?

c) *Splitters and combiners*

18. How is beam tilt generally achieved in multi-element side-mounted FM antennas?

Phase shift between antenna elements, normally done with the length of interbay lines on and end fed antenna. On a center feed, the feed point is offset or moved up.

19. Some FM antenna manufacturers use steatite as a dielectric material for slug tuning while others use brass. Why might steatite be considered superior to brass for this purpose?

It does not significantly impact voltage rating of the transmission line because steatite does not conduct.

World Radio History

FLEXIVA HD TRANSMITTER

The Flexiva™ air-cooled FM solid-state transmitter family provides today's broadcaster with a single transmission platform capable of analog and digital operation.

Flexiva is designed for low- and high-power requirements, up to 80 kW, while utilizing the most compact design on the market today.

STUDIO 'A'

OASIS NETWORKED ON-AIR CONSOLE

The Intraplex® IP Link family of IP audio codecs provides high-end features at an affordable price.

Offering an array of audio coding options, the IP Link codecs are suitable for use in Studio to Transmitter Links (STLs) as well as audio contribution and distribution networks. Support for IP multicast and multiple unicast streams enables one encoder to feed multiple decoders.

STUDIO 'B'

OASIS NETWORKED PRODUCTION CONSOLE

Flexiva Oasis™ is a high-value standalone audio console for on-air and radio production applications.

Designed with next-generation studio demands in mind, Flexiva Oasis allows facilities to cost-effectively and easily migrate from analog to digital whenever they're ready. In addition, Flexiva Oasis provides both analog and digital outputs that enable facilities to connect to modern STLs and studio infrastructures.

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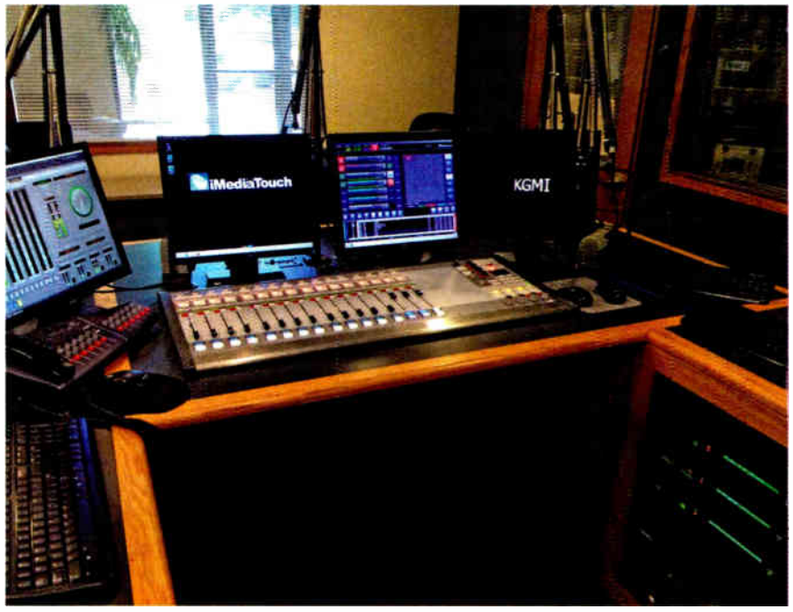
World Radio History

Saga Modernizes With Wheatstone

Out with the old and in with the new makes facility integration easy

USERREPORT

BY JEFF DEN ADEL
Engineering, Saga Communications, Cascade Radio Group



BELLINGHAM, WASH. — Miles and miles of old analog wiring have been pulled out in favor of Cat-6 runs; consoles have become control surfaces with no actual audio passing through them; racks where distribution amplifiers and switchers lived for many years are now filled with blank rack panels; and instead of inputs and outputs we are thinking more in terms of sources and destinations. Cascade Radio Group has recently gone digital with WheatNet-IP audio networking.

CRG is a group of five radio stations owned by Saga Communications. KISM(FM) (classic rock), KAFE(FM) (Today's Variety), KGMI(AM) (news/talk), KPUG(AM) (sports) and KBAI(AM) (progressive talk) operate from one facility in Bellingham, Wash. We have five on-air studios and two production rooms. The addition of WheatNet-IP has streamlined our facility, making configuration and trouble-shooting faster and easier.

Our WheatNet-IP system consists of two core switches, to which edge switches are connected in each studio. Every Blade I/O network access unit and PC driver's NIC is either plugged into an edge or core switch, depending on their location. Dual NICs are used on computers that utilize Wheatstone's PC driver to stream audio in and out of machines, one NIC for the automation network and the other for WheatNet-IP. The PC drivers show up in the system's Navigator software like a Blade would, allowing us to crosspoint audio to and from them easily. Once the audio sources are "in the system," those sources are then routable anywhere in the network. This gives even our production studios the ability to go "on air" with just a few crosspoint changes.

We utilize 24 Blades of various models (IP88A, IP88AD, M4 and Mix Engine) to route audio and logic functions in and out of studios, as well as in the master control room to handle audio and logic for our 12 satellite receivers. Six of the eight Blades in master control handle the satellite audio and contact closures for all five stations. Contact closures are wired directly into the logic ports on Blades and are defined as an LIO source. Once an LIO is defined it can be converted to an SLIO by making a single crosspoint and either defining a user function name or using a predefined function via Navigator.

NETWORK

Our automation system, iMediaTouch by OMT, only recognizes SLIOs, so all satellite contact closures that the automation uses have to be converted from the physical LIO to an SLIO. IMediaTouch uses SLIOs defined in the On Air module to make or break satellite connections, fire liners from the automation's show log page and also to turn the satellite fader on/off on the control surfaces. It's always gratifying to see the iMediaTouch system make the satellite audio connection and turn the fader on when the feed starts. Likewise, when the feed ends, the audio connection breaks and the channel turns off. Logic circuits to control on air lights, mutes and remote starts are wired into the IP88A Blade in each studio, keeping control local for each studio.

We have a combination of Wheatstone E-6 and Audioarts IP-12 control surfaces in our studios. Each surface is essentially a big smart mouse. Both series of surfaces are a breeze to use. Sources are easily assignable to faders. Programmable buttons assigned to switch "Events" can reconfigure the whole surface to a user's preference with the press of a button. We have assigned two buttons on each on-air surface to control the "Next Event" and "Talk Break" functions in the automation system for easy access for the talent.

There is one lonely analog console left in the building. It's an Audioarts D-75 that resides in our smallest production studio (Production C). In this studio an IP88a Blade is used to route audio in and out of the room. Since we have an automation utility machine in the room that is on WheatNet-IP, multiple

(continued on page 23)

TECHUPDATE

ARRAKIS SEES ADVANTAGES IN BLUETOOTH

It has been a little over a year since the Bluetooth feature was added to the Arrakis Systems ARC-10 and ARC-15 series consoles. The company says customers have been enthusiastic about this feature that connects two powerful tools to the console with no wires.

The optional Bluetooth channel on the ARC series boards allows users to connect a cellphone wirelessly to the board, thus allowing users to take callers on a cellphone, and place them directly on-air or put them through the audition bus to record for later playback. This effectively replaces a need to purchase a phone hybrid. Using cellphone technology, users also can conference multiple callers without the need of a multiline phone hybrid.

The ARC-10 and ARC-15 series boards still have the ability to connect to a phone hybrid, so an existing hybrid can be used to connect to a land line.

The other side to the Bluetooth channel is its ability to connect a board to a Bluetooth MP3 player such as a tablet or smartphone. This allows the user quickly and wirelessly to connect to the console and play any playlist. This can be effective for environments where there are multiple DJs, such as volunteers or students, who want to connect their device to play their playlist.

Arrakis says that users like the high-end Bluetooth BlueCore 5 Multimedia chip by CSR, which has performance capabilities beyond standard Bluetooth specifications. Operating in the 2.4 GHz spectrum, Bluetooth is RF resistant, adding to the performance quality of the ARD-10 and ARC-15.

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

World Radio History

TECHUPDATE

ALLEN & HEATH XB-14 RECEIVES UPGRADE

Mixer maker Allen & Heath recently launched a new version of its compact broadcast mixer, XB-14, that it says is based on requests from broadcast users. The XB-14² incorporates a dedicated audition bus, enhanced stereo channel configurations, updated mic preamps, more flexible monitoring and a new matte paint finish to reduce surface reflctions.

It is suitable for a range of applications, including small radio and Internet broadcast studios, hospital radio, university radio, community radio and larger studios with multiple rooms. The XB-14² is equipped with features intended for broadcasters, including telco inputs for telephone callers, mic fader start sensing for external connection and internal automatic muting of the speaker outputs, stereo channel start/cue outputs for transport control, multiple headphone outputs and an additional stereo bus (Mix B).

The new model includes a stereo audition bus that allows individual channels to be switched away from the main program bus for off-air monitoring. The telco channel EQ has been replaced with variable high-pass/low-pass filters for control of the telephone caller feed signal. There is a new external monitor input level control. The preamps have been enhanced for lower noise and higher bandwidth, and the stereo inputs have more gain and routing options.

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

WHEATSTONE

(continued from page 22)

instances of Wheatstone's PC-XY application have been installed on that machine. PC-XY allows users to select sources quickly by scrolling through the source and destination menus and clicking "take" once that information has been defined, much like their XYE-R controller. There are also eight user-definable buttons per instance of the application, making quick source selection faster. In Production C each instance of the app is pointed to its own channel on the D-75, essentially creating an A-H source select per channel, switchable with the click of the mouse. The PC-XY application has increased the usability of this studio immensely as any source in the WheatNet-IP system can be pulled up with ease.

One of the most powerful tools at our disposal is a laptop loaded with Wheatstone's Navigator and GUIs for configuring IP-12 surfaces/Mix Engines, setting and tweaking the M4-IP four-channel mic processors, and other GUIs for setting the Aura8-IP Blade multimode processing where needed. Going into a studio to troubleshoot or tweak levels has just a matter of plugging the laptop into the WheatNet-IP edge switch and opening whatever app that's needed. With Navigator, we have our whole system configuration at our fingers.

WheatNet-IP has been stable since installation and maintaining the network has been easy.

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

Logitek Networked Console Systems

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Pilot Digital Console

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Even your greenest operators can easily handle the power of AoIP networking with the Pilot console from Logitek. Faders, bus assigns and monitor selections are intuitive, and selecting the inputs you've assigned to a source can be achieved with minimal effort. The Pilot is Logitek's most economical console, but still offers full access to the sources available via our JetStream DenseNode Architecture. Pilot consoles are available in sizes ranging from 6 to 18 faders; each fader has its own selector buttons for program and 3 Aux sends along with Cue and Change buttons. The console uses efficient LED lighting throughout, and its bright, wide-angle displays support 16 character source names. It's ideal for small air studios and newsrooms.

Now in our 35th year, Logitek continues to develop new ways of managing broadcast audio in a facility. Contact us to arrange a demonstration of Logitek Audio Networking or browse our console options at logitekaudio.com.

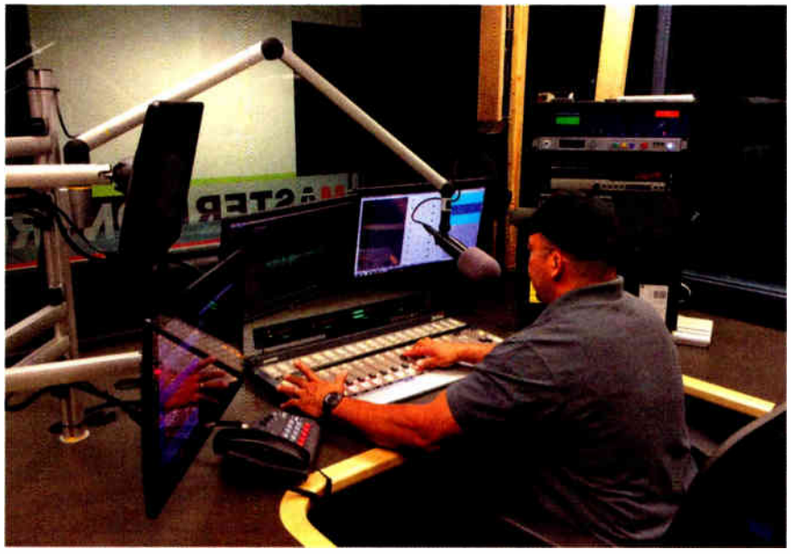
World Radio History

New World Radio Chooses GatesAir

Studio relocation allows broadcaster to redo the production chain

USERREPORT

BY BRIAN EDWARDS
Vice President of Engineering
New World Radio, WUST(AM)



FALLS CHURCH, VA. — New World Radio spent the better part of two decades operating from a studio in a residential neighborhood in a suburban Washington neighborhood. The spreading residential development of Northern Virginia finally reached our former home, forcing us to relocate.

As a broadcaster, the opportunity to relocate provides a fresh look at every facility operation, including technology. We identified studio systems as one area especially ripe for upgrades, choosing a GatesAir networked audio solution following a lengthy evaluation period of several vendors.

MULTILINGUAL

Our new space for WUST(AM) takes up much of the second floor of an office building on the other side of town. With the freedom to redesign the rented space, we strategized layouts for three dual-use on-air and production studios and a master control center that would make the best use of the WUST workflow. As a specialty, multilingual broadcaster, New World Radio produces on-air content by guest broadcasters, most of whom have little to no professional experience. We wanted to equip the studios with intuitive consoles that balanced modern features with a quick learning curve.

Similarly, we wanted the enhanced operational efficiencies that digital audio networking provides, from more collaborative environments to reduced technical infrastructure. In cooperation with a regional GatesAir representative, our leading equipment supplier, SCMS, offered a detailed demonstration of the GatesAir VistaMax studio networking solution, including comprehensive drawings of how the complete architecture came together. This, along with several key differentiators and a competitive price point, put GatesAir over the top.

The three dual-use studios feature Oasis 12-channel consoles. Our previous console upgrade in 1998 transitioned WUST from old-school rotary consoles to slide fader consoles — a change that created a massive learning curve for many producers, causing serious headaches. The transition to Oasis has been much smoother, while incorporating more modern digital features and the advantages of studio networking.

The Oasis allows me to keep things simple. Producers turn a channel on, a fader up, select Program 1, and they are on the air. The consoles accommodate multiple inputs, most of which are computer-based equipment along with a couple of CD players, microphones and an on-air phone system. A GatesAir World Feed Panel provides a single interface for multiple inputs and outputs of various formats if additional sources are required.

One of my favorite Oasis features is the ability to plug a laptop into the USB port and configure the console. A detailed—yet straightforward—visual of the console layout is provided onscreen, with the ability to change channel configurations, move the dual mix/minus channels and achieve other on-air and production needs without difficulty. Additionally, the mix/minus feature eliminates the need to create a mix/minus feed of my own, automatically delivering an output for the mix/minus bus.

The NetWave 16-channel console design for master control is more advanced, giving our professional in-house operators a more expansive, feature-rich console to manage and bring feeds to air. It does not have the same slick configuration options as the Oasis and requires some more manual attention. Still, it was simple to set-up and offered an easy learning curve for our full- and part-time staff.

The big benefit of networking these systems via VistaMax is the ability to share or recall sources at any connected location. For New World Radio, this usually means easy audio routing from Oasis consoles to the NetWave; and also routing other sources into the VistaMax network, such as Internet-delivered programs, phone system audio and content from remote producers. VistaMax provides additional routing flexibility through source selectors, allowing us to route individual mics that master control operators can call to air as needed.

The reduction in infrastructure extends from in-studio space-saving to overall cabling and wiring. I handle studio systems integration as part of my role at New World Radio. VistaMax reduces the old-school routing method with 10 tons of wiring to Cat-5 and Cat-6 network cables. The transition from audio to network cabling makes integration far simpler to install and maintain.

Resiliency is perhaps the biggest differentiating factor of VistaMax. The architecture allows us to home-run single studios to a separate audio switcher

(continued on page 27)

TECHUPDATE

STUDER INTRODUCES ONAIR 1500 DIGITAL MIXING CONSOLE

Studer says its OnAir 1500 is a 12-channel, six-fader console (expandable to 12 faders), suitable for studios needing an additional professional-grade fader unit and additional I/O or a compact, cost-effective mixing console for a production room or air studio.

Integrated USB playback and record functions make the OnAir 1500 a compact production unit and mixer. With point-to-point connectivity it can be moved around as a backup or secondary unit easily.

Flexibility can be increased with the addition of an optional six-fader extension bay, creating either a 12-fader surface or an additional six faders that can be placed remotely in a producer's bay or used as a redundant surface.

Channel parameters such as EQ and dynamics can be edited using console controls in combination with the OLED channel displays without requiring an additional screen or PC. For more advanced operation and configuration, the console provides interfaces for connecting a PC screen, keyboard and mouse.

The master section gives the operator access to the signal monitoring and switching for control room and studio with an internal speaker preconfigured to output cue and talkback signals. Audio monitoring is augmented by two 29-segment stereo bar-graph PPMs, providing constant overview of important signals; six meter standards are available.

Features such as Headphone Split allow the user to listen to two sources, one through the left earpiece and the other through the right. Preset buttons also allow one-touch control of monitoring. Additional monitoring for separate studios is available via an external monitoring/talkback unit for added flexibility.

For information, contact Studer USA in California at (818) 920-3212 or visit www.studer.ch.

World Radio History

TECHUPDATES

LOGITEK EXPANDS NETWORK OPTIONS

Logitek introduced the JetStream Plus, which expands the company's line of Dense Node Architecture Networked Audio products. The JetStream Plus provides 240 channels of I/O in a compact, four-RU enclosure.

Fifteen card slots are provided for analog inputs, digital inputs, analog outputs, digital outputs, SDI inputs and microphone preamps. A drop-down front panel enables access to the cards. The company says that, as with other Logitek audio networking products, one chassis accomplishes everything needed for operations: mixing, routing, mix-minus generation, profanity delays, audio processing and other audio functions.

An embedded microprocessor monitors the DSP functions of the JetStream Plus, providing access to the system remotely by browser as well as by Logitek's virtual applications (virtual consoles, router panels, metering screens, and macro programming features). Up to four Logitek consoles (comprising a total of 36 faders) may be operated via a JetStream Plus.

The product supports the latest IP and Ethernet protocols. As with the JetStream Mini, the JetStream Plus offers the Logitek JetNet network conduit for direct network transfer of audio from hard-disk playout systems (no sound cards are needed). A new Axia Livewire interface will provide direct connection to a suite of products from Livewire partners and licensees.

A touchscreen display on the front of the JetStream Plus allows access to meters, router controls and status indication. Redundant power supplies ensure robust performance. The JetStream Plus is made in the USA and is now shipping.

For information, contact Logitek in Texas at (713) 664-4470 or visit www.logitekaudio.com.

SAS ISL CONSOLE CONTROL SURFACE DEBUTS

The Sierra Automated Systems iSL Console integrated control surface uses SAS Rubicon SL modules housed in a chassis that includes an integrated LED meter bridge. The SAS iSL console is available in several sizes to fit most applications. It can be mounted on a desktop or, for most on-air broadcast installations, cut into the desktop for a sleek, low-profile work surface.

The iSL Console connects to an SAS RIOlink Mix Engine or any SAS 32KD DSP Output Engine and interconnects using Cat-5 cabling. The iSL takes advantage of the features that the SAS Audio Network provides: routing, mixing, automatic mix-minus, distribution, intercom, IFB and automation.

Additional control surface features include a monitor module section with cue speaker, headphone amplifier and talkback controls. There's also a programmable timer.

Each physical input channel has a 100 mm Penny & Giles fader, four programmable bus buttons, rotary pot, alphanumeric scribble strip and button safety guards.

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

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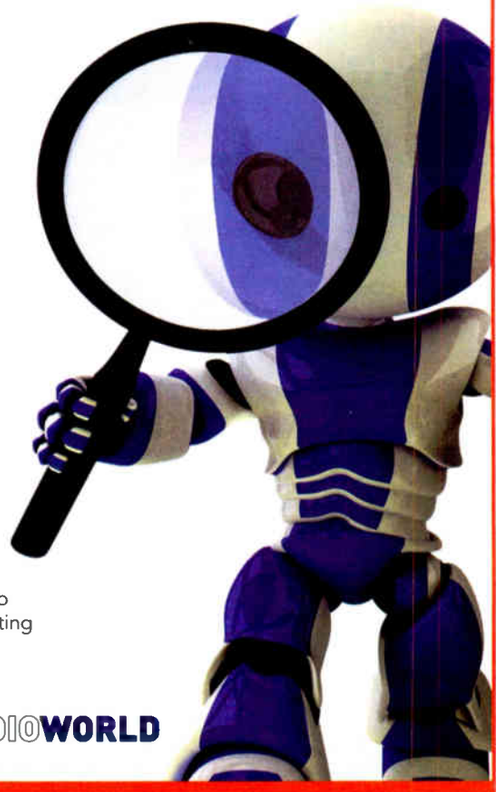


TO VIEW THE ARCHIVE, VISIT: http://radioworld.com/webinars/12/

World Radio History

TECHUPDATES

LAWO'S NEW CRYSTAL RADIO CONSOLE

Lawo says its next-generation crystal console offers intuitive operation, logical workflow, refined functionality and a more powerful system core.

It is suitable for radio applications and TV production, and it provides integration into comprehensive broadcasting systems via MADI to Ravenna audio over IP to remote control.

Crystal consoles come with a basic set of features meet general demands of a range of radio applications. In addition, it allows customization, offering a pool of features that includes AutoMix and AutoGain. The crystal can be a choice for efficient standalone operation or networked environments.

The console provides functionality of a conventional mixer as well as an integrated matrix of up to 288 I/Os. These can be prepackaged from a broad range of modules including Ravenna audio over IP, MADI, AES and mic/line.

The control surface is available in variants offering four to 16 faders. Pushbuttons are illuminated with RGB LEDs enabling users to work with color schemes for different functions, such as giving each signal processing function its own coloring (e.g., blue for EQ, magenta for dynamics, etc.).

Beyond the limitations of hardware user interfaces, VisTool — Lawo's customizable touchscreen optimized software interface — provides additional functionality and visualization, for example of DSP parameters, signal levels and the snapshot database.

For information, contact Lawo North America in Ontario at (888) 810-4468 or visit www.lawo.com.

YAMAHA REDESIGNS MG MIXERS

The redesigned Yamaha MG Series of mixers consists of 10 models that come with the company's discrete Class A D-PRE microphone preamps.

Yamaha says that by using an inverted Darlington circuit topography, these studio-grade preamps feature multiple circuitry elements to provide more power, deliver lower impedance and supply a frequency range that can handle signal from any source without coloration while retaining the original sound.

With varying input/output and processing capabilities, the MG Series includes four XU models that feature an upgraded version of the popular Yamaha SPX effects processor. The MG06X model comes with six non-editable SPX effects (but does not include USB integration, found on the XU models). Five standard models range from six to 20 channels.

New XU models offer digital connectivity and software that streamlines the recording process, including Steinberg Cubase AI. A USB 2.0 audio interface capable of 24-bit/192kHz sound quality allows for playback of digital content from a PC and recording of the mixer output using DAW software. USB Audio Class 2.0 is supported so that compliant tablets and other devices can be used without installing drivers. Models in the XU line offer recording and playback of digital audio content to and from an iPad or iPhone.

MG mixers feature three-band channel EQ and high-pass filters; models with more than 10 inputs are equipped with newly-upgraded, single-knob compressors that add optimized compression to a variety of input sources with the touch of a control. Master send controls are included, along with Return level controls for the aux and stereo busses, which provide integration with external gear.

For more information, please call (714) 522-9011 or visit http://4wrd.it/livesound.

WHO'SBUYINGWHAT

AEQ FORUMS LAND IN IRAQ

AEQ started supplying broadcasters in Iraq six years ago, and says the country has become one of most important markets in its commercial division for the Middle East, in spite of the political and bureaucratic problems of that complex market.

AEQ's first projects were analog; now digital technology has a foothold. Recently, AEQ equipped two radio stations in the country, Radio Baban (shown) and Al Media Radio, with Forum digital consoles plus AEQ Capitol consoles for voice booths and small studios.

The Forum is a mixer for on-air control. AEQ says that it incorporates features required in a broadcast environment including automatic monitor mute, remote mute, fader-start, signalling, control signals for external equipment automation, management of external communications and intercom. With a modular design and small footprint it fits in varioius scenarios: self-op, control-studio, production controls for television, sound production, mixed configurations or integration in large systems.

The Forum starts with a control surface of four faders that can be extended to eight and 12 independent channels for standard Forum configurations or 16 to 20 faders in Grand Forum models.

AEQ's projects in Iraq have been seen through by the technical staff of AEQ's local partner MECAST in coordination with AEQ's technical departments in Madrid and Miami.

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

DHD PLANS SUPPORT OF AES67

DHD says that, following Audinate's announcement of AES67 compatibility with Dante devices by the end of this year, it will be able to provide customers with connectivity to audio over IP-enabled devices from other manufacturers using Dante.

The company says a growing number of its customers are taking advantage of Dante's low-latency, multichannel distribution network capacities for exchanging audio signals between studios.

In addition, Dante is the main playout solution for radio automation systems in new DHD installations.

The combination of a Dante-enabled DHD system, a radio automation PC with a standard network interface card and a Dante Virtual Soundcard enables DHD clients to save expenses of audio cabling, dedicated soundcards and I/O modules, it says.

The Dante Virtual Soundcard also allows flexible audio signal monitoring and recording at workstations connected to the Dante network via the built-in network interface.

With the help of Audinate's AoIP networking solution, the entire audio distribution structure can be standardized. DHD says that with the AES67 implementation into the Dante system, the integration of consoles, digital audio routers, codecs and intercom systems will be simplified.

For information, contact DHD in Germany at 011-49-341-589702-0 or visit www.dhd-audio.de.

World Radio History

AXIA FUSION COMING SOON

Axia Audio says some 5,500 of its consoles are in the field. Now the company offers another choice: Fusion, a new modular console with features and capabilities refined through the company's IP audio experience.

Available in sizes from four to 40 faders in single or multiple linked frames, Fusion pairs with the company's PowerStation and StudioEngine DSP mixing engines, connecting to Livewire networks with a Cat-6 Ethernet cable.

The company says Fusion's aluminum construction ensures rigidity and EM-tightness. Brushed-metal surfaces have anode-sealed markings that won't rub off, ensuring durable good looks. High-resolution OLED fader displays show selected sources, confidence metering, talkback status and other context-sensitive information.

Fusion provides four stereo program busses, four send busses and two return busses. A variety of module types are available, including fader-only modules and multiline controls for Telos phone systems.

Fusion's intercom capability includes IFB for two-way communication to individual talent positions via headphone feeds and mics, plus optional drop-in intercom modules that connect to Axia IP Intercom whole-plant intercom systems. A talkback system lets board ops talk directly to hosts, studio guests, external feeds or any source with an associated backfeed.

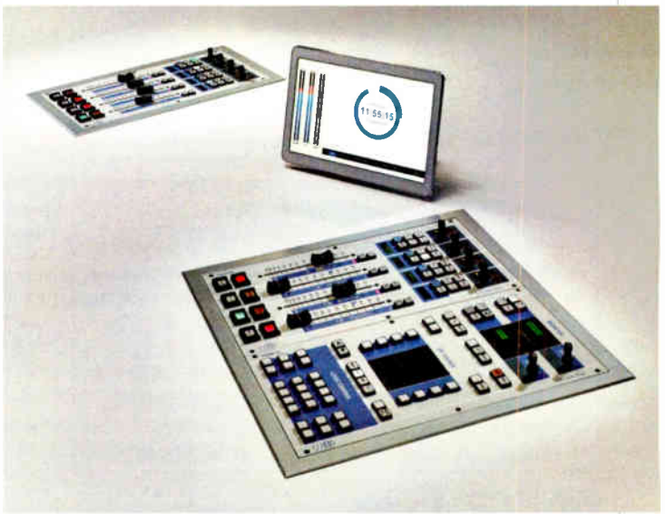
Other features include auto-assigned, auto-generated per-fader mix-minus, a one-button off-air phone record mode, and up to 99 console "snapshots" for recall of console layouts. Digital EQ may be applied individually to any audio source; Omnia Audio dynamic microphone processing is included as well. Fusion will be available in September.

For information, contact Axia Audio in Ohio at (216) 241-7225 or visit www.axiaaudio.com.

NEW MODULAR CONSOLE FROM STAGETEC

Stagetec calls its new On Air flex "the first truly personalised broadcast mixer." According to the company, the entire mixing console configuration can be defined with the help of configuration software called MapCfg. The user can adapt the mixing console to suit the workflow of their radio or TV station.

On Air flex is a modular mixing console system with processing provided by a Nexus XCMC board. It can process up to 40 input channels when configured with eight groups, eight sums, eight auxes and eight mix-minus buses. A configuration with up to 54 input channels without groups is possible. The input and output connections are available through the Nexus network, which can range from a single, locally installed Base Device to a campus-wide audio network.



Components of the On Air flex communicate via standard IP protocol, streamlining cabling and increasing the options of physical location of the individual elements.

The On Air flex virtual user interface emphasizes the flexibility of the mixer. It transforms a Web browser into a mixer control surface. The new virtual interface is just as the mixer controller — and it now runs on any end device that has a Web browser, including smartphones.

For information, contact Stagetec in California at (818) 701-6201 or visit www.stagetec.com.

GATESAIR

(continued from page 24)

in our TOC, keeping the consoles on the air if the network is taken down for any reason. This essentially means we have a networked studio environment that can also stand alone.

Nothing is perfect in the broadcast world. We have required some assistance with VistaMax software, though GatesAir technicians have been quick to deliver results. I also put my woodworking skills to work, making some modifications to the rear of consoles to better accommodate wiring connections. However, every transition of this scope will have challenges, and ours have been minimal.

This is crucial given the unique attributes of our operation. Every show at New World Radio has its own purposes, and the environment is akin to running multiple small radio stations given the many program producers on site. GatesAir has made the transition to a networked studio environment very simple.

For more information, contact Bill Betts at GatesAir in Ohio at (513) 459-3678 or visit www.gatesair.com.

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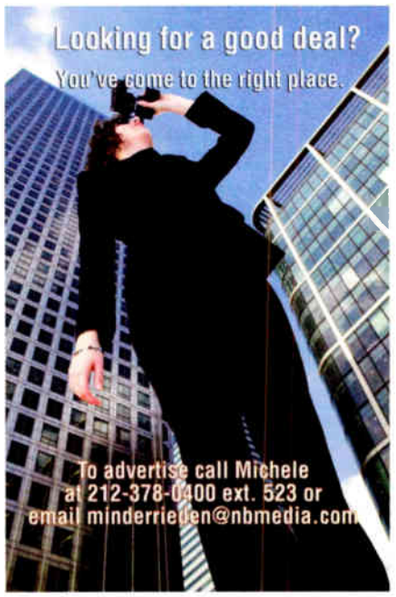

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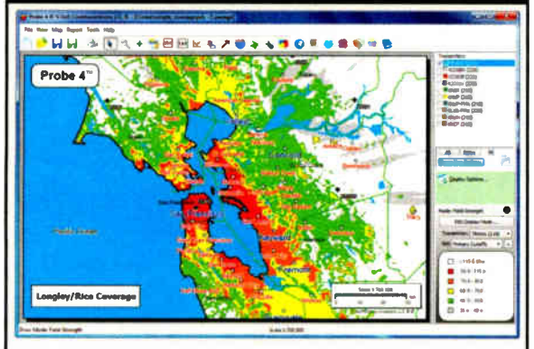

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About iBiquity Digital Corporation
iBiquity Digital Corporation is the developer of HD Radio™ Technology, which is fueling the digital radio revolution in the United States and around the world. iBiquity is a privately held company with operations in Columbia, MD, Auburn Hills, MI, and Piscataway, NJ. For more information, please visit www.hdradio.com or www.ibiquity.com and follow us on Facebook.com/hdradio and Twitter.com/hdradio.

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World Radio History

Nothing Less Than 100 Watts, Please

In revitalization comments, AM owner argues for regulatory focus change

COMMENTARY

BY EDWARD P. DE LA HUNT

These comments were sent to the Federal Communications Commission relative to Docket 13-249, "Revitalization of the AM Radio Service." Edward P. De La Hunt Sr. is owner of De La Hunt Broadcasting. The De La Hunt family owns nine stations in northern and central Minnesota, including KPRM(AM) in Park Rapids and three other AMs.

I would like to comment on the proposed rulemakings.

I have no problem with exclusivity of translators for AM applications; however, in the same vein, I would propose that no AM radio station, regardless of its class, should operate at any time with less than 100 watts. The 6/10/13 20-watt post-sunset powers are absolutely ridiculous.

Broadcast on the AM band should serve its local community and with some stations operating with 3 watts, all that has to happen is someone in the neighborhood turns on a fluorescent light, and it's all over. With 100 watts, at least there will be some chance of local service being provided. Skywave interference will increase somewhat, but the increase in local service will far outweigh the interference created.

With regard to modification of AM antenna efficiencies, this would be an absolute step back to the dark ages. If anything, we should be striving to increase antenna efficiencies by improving the radiation, lowering the angle of radiation, which in itself will improve nighttime service and lower nighttime interference.

Nighttime and daytime coverage standards could be relaxed and possibly adjusted to the point where the local service becomes the first choice in making any judgments on individual cases but not on an overall basis.

The wider implementation of modulation dependent carrier level control technologies not only should be further implemented, but should be encouraged, as it not only improves coverage, but helps conserve electrical power.

An additional comment, from myself, is that clear-channel skywave protection should be reduced from 750 miles down to 450 miles, allowing some stations to improve their nighttime coverage.

Clear-channel skywave protection should be reduced from 750 miles down to 450 miles, allowing some stations to improve their nighttime coverage.

Also, IBOC should be abolished, as it does nothing but destroy nighttime AM service to stations that are adjacent to an IBOC station. It is even a daytime problem for adjacent stations when the IBOC station is high power.

In addition, the FCC should return to enforcement of incidental radiation and encourage radio manufacturers to include digital noise blankers in their radios.

Comment on this or any article. Write to radioworld@nbmedia.com. *attention Letter to the Editor.*

Edward P. De La Hunt

CLARIFICATION: BBG

In our June 4 story "How Effective Is the BBG in 2014?," Ambassador Victor Ashe, a former member of the Broadcasting Board of Governors, was identified as a Democratic appointee. He is a Republican who was appointed by President Obama, a Democrat.

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