



RADIO WORLD

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Sochi 2014 Winter Games

NPR Labs Tackles Streaming Loudness

“Normalization” is possible to reduce volume variation from stream to stream

TECHNOLOGY

BY JOHN KEAN

To engineers in the audio media and broadcasting fields, few subjects are more personal, and partisan, than the transmission level and loudness of

audio content. If loudness was no issue we might see more consistency across various media — but I’m getting ahead of matters.

In the Jan. 1 issue of Radio World, our article “NPR Labs Eyes Streaming Codecs” discussed a study to find the best codec and optimum bit rate for public radio streaming, a study commissioned by NPR’s Digital Media division.

That selection process proceeded smoothly from start to finish, but early in the study it became apparent that another issue was potentially as important to public radio listeners of Internet streams as digital quality: consistency of loudness from stream-to-stream, and sometimes from program-to-program within a stream.

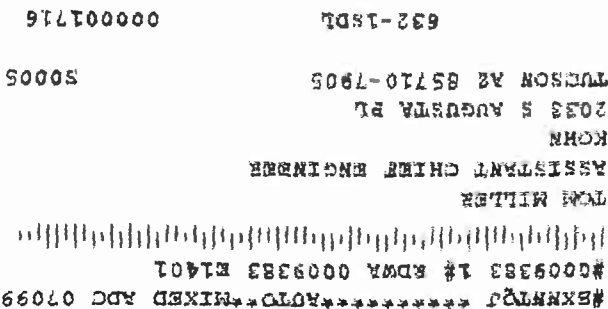
This issue led NPR Labs on an exten-

sive study of audio measurement — one that continues — and that we share here. While the study was conducted for public radio, the premise and conclusions may be helpful to commercial broadcasters that stream audio as well.

VARIANCES

The first indication that audio level needed attention came from a study of 49 streams carrying the same program from NPR (“Weekend Edition Saturday”) in February of 2012. Fig. 1 shows a waveform envelope for the streams as a consecutive sequence of 45-second audio clips. Only speech segments were used, although the speakers may vary. It was evident that signal peaks varied widely from stream to stream: the difference between the loudest and softest streams was more than 22 dB in peak signal level.

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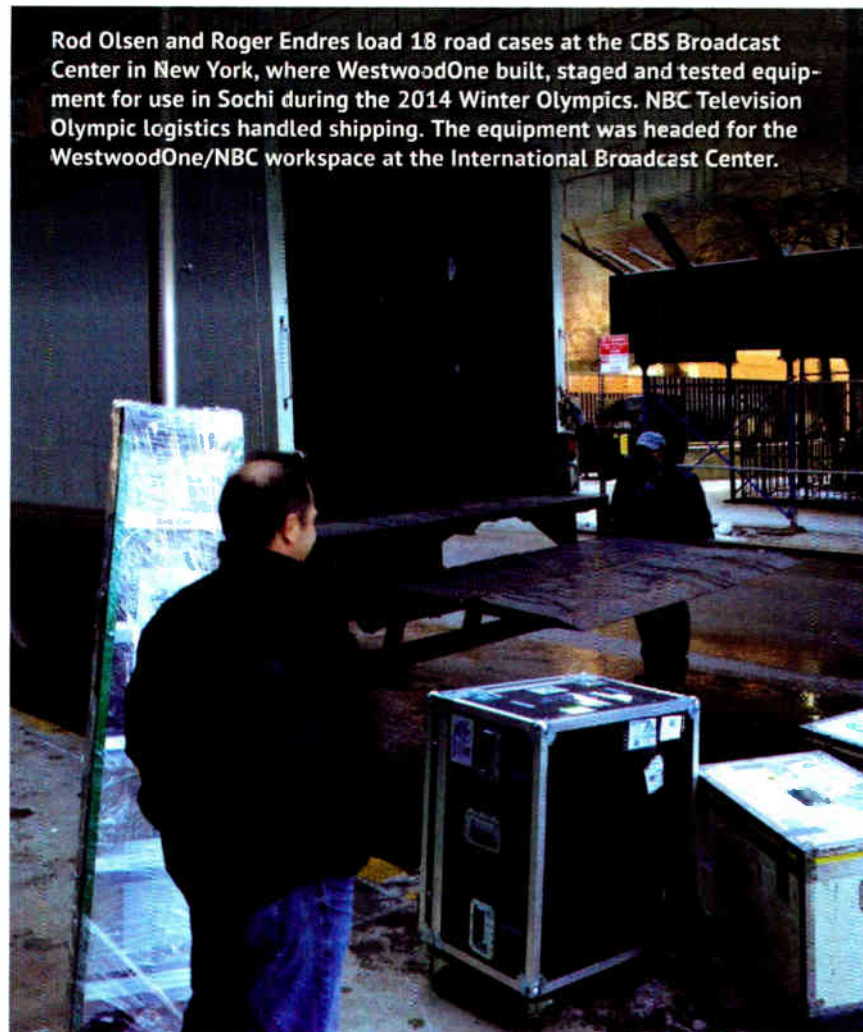
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WestwoodOne Readies for Sochi

The network, now part of Cumulus Media, navigates logistics for 22nd Winter Olympics



Rod Olsen and Roger Endres load 18 road cases at the CBS Broadcast Center in New York, where WestwoodOne built, staged and tested equipment for use in Sochi during the 2014 Winter Olympics. NBC Television Olympic logistics handled shipping. The equipment was headed for the WestwoodOne/NBC workspace at the International Broadcast Center.

BY RANDY J. STINE

NEW YORK — Mitch Glider is hoping that WestwoodOne's coverage of the Winter Olympics from Sochi, Russia, is "primed for gold."

This is the first Olympics for WestwoodOne as part of Cumulus Media. The radio network merged with Dial Global Radio Networks in 2011 and took on the DG brand, but it eventually rebranded using the familiar WestwoodOne nameplate. Cumulus Media then purchased Dial Global/WestwoodOne in August 2013.

The organization holds rights to provide U.S. network radio coverage of the games Feb. 7–23. Cumulus declined to detail how many stations are expected to use the content. Some long-form programming and all hockey games will also air on SiriusXM.

Glider, vice president of engineering for WestwoodOne in New York City, devised a technical plan months ago that uses a structure for broadcast remotes based in the International Broadcast

Center in Sochi. The audio architecture must be resilient enough to deliver 17 consecutive days of coverage.

His challenge is aggregating audio from numerous competition site venues, eliminating technical glitches and delivering a smooth broadcast product to the radio network's affiliates — from the distinctive beep at the starting gate of a downhill ski race to the swoosh of a luge sled on an icy track.

He expects to be in Sochi to help execute on-air coverage that includes short reports three times an hour, 24 hours a day, through the games. WestwoodOne,



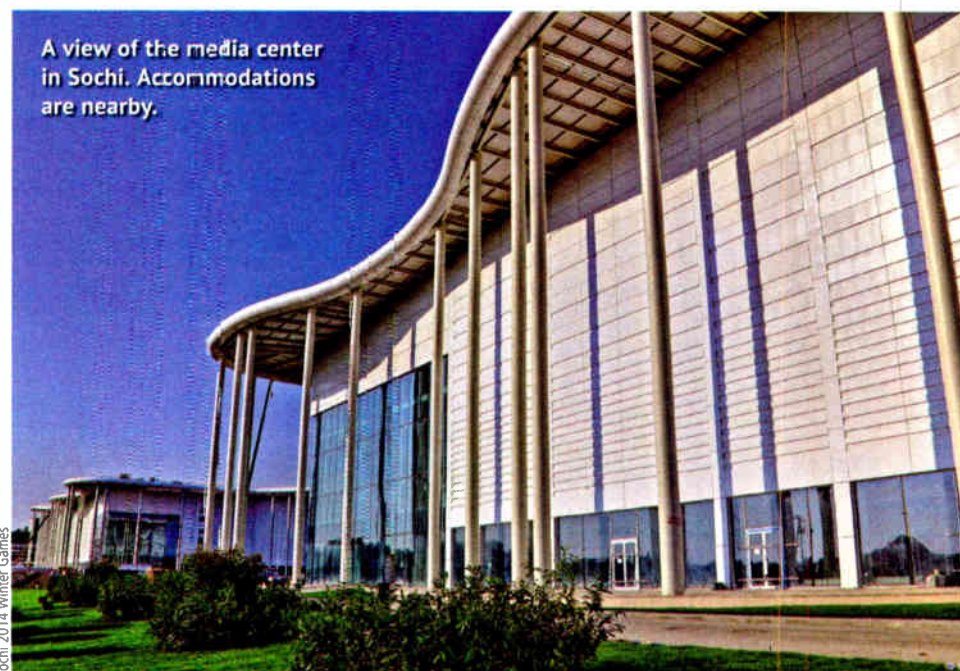
which presented a 32-part series of pre-view vignettes, also will provide nightly recaps and live play-by-play of certain events.

18 CASES

Sochi, with a population of 400,000, is nine hours ahead of Eastern Standard time. The city is in Krasnodar, the third-largest region in Russia, according to the XXII Olympic Winter Games website. The Sochi Olympic Park is built along Black Sea coast in the Imeretinskaya Valley.

WestwoodOne is sending an air staff of approximately 10 announcers. In support, Glider worked with Howard Denoroff, executive vice president/executive producer of WestwoodOne Sports, to set the technical plan based on the programming and type of communication back-hauls required, in addition to in-house communication needs at the IBC.

(continued on page 6)



A view of the media center in Sochi. Accommodations are nearby.

Sochi 2014 Winter Games

BWWG: Treat AM as a National Resource

EAS interest group has strong ideas about 'revitalization'

It's not often that a filing to the FCC is dedicated to someone who's passed away. Comments about AM revitalization from the Broadcast Warning Working Group honored the late Larry Estlack, one of its members and the director of technology for the Michigan Association of Broadcasters.

BWWG is all about EAS, so it has an interest in AM. You probably know most if not all of its members: Adrienne Abbott, chair of the EAS Nevada State Emergency Communications Committee;

Clay Freinwald, chair of the EAS Washington State committee; Suzanne Goucher, president/CEO of the Maine Association of Broadcasters; Barry Mishkind, the veteran engineer and industry journalist; David Ostmo of the Sinclair Broadcast Group in San Antonio, Texas; and Richard Rudman, vice chair of the EAS California SECC.



The late Larry Estlack, shown in a Facebook page in his memory. Search "Friends of Larry Allen Estlack."

They write that AM is "an invaluable national resource" but that the band needs a "resurrection" and not just revitalization. They noted that EAS was enhanced when some AMs became part of the Primary Entry Point system in 1997 and that recent hurricanes demonstrate what can happen when communications are slammed and officials need a reliable way to talk to the public. AM's simplicity and reliability are assets then. But what to do?

'UNIQUE BUT DEVASTATING'

Transmitter power increases aren't the answer; they "will eventually be negated by the still rising tide of RF noise in the band," BWWG writes. Nor will digital transmission will overcome this. "Masking of power line-radiated noise is only effective until the noise rises to a level where Bit Error Rates exceed their ability to function and the digital signal vanishes."

The group reiterated what many

have been saying: The noise floor has increased sharply, stealing signals and audiences. It pleaded with the FCC to enforce Part 15 rules and support delivery alternatives other than broadband over power lines.

The high-voltage power grid infrastructure generates its own "unique

One BWWG recommendation: Congress should forbid the marketing of FM-only receivers.

but devastating" noises, a problem that seems to be getting worse. Further, new high-tension lines near directional transmitters act as long-wire antennas that "broadcast" harmonic noise; BWWG says we should hold utilities accountable.

Further, station over-modulation causes "splatter" to adjacent channels; older transmitters and poor processing practices can mean problems 20 kHz away. The group thinks the FCC should reduce negative peak modulation to 96

FROM THE EDITOR



Paul McLane

percent for AM and clarify wording in Part 73 on this topic.

"We should allow a 4-5% margin for error for settings, power supply issues and measurement errors. This will provide a better spectral median

strip between broadcasters vying for what most audio experts believe is a race for a mythical audience bent on searching for the loudest signals on the band. ... It is time for the commission to end the destructive AM modulation race that some broadcasters continue to pursue, despite solid technical data that such a race has no basis in reality."

The group throws up its hands on the topic of devices that make noise like

(continued on page 14)

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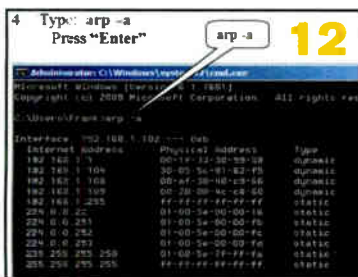
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Photo courtesy Mark Legrande

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NEWSROUNDUP

SONG REPETITION: MusicFirst described as "shocking" a Wall Street Journal report on how often radio songs are repeated. The report says programmers find that listeners tune in longer if they hear a song they're familiar with but hit the "next" button more quickly if they hear a new song; hence new songs are slower to reach the airwaves. MusicFirst says this exposes "NAB's biggest lie — that Big Radio promotes new music and helps new bands breakthrough." The group, which is backed by record labels, wants terrestrial radio to pay a performance royalty. It says some bands "earn nothing" from repeated airplay. MusicFirst says "empty promises of phantom 'promotion' won't do."

NAB REBUTTAL: Responding to the above, NAB Executive Vice President of Communications Dennis Wharton told RW: "If the charge is that local radio plays popular music that listeners enjoy, we plead guilty." Local radio remains the number one source for exposing new music, he says, citing Nielsen's Music 360 Report and USA Today. "Bottom line: Hometown radio stations that are free to the listener will continue to cater our programming to a growing audience of more than 240 million people who tune in every week," he said.

PANDORA: Chrysler also is the 25th automotive brand to include Pandora Internet audio. It will be available on the Chrysler 200, through Uconnect Access via Mobile. The audio service is available in other Chrysler Group vehicles like the 2014 Dodge Durango, Jeep Cherokee, Jeep Grand Cherokee, Jeep Grand Cherokee SRT as well as the 2013 and 2014 Ram 1500 and SRT Viper. Pandora says 4 million unique visitors had activated its service through automotive integration.

EAS: FEMA's Integrated Public Alert and Warning System seeks help from the private sector to improve the technology behind its CAP EAS system, but says it is not privatizing the system. That clarification came from IPAWS Division Director Antwane Johnson after FEMA published a Request for Information seeking suggestions for "best methods for providing a highly reliable and highly available application and data center services" for the alert system's infrastructure. The RFI prompted news articles about outsourcing. "The IPAWS program is not seeking to replace or outsource IPAWS services," Johnson stated on the SBE EAS listserv. He said FEMA will seek

alternative "hosting solutions" to provide reliability and availability while increasing resilience and cost efficiencies.

HD RADIO: Chrysler will offer HD Radio standard in the new 200 mid-size sedan, to arrive at dealerships in

Aux inputs, is standard. The car comes with a 12-month trial of the automaker's Uconnect access system that enables embedded cellular technology. Uconnect access via mobile puts four Internet radio apps into the vehicle: Aha by Harman, iHeartRadio, Pandora and Slacker. It also enables what Chrysler calls "on-demand WiFi hot-spot capability," allowing



Promotional image of the Chrysler 200, offering HD Radio and Pandora access.

the second quarter. The 2015 model year 200 is the first Chrysler-branded vehicle to offer HD Radio, which, along with SiriusXM and other ways to access digital music like USB and

drivers to listen to personal Internet radio accounts and stream audio using their mobile phone data plans. Passengers can buy WiFi hotspot capability for a day, week or month.

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WINTER OLYMPICS

(continued from page 3)

Glider has been planning U.S. network radio Olympic technical coverage dating back to Salt Lake City in 2002. He said Sochi presented challenges based on logistics and airfreight restrictions through customs. WestwoodOne shipped 18 road cases of technical equipment in mid-December to ensure delivery prior to start of the games.

"We are still primarily ISDN (for main program feed), but we also have dedicated IP codecs over the public Internet running parallel to the ISDNs for backup."

The backhaul path, according to Glider, involves taking the finished audio product from Sochi, which could be live or recorded, passing it via ISDN to the CBS Broadcast Center in New York in real time, with return to Sochi for monitoring by talent.

The radio network uses Sierra Automated Systems products, Glider said, including a SAS 32KD router and Rubicon-SL consoles and Dixon mixers and ICM 32 intercom heads, which will allow WWI to use the unit for listening, four-wire communication and intercom communication from Sochi.

It uses Telos Zephyr Xstreams for ISDN, and Telos Z/IP and Comrex Access for IP codecs, according to Glider.

The setup is similar to what WestwoodOne used in London for the 2012 Summer Games, though "we have expanded the use of IP codecs for sure and are relying on them more than ever," Glider said.

GLOBAL COVERAGE

The world's radio broadcasters will cover the games from the International Broadcast Center, from commentator positions at stadiums and other venues, and in zones where broadcasters will "mix" with and interview athletes.

Radio has a long history of covering the Olympics. The 1928 Summer Olympics in Amsterdam were the first to receive radio's attention; full-blown radio coverage started at the 1936 Summer Olympics in Berlin.

The core of coverage — sound and video from Opening and Closing Ceremonies, and live feeds from venues — is produced by Olympic Broadcasting Services. An agency of the International Olympic Committee, OBS has been host broadcaster for Olympics Games since 2008.

OBS is manager and operator of the IBC in Sochi and the associated Mountain Broadcast Center. The IBC is headquarters for radio and TV rights-holding broadcasters. (Non-RHB reporters and print are housed in the nearby Main Press Center.) The big, low-rise IBC is within walking distance of the competition venues in Sochi's "coastal cluster."

"The standard OBS studio module is just over 47 square meters [500 square feet], large enough to support a basic radio production facility," said Matt Mason, OBS head of information and publications. "This said, many RHBs have requested custom-tailored facilities." Right-holders typi-



Inside view of the Main Media Center.

The remote gear is set up and tested in New York and fitted for equipment modularity. "Everything is in the rack already and pre-wired. We take a modular approach with Cat-5 cable." Glider then submits it to final test during a staging process.

All of the gear, including routers, computers, servers, codecs and consoles, is staged in the CBS Broadcast Center, where WestwoodOne's technical opera-

tions are located and where Glider is based. (WWI also provides technical support to CBS Radio Network news for coverage of large-scale news events and remotes, including political conventions, inaugurations and the Olympics.)

Glider designed the WestwoodOne studio space in Sochi, located within the NBC Television complex, using Visio, the diagramming program from Microsoft. Mike Eaby, WestwoodOne sports

vice president/coordinating producer, visited Sochi in 2013.

IBC

The International Broadcast Center is home to international broadcast organizations covering the Olympics. WestwoodOne will broadcast from a combo studio, a long-form studio and two read-in positions, semi-enclosed for privacy, Glider said.

"It's a bit of a departure from what we have done in the past. We have added a bit more versatility to the positions utilizing things that we have learned from previous Olympics. And we have added a small engineering space, too," Glider said.

WestwoodOne engineer Zack Akey was set to accompany Glider to Sochi to handle technical services duties. This is Glider's first trip to an Olympics since 2006, he said. The pair expected to arrive in Sochi in mid-January and begin assembling the studios. The opening broadcast is Feb. 7.

Security within the Olympic village is expected to be tight, Glider said. Media accommodations are next to the IBC and inside the "clean zone," Glider said, which means a lot less time standing in security lines.

Sochi, which typically doesn't receive a lot of snow, likely will have high temperatures in the mid-20s during the Olympic visit. The mountains in Krasnaya Polyana, home to skiing and sliding events, typically receive most of the region's snowfall.

WestwoodOne says it delivers audio content each week to 8,200 media partners and 225 million consumers.

cally outfit their own studios.

Competition venues are the locations of "broadcast commentary positions," where RHB announcers can deliver coverage tailored to their audiences.

A total of 532 broadcast commentary positions are available. Each accommodates one, two or three people. "Radio broadcasters will occupy up to 79 commentary positions throughout the Sochi Olympic Winter Games site," Mason said. For instance, BBC Radio will be using five.

At mountain venues, commentary positions are in temporary cabins with power, lighting and a heater.

RHBs have the option of booking equipped or unequipped commentary positions. "Commentary audio from the equipped positions is routed to the RHB studios through full-bandwidth connections to the commentary switching centers in both the IBC and the MBC via redundant fiber paths," said Mason.

"At unequipped commentary positions, RHBs can order uncompressed full-duplex audio lines to IBC/MBC, ISDN lines and Internet access." Commentator positions are also at the Medals Plaza.

Feeds from the venues are routed to a commentary-switching center in the IBC, the main hub for coordination circuits and international sound for radio.

— James Careless



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STREAMING CODECS

(continued from page 1)

Differences in loudness were roughly in line with the signal level. Allowing for slight differences with different speakers in the program, we expected to only see differences of a few dB across the group. This spread was likely to annoy listeners as they changed streams.

Public radio is by no means the only source of difficulty: listeners experience similar variations on commercial radio streams, and worst of all, it appears, on freelance audio streamers. Fig. 2 shows a sequence of 46 randomly-selected commercial radio music streams from a major stream aggregator (who offers these streams on-demand through custom player software). In this chart, the loudness has been indicated on the blue line and the signal peaks are shown in yellow, which digital full-scale at 0 dB. The sharp drops show the audio gaps between station samples.

The differences are less, amounting to little more than 10 dB at the most, but most of these streams are highly compressed and limited, as shown by the flatness of the signal peaks across each of the samples. This compression makes differences in loudness of a few dB quite noticeable. The stream aggregator should be commended for moderating the loudness levels around -23 LUFS (a measurement of loudness discussed below), although the compression and limiting of the station audio is wasting a good deal of peak headroom.

Not all stream providers have not seen fit to moderate their transmission level. Some audio streams have been measured by the author as high as -5 LUFS, a condition that would probably make any listener lunge for the volume control! This high loudness is the result of heavy dynamic compression and



Fig. 1: A waveform envelope for 49 streams of the same NPR program displayed as a consecutive sequence of 45-second audio clips.

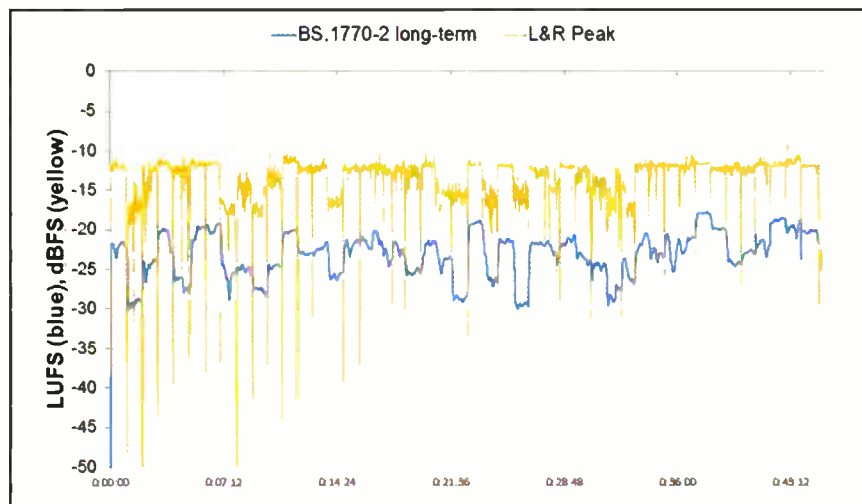


Fig. 2 shows a sequence of 46 commercial radio music streams from a major stream aggregator. The loudness has been indicated on the blue line and the signal peaks are shown in yellow, with digital full-scale at 0 dB.

peak clipping. These streams are frequently freelance audio services, rather than broadcast stations, but the point is that the “loudness war” does exist on some Internet audio streams.

LOUDNESS

Fortunately, a great deal of work was already done on loudness measurement by some dedicated engineers on working groups at the Radiocommunications Sector of the International Telecommunications Union and the European

Broadcasting Union. Their research over many years led to the development of an algorithm to measure program loudness similarly to human hearing, currently defined by Broadcast Systems recommendation BS.1770-3.

The ITU loudness algorithm first performs frequency weighting for each channel, rolling off below 100 Hz and providing a uniform boost to frequencies above 2 kHz of about 3.5 dB. The total means-square amplitudes are calculated, summed and logarithmically converted

to a decibel scale. This provides a real-time indicator with the instantaneous program loudness in Loudness Units (“LU”), where a change of 1 LU is 1 dB. A relative-threshold gate is added to cause the measurement when the signal drops below a certain threshold. This prevents silence or background sounds from biasing a long-term integrated loudness value. This algorithm supplied the audio stream loudness measurements in Fig. 2. The ITU algorithm also defined the method of measuring the reconstructed signal peaks that accompany the loudness graphs.

The ITU loudness meter display is often combined with a peak meter, as both are significant indicators. An example is the K-Meter, a program for Windows and Unix computers, as shown in Fig. 3: ITU loudness is indicated by the solid green bar while the momentary signal peak is shown by a single red segment. Another example is Orban’s Loudness Meter, which provides logging of measurements. Many of the measurements herein were recorded with this meter software.



Fig. 3: In this screenshot of the K-Meter, a program for Windows and Unix computers, ITU loudness is indicated by the solid green bar while the momentary signal peak is shown by a single red segment.

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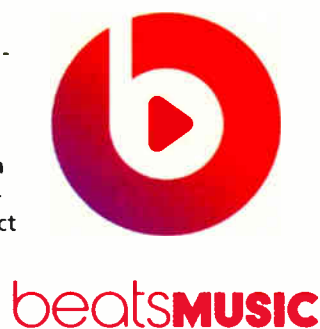
Watching program audio with an ITU loudness meter and peak meter, one of the first things one notices is that loudness and signal peaks do not correlate well. Some material will indicate lower margins than others, for example, popular music that has been peak-limited, compared to live speech.

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(continued on page 10)

NEWSROUNDUP

BEATS: New music service Beats launched. The company is trying to differentiate itself from competitors like Pandora, Spotify, Rdio and Apple’s iTunes Radio with a subscription-only pay structure. Beats calls the product “a new kind of streaming service” that’s “curated by people.” Fans can stream music or download to listen offline. At launch, users were invited to a 30-day free trial; then a \$9.99 per month subscription fee kicks in.



RADIONOMY: Radio platform and digital ad network Radionomy acquired media player Winamp and Internet radio platform Shoutcast from AOL. Radionomy says

the addition will give it exposure to a larger audience and pave the way for offering an enhanced experience. The acquisition of Shoutcast in particular will make Radionomy the source of about half of all streamed Internet radio worldwide, the company claims. Terms were not disclosed. The Radionomy Group also includes audio ad network TargetSpot.

LPFM: The FCC began granting low-power FM applications construction permits, and dismissing others. A sample: It dismissed two applications for new LPFMs in Phoenix competing for 105.1 MHz. The agency dismissed applications from groups vying for a new LPFM in Moorhead, Minn., Madawaska, Maine, San Diego, Portland, Ore., and El Paso, Texas. One of the approximately 160+ applications that had been granted at press time was on 101.1 MHz in Palakta, Fla. Grants that caught our eye include one in luka, Miss., for Flash Cat Animal Advocacy, and another for Solar Garden Learning and Entertainment in Davis, Calif. Permittees have 18 months to build their stations.

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Logitek's flagship console is now even better with enhanced styling and functionality.

Updated for use with today's advanced audio streaming and networking technologies, the Mosaic gives you fast, easy access to sources and smooth, consistent operation no matter where it's used.

The Mosaic provides anywhere from four to 24 faders in a durable, attractive tabletop enclosure that can be placed anywhere or moved out of the way when not needed. OLED screens are used throughout the console and have been added to the Softkey module for easier source selection. We've made access to controls more intuitive and have illuminated key controls for use in any type of studio lighting.

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Logitek
Networked Audio Systems

STREAMING CODECS

(continued from page 8)

Peak indicators are now the most common indicator for monitoring and measuring program level, in production and transmission. Their importance is understandable, given the absolute headroom limit of digital audio.

However, the human ear does not evaluate signal peaks; we sense loudness in terms of a complex psychoacoustic process of audio frequency and duration, which the ITU loudness meter strives to indicate. Consequently, the inaccuracy of peak meters as a loudness indicator is a reason that Internet streams have such

relatively high acceptance. This suggests that listeners accept natural changes that result from dynamic range.)

With the help of loudness meters, especially ones that can display a measurement log over time, consistency in loudness can be easily achieved.

Fig. 5 illustrates the process, called "loudness normalization." In this chart, the stream at the left is logged for a few minutes, producing the solid blue line for short-term loudness and the solid red line for signal peaks. It has a long-term (average) loudness, indicated by the dotted blue line, of approximately -14 LUFS at the end of the sample period.

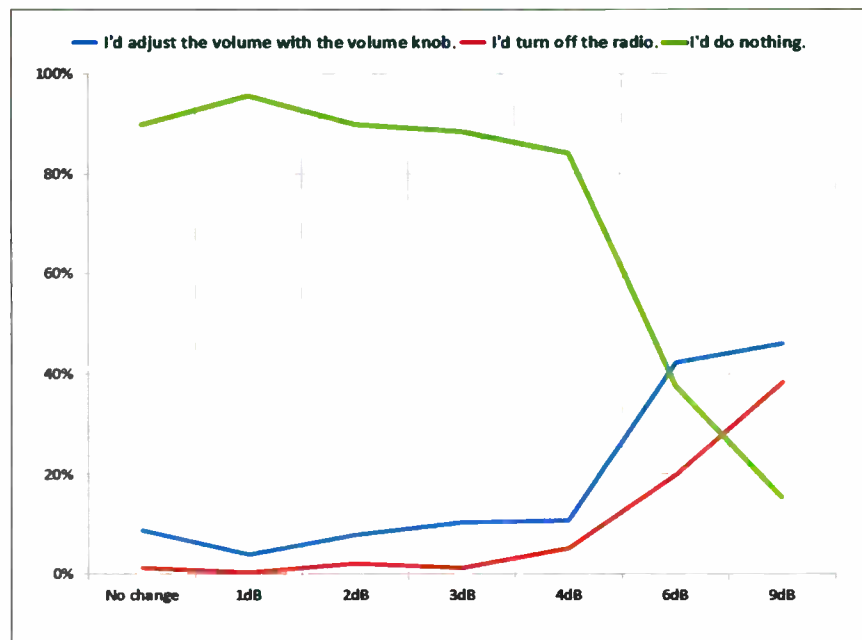


Fig. 4: Listener behavior with frequent changes in loudness

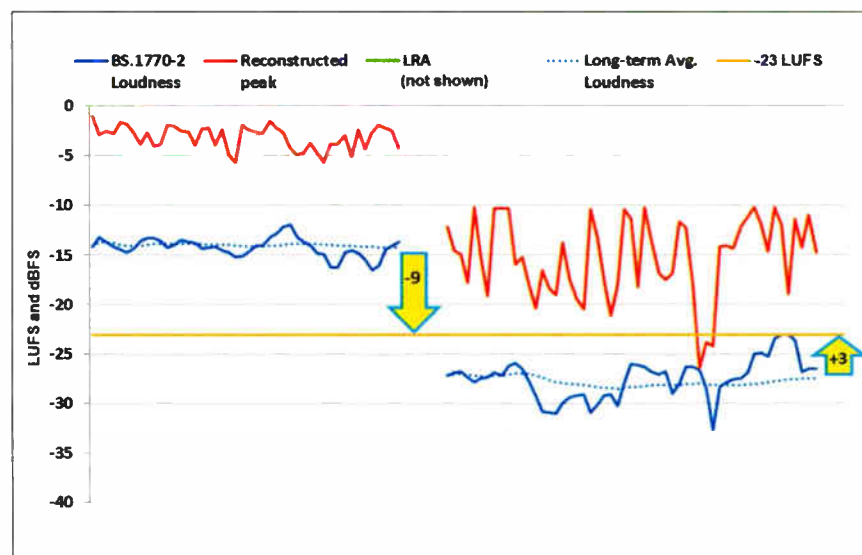


Fig. 5: "Loudness normalization" is illustrated. In this chart, the stream at the left is logged for a few minutes, producing the solid blue line for short-term loudness and the solid red line for signal peaks. It has a long-term (average) loudness, indicated by the dotted blue line, of approximately -14 LUFS at the end of the sample period.

before transmission. (It's been reported that some engineers have taken advantage of this headroom, by reducing the peak limiting, resulting in a more open and natural sound, I would submit.)

However, normalization in no way dictates how one should process their audio — some engineers or programmers prize a particular "sound" resulting from processing. This technique just encourages agreement between the media producers, which benefits listeners. It is nothing more than observance of a common standard for transmission loudness — there is nothing to prevent a rogue operator from pursuing a loudness war on the Internet.

Experimentally, NPR Labs has normalized a large number of streams and listened to them over a private test

stream in our Audio Lab, commuting in the car, even mowing the lawn (with ear buds, of course). My own impression is that normalization is easy to achieve and makes Internet streaming a more enjoyable experience.

The Consumer Electronics Association has established a working group, R07WG15, sponsored by the R07 Home Networks Committee, to evaluate techniques for improving listener satisfaction related to loudness. I look forward to working with the group and hope that readers will follow our progress and comment on their experiences.

John Kean is senior technologist, NPR Labs at National Public Radio.

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

The "loudness war" does exist on audio streams.

irregular loudness. If one wants to make audio reasonably consistent from stream to stream, and please listeners as they change streams, the ITU loudness meter is arguably the best tool for the job.

ANNOYANCE

NPR Labs' research found that listeners do respond — unfavorably — to changes in loudness. We were interested to learn what consumers thought of within-stream changes in loudness, as part of the major consumer study on codec selection. The codec selection study was covered in our first article. Listeners used a computer program to register their reaction to changes to various shifts in program volume (measured in LUFS), indicating when the changes occurred if they would do nothing, reach for a volume control (to turn it up or down), or, if repeated they would "turn off the radio."

Fig. 4 shows their responses: Beyond a 4 dB shift, annoyance rapidly sets in, and listeners would quickly change from "doing nothing" to "turn off." While this test was an in-stream measure of listener behavior, it suggests how listeners may feel if, for example, they are driving the car and change streams that are much louder or softer than others.

(Another test, designed to determine if natural changes in loudness within a program would affect listeners, found

Measurements should be taken for longer periods when the program has greater dynamic range. The other audio stream is logged for a similar time interval and has a long-term loudness of about -27 LUFS. A listener switching from the first to the second stream would hear a drop in loudness of approximately 13 dB.

Based on extensive study of programs from a range of broadcast material, the EBU adopted a target loudness of -23 LUFS for production and transmission. (The EBU R128 standard and the ATSC A85 standard for U.S. digital television share similar values and techniques for loudness normalization.) This loudness value permits most programs with greater dynamic range and signal peaks to fit safely under the digital full-scale limit.

Normalization of the two audio streams, then, simply lowers the encoding gain of stream number one by 9 dB (from -14 LUFS to -23 LUFS), and raises the gain of stream number two by 3 dB (from -27 LUFS to -23 LUFS). Voilà! The two streams now have a similar loudness.

CONSISTENCY

Using loudness metering at the production stage, and calibrated gain levels along the program chain, ensures that programs can be produced with known, consistent loudness, without relying on as much audio processing at the transmission point to correct variations in loudness. (For the same reason that signal peaks do not correspond well to our sense of loudness, peak-responding processing does not necessarily produce natural, consistent loudness in program audio.)

It is apparent that stream number one would have signal peaks that are well below full scale, probably because they are being limited by audio processing



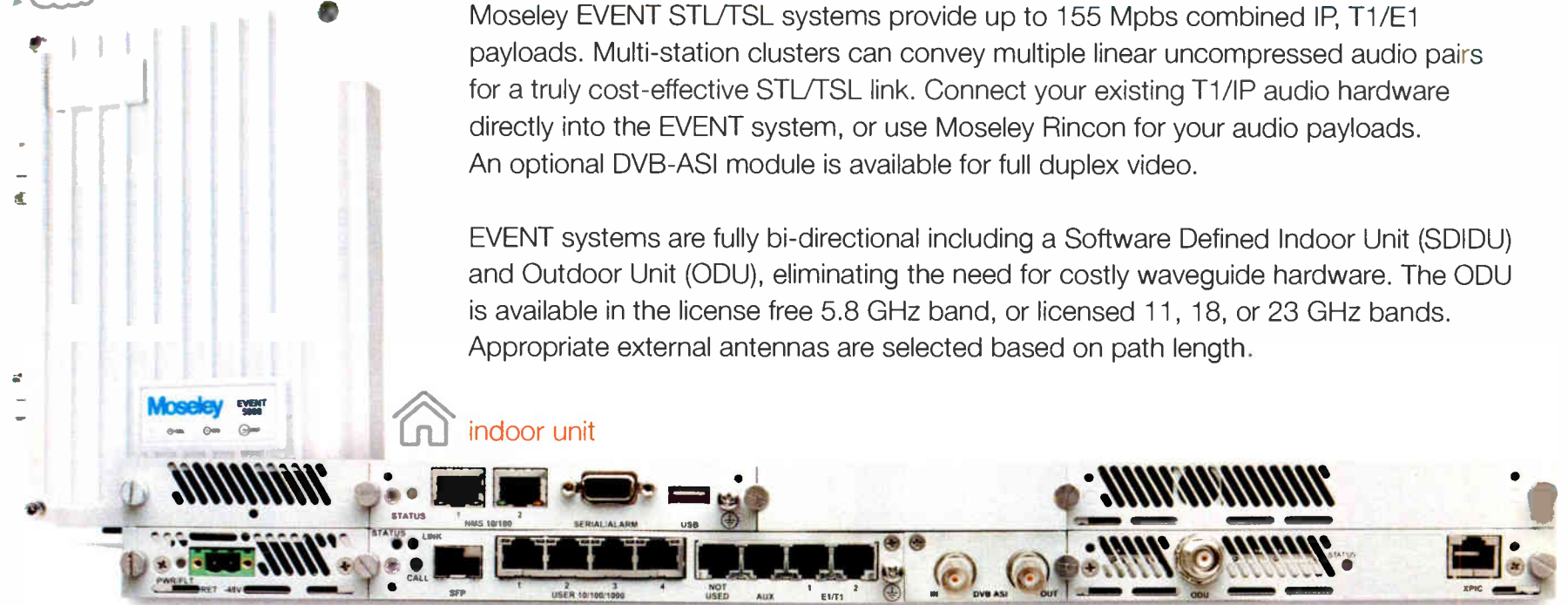
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EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz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



INTELLIGENT SYSTEM DESIGN

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



IP APPLIANCES AND APPLICATIONS

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

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Choose Your Own Static IP Address

Also, tips for finding some excellent (free) tools online

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

You find yourself at a remote broadcast site and you need to assign a static IP address for one of your devices. But no one at the site can tell you about

the router or its IP address.

Engineering consultant Frank Hertel offers steps to decide which IP address to use. A caution: You don't want to select an address that's going to cause an IP conflict for the client's operation.

One possibility is to gain access to one of the client's computers operating on the site's local area network. Follow

these steps.

First, click on the START icon at lower left of the computer screen (see Fig. 1). Within that figure, locate the "Search Programs and Files" (indicated with the #2 in the bubble).

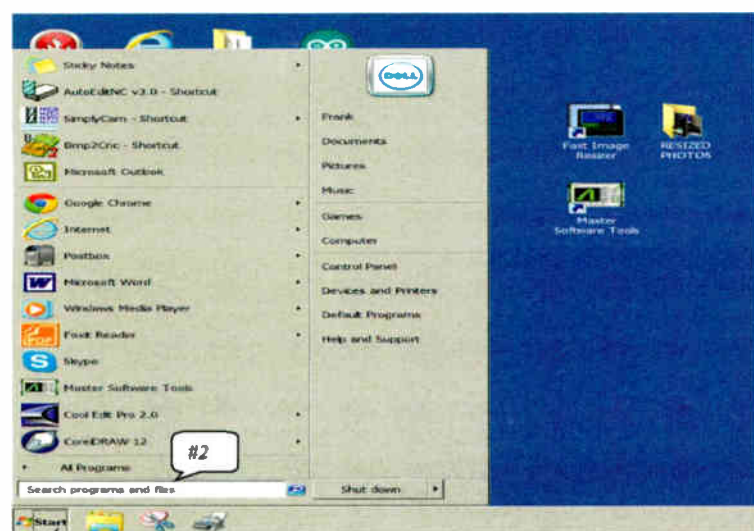
As shown in Fig. 2, type in CMD in the Search Programs and Files box, then press ENTER. Fig. 3 on page 14

shows the Command Line Screen, which appears after you do so.

As seen in Fig. 4, Type "arp -a" at the C prompt and press ENTER (note that the dash is the hyphen, the key next to the zero on your keyboard, rather than the longer en dash or em dash). The IP address table for the active/online devices will be displayed. These are devices in use on the LAN that is serviced by the switch to which you are connected.

There are limitations to using "arp -a." It will only let you see the IP addresses of the devices that are on the switch you

1 Click on the "START" icon (#1) (lower left of the screen)



Locate the "Search programs and files" box (#2)

2 In the "Search programs and files" box, type CMD and then press "ENTER"

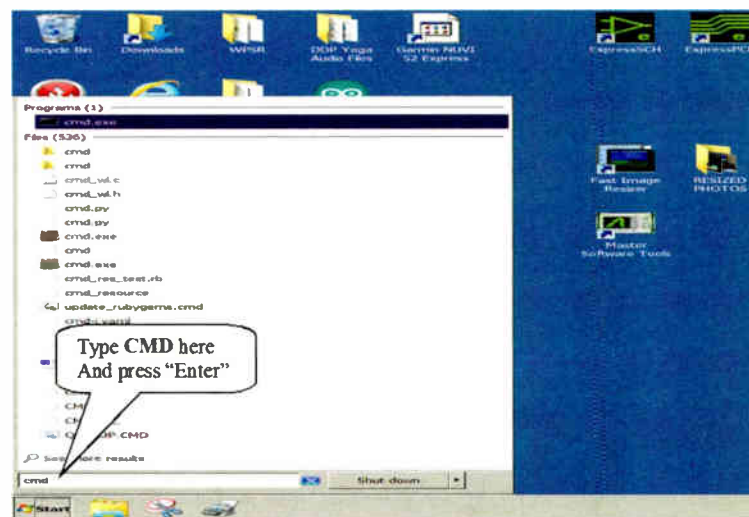


Fig. 1: The START button is the first step to identifying a static IP address.

Fig. 2: Type in CMD in the Search Programs and Files box.

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are using; it cannot see the IP addresses of other devices that are not connected directly to your specific switch.

This process likely will provide you with the information you'll need to aid in choosing an IP address. It will also ensure that you don't select a static IP address that is critical to the client's business operation.

You won't need to do this if your equipment can use DHCP IP addressing and if the addressing has been provided by the IT administrator who set up the LAN router.

Thanks, Frank, for a useful tip as remote season approaches.

Reach consultant Frank Hertel at newman-kees-hertel-rf-eng@twc.com.

The images shown in Figs. 1 through 4 are from a free program called ScreenPrint32. Frank Hertel has enjoyed using the program, which allows you to print what's on your computer screen. It will also let you capture any part of the screen image using a selection

(continued on page 14)



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The right tool makes all the difference.

Internet Radio is the future, and until now staying on top of your streaming audio performance has been a real challenge. Limited software tools and unreliable PC based solutions just aren't cutting it.

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610 Internet Radio Monitor



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- ✓ MP3, AAC and Ogg decoding.
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- ✓ iOS, Android remote control.
- ✓ Email/Text message alerting.
- ✓ SNMP control & monitoring.



BWWG ON AM

(continued from page 4)

computers, switching power supplies, compact fluorescent lights and fish tank thermostats; it says Part 15 controls are not effective, but: "We have no answers, only questions about why these sources are still allowed to contribute to the damage being done to the AM band."

The BWWG is (relatively) restrained about HD Radio but thinks "it may be time for an honest and rigorous revisiting of IBOC for AM to see if turning it off can help revitalize this troubled band by giving amplitude modulation signals 'breathing room.'" It also cites bandwidth standards adopted by some broadcasters that reduce analog audio fidelity as well as "compromise advantages" that favor digital but hurt coverage of adjacent-channel stations. Blending and noise floor problems exacerbate the digital situation.

RECEIVER STANDARDS

The group's comments are well worth reading. (I've saved them for you at <http://bit.ly/lmGcAzF>.)

They further want to see receiver standards that mandate or encourage use of synchronous AM detection or other detection methods that can help stave off electrical noise. "The commission regulates standards for receivers in other services. Why not do this as a key component for AM band resurrection?"

Dramatically, BWWG suggests that Congress should not allow manufacturers to market FM-only receivers, even in cars. It feels that Congress could do this as part of a national public warning strategy, treating AM as a national emergency resource.

If FM translators are part of AM revitalization, BWWG continues, tie each to an AM station and specify that the license is non-transferrable. Allow installation of translators at AM transmitter sites; and make it clear that a translator can only be on the air if the AM is on the air, except for night operation by daytimers.

It says the FCC should not apply the "ratchet rule" in certain cases, to avoid unintended consequences. (For more on this, see radioworld.com/ratchet.) The group further asks that the FCC require

stations to certify that reports for tests as described in Section 73.44 have been carried out at least once a year. And they suggest making better use of the band above 1610 kHz: "Directional array AM (DA) stations literally running in 'sardine can' or narrow local AM channel conditions should be given preference in the expanded band, as well as for other options that will allow for power and coverage increases."

The FCC should explore making different use of 530 kHz, too. Should the frequency be allocated to bring back "clearer channel" stations that could bring AM coverage, "especially for major emergencies," to areas where service is missing?

Daytime stations would be permitted Pre-Sunrise Authority at 500 watts, Post-Sunset Authority at 500 W at least until 6 p.m. Protection coverage for Class A stations would be reduced, to help AMs that are running "at or near financial failure an opportunity to serve a wider audience." Further, AMs should be allowed to use any antenna/transmitter, with no minimum efficiency, basically as long as annual NRSC

measurements show compliance; but BWWG wants the FCC to stiffen and enforce rules against stations running more than 10 percent over.

It also suggests an upgrade preference for licensees that promise to maintain emergency power generation and other "resilience measures" and that commit in writing to devote resources to emergency public information as needed.

The group concludes by saying no ideas filed with the FCC will produce a total cure for the AM patient. "Full recovery will require aftercare by responsible licensees offering quality local programming and public service that really matters to the public, and to the overall public safety emergency communications picture."

I think the Broadcast Warning Working Group offers great ideas here, though I'm dubious about the chances (and advisability) of a government mandate. Usually the market knows best.

What do you think? Email me at radioworld@nbmedia.com, attention Letter to the Editor. To see more opinions about AM, visit radioworld.com/amcomments. To read an obituary of the late Larry Estlack, go to our website and enter keyword Estlack.

WORKBENCH

(continued from page 12)

box. Then you can use what you captured in emails or presentations. Frank uses it when preparing manuals for clients or operating instruction manuals for operators.

Google Screen print32 for the download. Several are provided; try the one at screenprint32.en.softonic.com.

While we're on the topic of free software, broadcast engineer Dan Slentz, a fellow RW contributor, offers more "must haves."

Most engineers are familiar with the Visio drawing program. You're probably also familiar with its price. Dan suggests Draw.IO, a free tool excellent for when you need to document signal flow or make flow charts: www.draw.io.

When he's not engineering, Dan Slentz does voiceover work. He also shares a link that offers free ISDN over the Internet using Google Chrome. Dan says it is ideal for VO work. Find out more at ipDTL.com.

Is there a favorite free or low-cost software package you couldn't live without? Send the info my way: johnpbisset@gmail.com. Reach Dan Slentz at dan_slentz@yahoo.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 is SBE Certified and is a past recipient of the SBE's Educator of the Year Award.

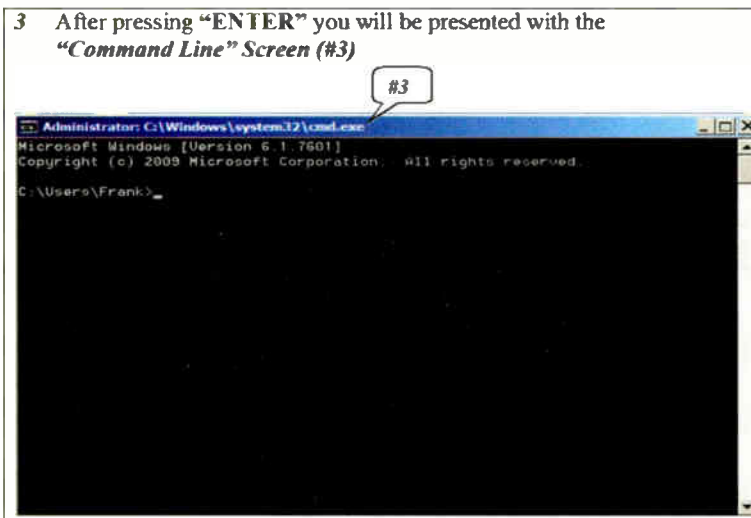


Fig. 3: The Command Line Screen

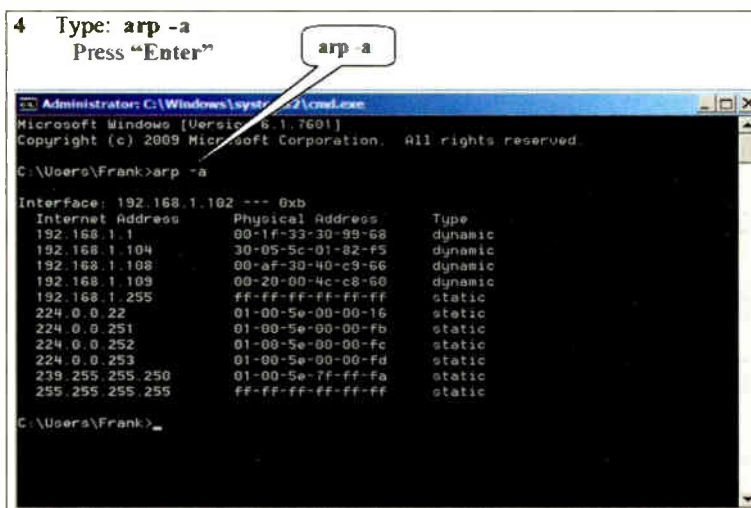


Fig. 4: The IP Address Table

WHO'S BUYINGWHAT

Greater Media Inc.'s New Jersey facility WRAT(FM) recently installed two pairs of Harman's JBL LSR series studio monitors as part of a station-wide renovation. Regional manufacturer's representative Sigmnet Corp. provided the JBL equipment.

With a pair of LSR305 studio monitors in a small production room and LSR308 studio monitors in the main production room, the creative department has improved the accuracy of production reference points, according to a release.

An additional pair of LSR305s has been installed in the home studio of the program manager of WJRZ(FM), another Greater Media New Jersey station.

Sigmnet also delivered three pairs of JBL Control 5 loudspeakers for portable use during events.

During the renovation, Director of Technical Operations, Keith Smeal demoed AKG microphones, provided by Sigmnet consisting of C414s, C214s, 4500 BCs, C3000s and a D12 VR was delivered to the facility. Smeal has plans to use 60 AKG C414s in his studios for a full microphone upgrade in 2014.



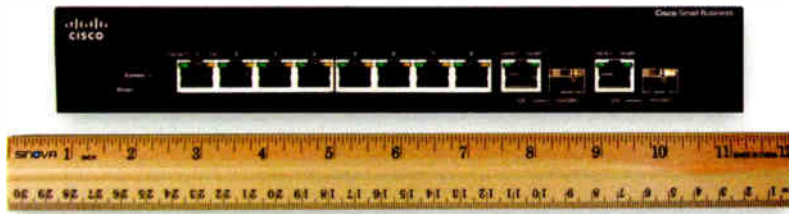
Journalist Maria Calabro

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We know that remotes generate revenue and can help boost ratings. But as broadcasters, we also serve the public trust. When called to that higher duty such as going live from a disaster zone or breaking news location, the ACCESS 2USB BRIC IP Audio Codec delivers the clearest, most reliable connections.

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Sizing the Ethernet Switch Can Save BIG!

You might have been told in the past to go with the biggest switch you can afford for your audio over IP network. But you might not have to...

...so why spend extra for something you don't need? A lot of older AoIP system designs don't manage the multicast streams, and actually keep the pathway open for them, which takes up valuable, expensive resources in the switch. But because the WheatNet-IP system continually responds to IGMP queries checking for usable source groupings on the network, any unneeded multicast streams are pruned as a result.

Read the rest of the story here: INN7.wheatstone.com

Processing for PPM

Does audio processing have an affect on PPM ratings? You bet it does...

...according to Wheatstone audio engineer Mike Erickson. "The biggest issue is making sure that audio levels don't fall below a certain threshold," he said. PPM encoders will stop encoding audio, as many have found out, if they are not fed a steady diet of audio. "When the encoder stops, the PPM (encoded) signals can no longer be 'heard' and detected by PPM devices that track listenership," he explained.

An easy out is to put an AGC in front of the encoder, and any Wheatstone audio processor will be able handle that with ease (our stuff can actually adapt to external processors without any user adjustment). For other processors that are not self-adjusting or even for ours that are, Mike suggests broadcasters establish a standard set of reference levels for audio sources as a guideline for board operators who load music, imaging and spots into the automation system.

Read the rest of the story here: INN7.wheatstone.com





Introducing the Audioarts IP-16

Audioarts' WheatNet-IP console gets a bigger sibling with a brand new 16-fader version

We just added four channels to our popular IP-12 console frame to give our broadcast customers a bigger, 16-channel console at a price they can afford. Each of its 16 input modules is equipped with an LED source name display and an A/B source selector; sources can be set via a rotary encoder in the master section. Each input module has access to four program busses and has cue and talkback switches. A 100mm long-throw fader and lighted channel ON/OFF switches round out the module. Best of all, the IP-16 has access to all your sources wherever they live on your WheatNet-IP network.

Click here to learn more: INN7.wheatstone.com

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Once you get that all-important construction permit...Then what?

We've been thinking about your studio options for some time, and we can pretty much guarantee that the studio you build today will be better and more affordable than the one you might have sketched out on a yellow legal pad back in the early '00s. It all starts with a plan, so give our sales engineers a call to go over your options.

Click here to learn more: INN7.wheatstone.com



AIR-1 is a perfect console for an LPFM station

BLADE HONING 101 What's Inside A BLADE...part 1

Each BLADE on the Intelligent Network is exceptionally powerful... but do you know about the incredible functionality inside EVERY BLADE?

By now, it's a good bet you're aware of the WheatNet-IP Intelligent Network. You know about its advantages - how it's obsessively compulsive about redundancy. How it can repair itself, configure itself, run rings around the competition while still having much greater bandwidth (due to the WheatNet-IP system's Gigabit Ethernet throughput) - enough, in fact, to not only handle our increased functionality today, but well into the future.

So we figured it's time to let you know a little more about those boxes you plug into the Intelligent Network. The ones that contribute to its intelligence. They're called BLADES and from inception have been far more advanced than any boxes on any other networks out there. Take a look and consider how you'd put all that to work in YOUR WheatNet-IP system.



Two 8x2 Stereo Virtual Utility Mixers

These can be used for a wide range of applications; for example, using Wheatstone's ACI Automation Control Interface, your automation system can control the mix for satellite or local insertion switching.

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Any system source to any destination on that BLADE



ACI (Automation Control Interface)

An embedded interface for complete external control over IP for both the BLADE itself and its Utility Mixers



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CLUB WHEAT:
INSIDE THE IDEA FACTORY

There's a LOT more in each BLADE and next month we'll continue the tour. In the meantime, visit us on the web to learn more! INN7.wheatstone.com



NATE Rebrands Annual Convention

Tower industry group gathers in San Diego amid a business boom

BY CRAIG JOHNSTON

Amid boom times for its member companies, the National Association of Tower Erectors will open the doors of San Diego's Town and Country Resort & Convention Center for the organization's annual convention and exhibition, Feb. 24-27.

"It's a very busy time in the industry," said NATE Executive Director Todd Schlekeway. "You had all of the LTE 4G buildouts ongoing. Verizon has completed their network, they're actually back out doing Advanced Wireless Service installation. AT&T is actually finishing their 4G buildout, and T-Mobile and Sprint are just starting theirs.

"That demand has led to a huge workforce demand, and there's a shortage of workers in our industry."

NATE also is rebranding the convention NATE UNITE.

"It summarizes our efforts to bring the entire industry, and the carriers, power owners and power construction firms that are the largest part of our membership," said Schlekeway.

"There's a whole ecosystem, [including] the broadcast group, that has a vital role in our industry. NATE UNITE represents bringing everyone united to work together to promote safety in the industry."

The trade association was founded by companies whose primary function was erecting, servicing, constructing or maintaining communication towers or similar structures. The hallmark of NATE, headquartered in South Dakota, has been worker safety; the first and last of its several mission statements mention safety, and the convention program includes a healthy dose of relevant sessions.

SAFETY FIRST

"We double down on safety," said Schlekeway. "We think each member company needs to create that culture of safety within their own organization, and each individual employee needs to make it paramount, a top priority, every time they step on a tower site."

This year NATE has expanded cer-



tification courses offered at its convention to include the NATE Authorized Climber Course, NATE Competent Climber/Competent Rescuer Course, OSHA 10-Hour Training Course, Medium-Intensity Lighting (LED) Installation and Maintenance Course, a PIM (Passive InterModulation) Testing Certification Course, and a Competent Rigging/Signaling Course. Participants must register in advance, and be employed by a NATE member company.

The NATE convention will provide three tracks of educational sessions: Technical, Leadership and Administrative. These will update attendees on how technological advancements and standards will affect project performance and implementation.

Said Schlekeway, "You'll see an eclectic mix of exhibitors — we have the manufacturers, wholesalers and suppliers of the equipment, telecom equipment, the RF safety equipment, the safety harnesses and lifting equipment, and the personal protective equipment that tower climbers wear."

He adds, "We have a lot of training companies that are members of NATE, and most of them exhibit at our show. The exhibit floor is an important part of the networking and offering leads to our member companies, and getting exposed to new products that are coming on the market, and new technologies."

ANTENNAS UP

The NATE convention could also be fertile ground for broadcast radio tower owners shopping for communications companies looking to site their antennas.

"There's such a demand right now,"

said Schlekeway. "Of course it's going to hinge on what type a structure the tower is, and whether it's structurally sound enough to host more antennas and more equipment."

With the cellular network companies driving demand for NATE mem-

ber's services, it's appropriate that the organization's convention be keynoted by Martin Cooper, chairman and co-founder of Dyna LLC, co-founder of ArrayComm LLC, and innovator of the Jitterbug cellphone and service.

Cooper conceived the first portable cellular phone in 1973 and is recognized as an innovator in spectrum management. He has been involved in, and contributed to, numerous innovations in personal wireless communications in his 50-year career. Radio industry readers take note: He also was involved in Motorola's AM stereo efforts.

Cooper's keynote address will be delivered starting at noon at the NATE Keynote Speaker Luncheon on Feb. 26.

Another high-profile speaker will be Dr. David Michaels, assistant secretary of Labor for Occupational Safety and Health, who will speak at the Feb. 25 NATE Keynote Speaker Luncheon,



IF YOU GO

What: NATE UNITE 2014 Conference & Exposition

Who: Companies and individuals involved with or interested in broadcast and telecommunication tower erection, service and maintenance industry.

Where: Town and Country Resort & Convention Center, San Diego

When: Feb. 24-27

How: natehome.com

How Much: \$149-\$449 (before Feb. 14), \$259-\$599

"It's a very busy time in the industry."

— Todd Schlekeway

starting at noon.

As assistant secretary, according to an official biography, he has worked to strengthen the agency's enforcement in high-risk industries, improve OSHA's whistleblower protection program, promote commonsense worker protection programs and standards, expand compliance assistance provided to small employers, and increase outreach to the vulnerable populations who are at greatest risk for work-related injury and illness. He has also increased OSHA's focus and capabilities in the areas of data analysis and program evaluation.

Sessions at the conference will address topics such as "The Primary Reason for Tower Accidents," "Overloaded Mounts and Your Safety," "LED Lighting" and "Social Media, Networking and Marketing for the Tower Industry." Exhibits take place on Tuesday and Wednesday of the show.



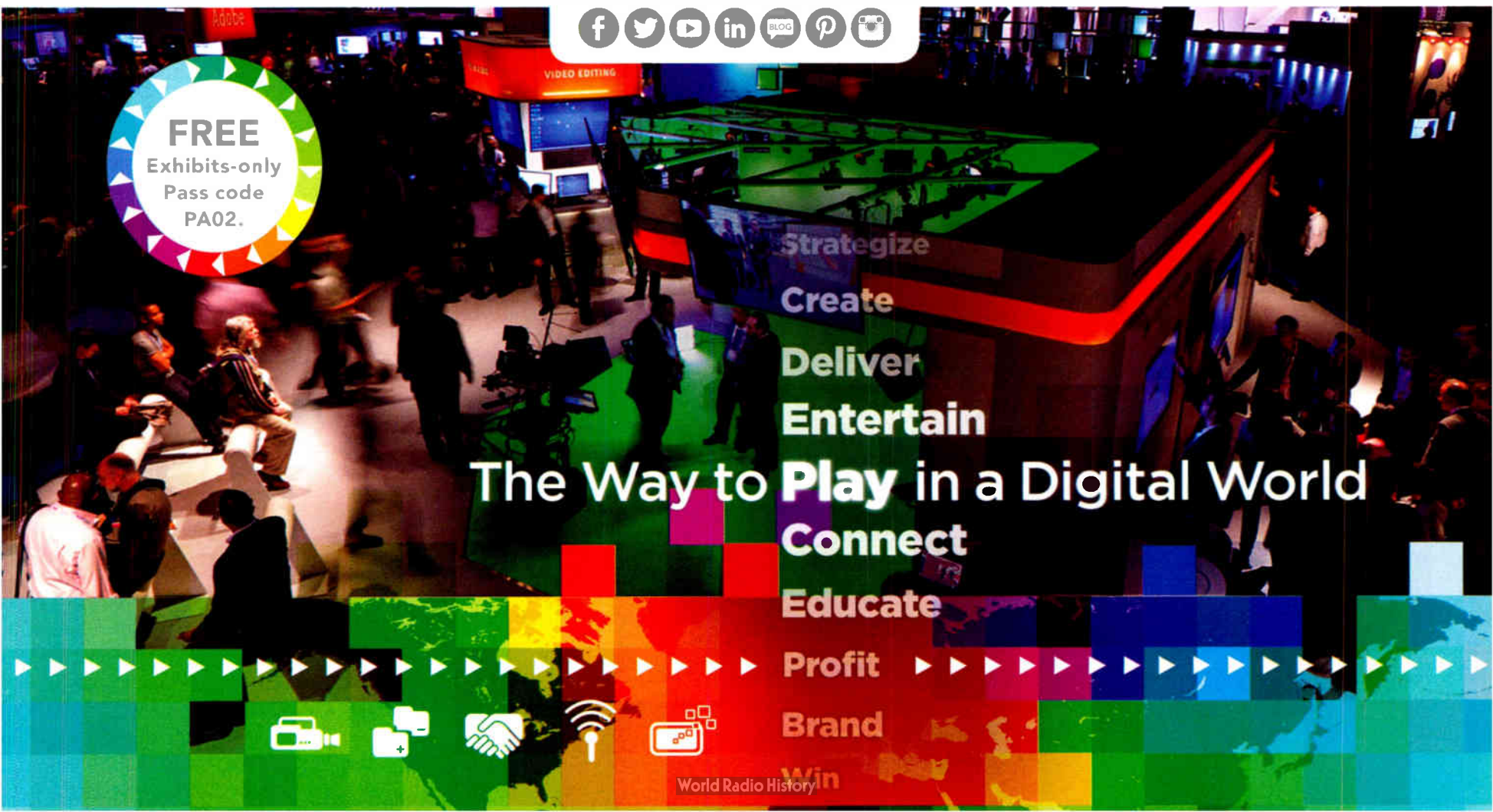
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Adjust Rules for NRSC Measurements

Commentary: Here's something the FCC can do to help many AM stations

TECHTIPS

BY MARK PERSONS

Normally I offer tech tips but this time I want to express a personal opinion on a topic important to me.

If it is a goal of the Federal Communications Commission to reduce regulatory and financial burden on AM broadcasters, then here is one way to help: Modify FCC rule 73.1590(a)(6) requiring annual occupied bandwidth and RF harmonic radiation measurements on AM stations, known as AM NRSC measurements.

You might remember that NRSC is the National Radio Systems Committee, which created standards for occupied bandwidth on AM and FM stations. The FCC turned those standards into rules.

I propose to exempt AM stations that use solid-state transmitters from the existing requirement to make annual

measurements.

The rules were written when vacuum tubes were often used in transmitter designs. Tube performance degrades with time. The result is that tubes must be replaced every year or two in order to maintain operating specifications. Beyond that time in service, an AM transmitter may not be able to comply with FCC rules for occupied bandwidth, which results in interference to other stations on the dial. In the case of FM transmitters, a weak/soft tube does not normally cause bandwidth issues.

For AM stations continuing to use tube transmitters, this annual requirement should still apply. The requirement that all AM and FM licensees keep their equipment in compliance with FCC rules should stay in place, regardless of which transmitter design they use.

Changes in any AM or FM equipment that could alter the occupied bandwidth should automatically trigger the requirement to do measurements to assure

compliance with FCC rules. A 30-day window to make successful compliance measurements sounds appropriate to me. The equipment change could be as simple as replacing an audio processor with a different model number.

This rule revision would bring AM stations into the same level of scrutiny that FM stations should meet; I feel my suggested changes will also assure FM compliance.

SPECTRAL ANALYSIS

Note that any change in equipment lineup could unwittingly cause bandwidth problems. The only way to be sure the station is FCC legal is to do spectral analysis.

We don't even have operator licenses anymore. Now is the time for the FCC to make the changes I outlined.

Further, the procedure for AM and FM stations should be written to require listing model numbers of studio transmitter links, audio processors and transmitters. (Serial numbers are not important.) In the case of FM stations, audio processors, stereo generators, RDS/RBDS generators, studio transmitter links and transmitters should be listed.

In essence, anything capable of controlling or changing occupied bandwidth should be documented.

The report would not be placed in a public file. Instead it would go into the station's engineering file, which is not seen by the public. No change there. In that way, a station's "custom lineup" of audio processing would not be revealed to competitors.

FCC FM rule 73.1590(d) regarding measurement data needs to be modified to strike the words "for a period of 2 years, and on request must be made available during that time to duly authorized representatives of the FCC." This re-written rule would require measurement data to be kept on hand until superseded by a newer report. It is documented proof of legal operation.

An FCC inspector or mock inspector



Mark Persons

would request this report when visiting a station. He or she would check to see if the same equipment is employed, even if it is years later. Any report that did not have this data would be invalid.

Practically speaking, my proposal would mean that all or most stations would need to perform a new set of measurements based on these criteria in the immediate future. Again, any changes in the equipment lineup should require a new set of measurements to assure FCC compliance.

VIGILANCE

On another note, station technical consultants need to be vigilant in watching for new transmitter sites or changes to existing transmitter sites within five miles or so of the transmitters they are watching after. A new onsite or offsite transmitter in the AM or FM band might create mixing products that could render the station illegal under FCC rules.

Mandatory annual measurements are not needed, in my opinion. Just watching after the store, so to speak, is what is necessary.

For perspective, technology has improved to make equipment more reliable and trouble-free. FCC rules have been modified in the past to keep up, even if they did lag a bit from reality. Stations were required to read and log all operating parameters every half hour up until about 40 years ago. Monthly carrier frequency measurements were required until about 30 years ago, as were annual audio proof of performance measurements.

We don't even have operator licenses anymore. Now is the time for the FCC to make the changes I outlined. It is good for the radio broadcast industry and makes perfect sense.

Comment on this or any article. Write to radioworld@nbmedia.com.

Mark Persons, WQMH, is a Certified Professional Broadcast Engineer and has more than 30 years' experience. His website is www.mwpersons.com.

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WFMU Explores Funding vs. Content

RadioVision conference looks into emerging models for production financing

BY PAUL RIISMANDEL

Whatever the future of radio will be, it must be funded.

This is an inevitable truth, whether we're talking about commercial or non-commercial stations; those owned by universities or those run by non-profits; private companies or public corporations. This issue was front and center at WFMU(FM)'s third RadioVision festival last fall in New York.

RadioVision Curator Benjamin Walker describes the event as "a convergence of radio and technology." WFMU Station Manager Ken Freedman says, "We sort of define radio a lot more widely than your typical conference, encompassing everything that a radio station should be doing, especially online." RadioVision's website called the event "a festival celebrating radio's future as it takes on new forms in the digital age for the medium's fans, tinkerers and future thinkers."

WFMU is a scrappy and award-winning free-form station based in Jersey City, N.J. It has an international reputation, in part because it embraced live and on-demand Internet streaming early. The UK's Telegraph newspaper recently named WFMU one of the best Internet radio stations and "possibly the world's coolest."

RELATIONSHIP

Walker said a central question for RadioVision is how a broadcaster can "stay true to yourself and find the right path."

According to Freedman, this is about "being sustainable," particularly if you are an independent producer, a public broadcaster or a participant in community radio. Furthermore, "Being non-commercial is becoming a more interesting question all the time." Blurring of lines between commercial and non-commercial was evident during panels dedicated to financing.

When it comes to fundraising, "You can't treat people like consumers. It has to be a relationship," so says Chris Bannon, vice president of advancement for New York City public station WNYC, who shared a panel about new funding models for radio production. "We're not sure we can make enough money on the radio alone to support what we want to do."

The station produces "Freakonomics Radio," based on the popular Freakonomics books by journalist Stephen



James Del of Gawker Media and Bob Garfield of WNYC/"On the Media."

Dubner and economist Steven Levitt. The program, in its fourth season, was born as a podcast and also airs on public stations.

With Internet programming, non-commercial stations are freed from FCC restrictions on underwriting, potentially

You can't treat people like consumers. It has to be a relationship.

— Chris Bannon

opening public radio podcasts to more traditional advertising. But that doesn't mean programmers always use that freedom.

"'Planet Money' will never do that because we're deeply in NPR," said Alex Blumberg, contributing editor for the program and a producer for "This American Life." Bannon of WNYC agreed, saying, "Our voice is a noncommercial voice. ... [While] we're slightly looser online, we've decided the tone on-air is what we want to have for our sponsorships online." Thus for example you won't hear an ad for Stamp.com at the top of a podcast hosted by WNYC's Brian Lehrer, even though that company is a prominent podcast and radio advertiser.

According to Bannon, an advantage

of producing "Freakonomics Radio" as a podcast is that, "We can figure out where and when [people] listen." He said the podcast alone now reaches 3.5 million people a month, whereas the radio numbers are harder to track because the program is aired at different times in different places.

Even so, Bannon said the program loses money; so WNYC launched a membership campaign for the "Freakonomics Radio" podcast. An element of the campaign was a pre-roll announcement for the online version similar to on-air pitches during pledge drives.

Blumberg said "Planet Money" conducted a Kickstarter funding campaign to design and manufacture a T-shirt; the initial goal was \$50,000 but the campaign ended up raising \$580,000 for 25,000 shirts.

Yet the show raised money only for the shirts, not the program. Why? "You're always in an awkward position at NPR when you're fundraising

(continued on page 23)

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You Need a Social Media Manager

Texting, tweeting and other social functions can constitute a job of their own

Broadcast radio has a serious communication problem.

We may be terrific at sending content out but we're terrible at receiving from, and responding to, our listeners.

Even when the main methods of feedback came from the phone lines in the control room, faxes and mail, radio stations performed poorly. These days, the norm outside of radio and television is a continual conversation, so broadcast stations run the risk of appearing out of touch and potentially even irrelevant.

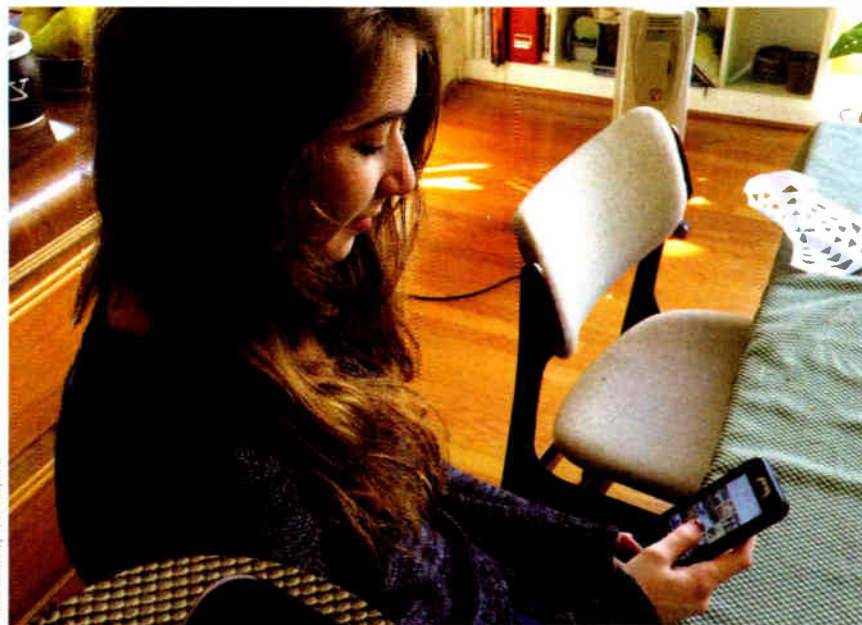
Active media consumers are growing accustomed to offering their opinion instantly, yet many radio stations are neither set up to receive feedback properly nor capable of doing anything with communication once it is received. The typical program director is too busy to handle this function, so I'm going to suggest something radical for our industry: Consider creating the new position of *social media manager*.

SMS? YES

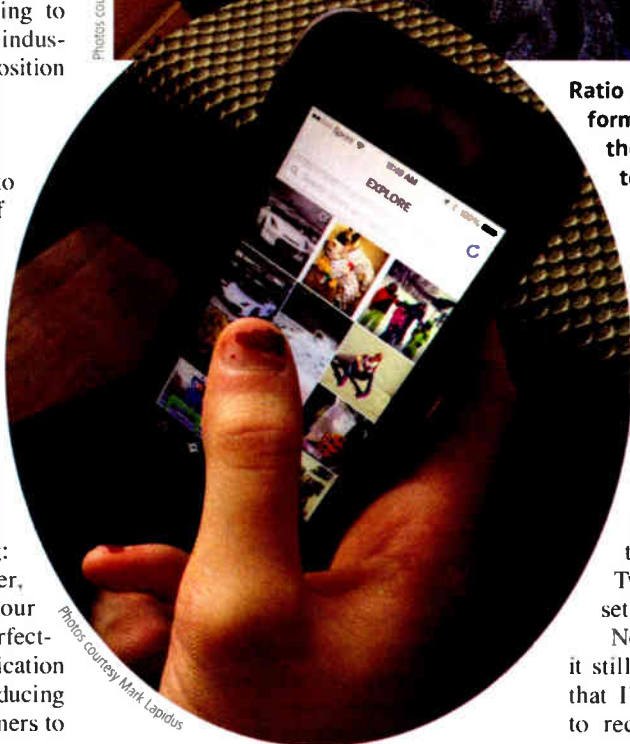
While you may not be able to accomplish the herculean feat of creating a full-time role right now, you may be able to string together enough freelance funds to make this a 20-hour-a-week job for starters. Assuming you hire correctly for the role, this will also give you ammunition for mounting a proposal for the next budget cycle.

Let's get down to details.

The primary reception buckets you should consider operating: Mobile/SMS, Facebook, Twitter, Instagram, email, posts to your website(s) and phone calls. It's perfectly okay to expand your communication toolset, but think twice before reducing any method that allows your listeners to



Photos courtesy Mark Lapidus



Photos courtesy Mark Lapidus

Ratio stations should embrace every form of communication available to them — especially easy-to-use texting and apps.

communicate with you.

A perfect example of premature abandonment concerns SMS, or text messaging. As Twitter's growth has exploded and the media has touted its power, we've witnessed stations either underutilizing or completely dropping the art of SMS.

The assumption is that texting is yesterday's news and that pretty much everybody does Twitter. Even among the younger set, though, that's quite a reach.

Not only is SMS alive and well, it still has the best open rate in media that I've ever seen. If you aren't able to receive communication from your

PROMO POWER



Mark Lapidus

listeners 24/7 by SMS, you are missing a huge part of your audience and eliminating the easiest and fastest way to create instant engagement.

And while we're on the subject of mobile, I must say I'm bewildered to see that most of the mobile (broadcast) radio streaming apps lack any method of sending feedback — thumbs up or down on songs, messaging back to the station or voting on polls.

The primary function of your new social media manager will be to engage your listeners personally by first closing the loop in received communication and then later proactively communicating. As he figures out how best to accomplish these tasks, he will then train and direct your on-air personalities.

BEYOND SELLING

A word of supreme caution: Radio people are natural-born marketers. Every successful DJ in America is great at teasing the next song or event, whether on- or off-air. Plus, the inclination of program directors is to use all their power to promote tune-in and time spent listening, so they encourage DJs to sell, sell, sell!

However, engagement and communication with listeners is not primarily about marketing, and this is a challenging adjustment for those so accustomed to messaging that's all about themselves. Social media engagement is primarily about real content.

Here's where the light bulb is supposed to go off. Your social media manager and personalities must live and love your actual product and be able to communicate emotionally with listeners about it. As a news or talk station, your engagement is topically driven and so your social media manager has to be a news junkie with an understanding of how to deal with divergent opinions on hot topics.

As a music station, your social media manager must be aware of the latest song releases, tours, personality news, pictures and gossip. Yes, you should still carefully insert marketing messages into your content discussions; do this by making it relevant to the ongoing discussion and not just random plugs for on-air tune-in.

People continue to talk about active communication engagement, or social media, as part of the future. This is not correct. This is happening now, with or without radio's involvement, so make it your business to start socializing.

Mark Lapidus is president of Lapidus Media. He can be reached at marklapidus@verizon.net.

MARKETPLACE

Clearing the Air: Wheatstone has released what it calls a "major software upgrade" for its AirAura X3 processor.

Version 3.6.7 includes Codec Masking, which a release describes as an "algorithm to help reduce the annoying

artifacts of bit-reduced program material that may have been downloaded from 'questionable' online sources."

It also adds Wheatstone's recently released baseband192 digital composite scheme. The release says that baseband192 has been successfully tested with BE, Harris and Nautel FM exciters.

The company says that beta testers reported that the new version increased loudness without increasing



distortion. "It further improves loudness, audio quality, and distortion control, and includes more than 50 new factory presets tuned to take advantage of the new technologies included in the software upgrade," the company says.

The release is applicable with all AirAura processors running software v 1.2 or higher. It is a free upgrade.

Info: wheatstone-processing.com

RADIOVISION

(continued from page 21)

because of the relationship with the individual stations," Blumberg said. The program is a co-production between NPR and "This American Life," and its stories air each week on the nationally syndicated "All Things Considered" and "Morning Edition."

"The public radio stations are independent and they have their own fundraisers. So if we all raise money at the same time, it's a mess."

While paid subscriptions could be another option for supporting online content, Bannon said, "My hope is that we continue to give everything away for free." Appealing to the founding principles of public broadcasting, he said, "We don't want to deny people access from things that are publicly funded."

NATIVE ADS

As radio broadcasters explore new sources of income, Walker and Freedman said, the experiences of other online pioneers in the area of native advertising hold lessons.

There has been growing debate in the media press about the practice. It flared when The Atlantic received stinging criticism for a native ad it ran for Scientology, an ad it subsequently pulled within a day.

Rob Walker, journalist and author of the book "Consumed," moderated a panel and posed a provocative question about native advertising: "Is this a new opportunity for creators? Or a fresh hell of heartbreak, corruption and lies?"

Bob Garfield, co-host of NPR's media analysis program "On the Media," said native advertising isn't necessarily new. There have been "things called 'advertorials' that sort



From left, Chris Bannon of WNYC, Alex Blumberg of "Planet Money" and Liz Berg of WFMU.

of look like a New York Times article ... [but] the Times makes sure the headline type is different ... so nobody can be confused." Such confusion, he said, is where lines are problems arise.

James Del, advertising director for Gawker.com, compared contemporary native advertising to "when a radio broadcaster reads some ad copy he or she didn't write," blending it seamlessly into a voice break.

It takes "the frame of the content, [like] a tweet or a post" that is similar to a site's typical output but is sponsored by an advertiser. Walker said this "looks the same as regular content, but is labeled as sponsored content."

Garfield said advertisers know people will click on native advertising "at a rate vastly greater than anything that looks like an ad, because they don't know it's an ad. They're being tricked, duped. It's insufficiently labeled." The risk is not just for the audience, he warned. "Every single ad that you run

that tricks the reader, you slice the golden egg, one slice at a time. The trust and credibility will be gone."

Garfield also drew parallels between native advertising and radio underwriting.

"Weirdly enough, at least on the national level there is more of a direct connection" between funders and producers, he said. "Advertisers have more control over content than they had in commercial [radio] because you can earmark for science coverage or something like that. ... That has always made me a little queasy, too."

Garfield said of the rise of native advertising, "The Internet creates a vast supply of content needing advertising. So the money that used to flow in to underwrite content is just drying up, disbursed upon millions of individual media. Nobody has the critical mass of advertising revenue to create quality stuff."

This echoed a point made by Alex

Blumberg of "Planet Money." He said that with the ubiquity of free content online, "The whole world is moving to the public radio model, and I hope we all get better at it. ... If you can steal anything or get it online for free, it is incumbent on the artists to make the pitch for why you should pay for it."

Producers face questions of integrity, especially those who want to work in public and noncommercial radio, along side the ever-present need for funding. Garfield advised, "Don't sell your creative soul along the way, or trick your listeners. The main thing is editorial independence."

The takeaway from RadioVision is that there are many emerging models for financing production, but it's not yet clear which ones will pay off over time.

Paul Riismandel is a 20 year veteran of community and college radio. He is co-founder and technology editor of RadioSurvivor.com.









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DIY PROJECTS

BY CHUCK BULLETT

I had an inquiry from our VP of programming concerning his office speakers. Were they blown? The JBL 4408s were his favorites; was there anything we could do?

Well, yes, there was something we could do: Replace them immediately with brand-new 4410s!

A perception that the larger speakers would sound better was perhaps not entirely justified (and they're hungrier for power now); but it was an easy "sell" and a quick fix. And I used a Brother P-Touch labeler to create a position called "11" on his amplifier's volume control. Suffice it to say that he was happy to get the larger speakers to debut new music ads on the station.

But back to the troubled 4408s.

Once they were in our shop, a little investigation revealed their real problem. The foam component surrounding the epoxy-impregnated speaker cone was completely rotted and required replacement. What had contributed to the foam's early demise? I was unsure; but that particular speaker sat in direct California sunlight all day long on a credenza in an office with large windows. Its sister 4408 had been in a darker area in the PD's office and showed no signs of early failure.

A little Internet research turned up SpeakerWorks.com (www.speakerworks.com), a supply house for DIYers that appeared committed to a high level of customer service, as evidenced by the detailed instructions supplied with each order. After prowling around the website for about 15 minutes I established that I could repair these woofers myself in our San Francisco shop for less than \$11 per speaker.

I ordered the parts recommended for JBL 4408A repair and moved on to other projects, thinking that it would be a week or so until I'd see the new surround and gaskets. Before my soldering iron could cool from another job in the shop the next day, my order had been delivered via Priority Mail.

Emptying the contents of the package onto the bench, I found two new surrounds and foam gaskets seen in Fig. 1, plus a small amount of the proper glue, small artistic applicator brushes and

thoughtful step-by-step instructions, including a phone number for assistance if necessary.

AWAY WITH FOAM

I disassembled the woofer from the speaker cabinet. The SpeakerWorks.com instructions told me to remove larger pieces of surround foam with my fingers, and the rest using isopropyl alcohol and a cotton-tipped swab to soften the adhesive.

applicators to apply isopropyl alcohol to the old glue; and a 1-inch paint brush to tip the alcohol uniformly into nooks and crannies of the frame.

You enhance your chances of project success by preparing properly and thoroughly; this job was no different. Done in a well-ventilated and clean work area, this phase can be performed efficiently in 30 to 45 minutes. At first I worried that I might slice the speaker cone inadvertently with the razor blade; but as work progressed I established a systematic and progressive path around the frame, separating the old foam from the speaker cone.

as I went. Working on a quarter at a time is necessary because the alcohol evaporates quickly, and the foam pulls away more effectively if it is still damp from the isopropyl application.

SpeakerWorks.com does state, "Rather than putting a lot of effort into removing the old material from the bottom of the cone in order to provide a clean gluing surface, you can install the new surround on top of the cone instead."

TEST FIT

The next steps were straightforward.

I went over the edge of the speaker basket with a paper towel dipped in rubbing alcohol to remove as much of the loose surround material as possible.



Fig. 1: Parts are laid out for the start of the big repair.



Fig. 2: Removing the old foam surround can be a little intimidating.



Fig. 3: Clean surfaces are ready for test fitting of the new foam surround.



Fig. 4: Centering the speaker coil is important prior to gluing the outer edge of the surround.

Some speakers also have a gasket over the top of the old surround, as the JBL 4408s did; a broad thin flat-blade screw driver was helpful in prying it away from the speaker frame.

The trick is to get the lip of the metal frame as clean and free of the old adhesive as possible. Use finger-held safety razor blades; cotton-tipped swabs as

SpeakerWorks.com is succinct about removing all of the old foam from the speaker cone, using the razor blade to slice it apart from the paper speaker cone if necessary. I found that using the 1-inch paint brush as an applicator for the isopropyl alcohol was helpful.

I focused on a quarter of the speaker frame at a time, developing confidence

Then it was the step I'd been waiting for, the test fit of the new surround *before* applying glue to any of the surfaces. For the surround to fit correctly, it must be in contact with the cone. In this instance I was fortunate. All went well and I determined that I could move forward with applying the adhesive supplied in the kit.

SpeakerWorks.com urges care in centering the surround on the speaker cone during the test fit. This assures that I would not be guessing about contact surfaces during the critical next step of applying glue on the surround and the speaker cone itself.

The glue is white upon application but dries clear. Still, the instructions recommend that you wipe off any excess. I took their hint of placing small

bolts around the circumference of the speaker frame as pressure clamps to ensure that the mated glued surfaces remained in contact, and left it overnight to set properly.

Finishing this speaker repair required laying in a multi-piece gasket around the frame edge and gluing into place. It set up quickly within an hour, then I anxiously carried the speaker cabinet back to the bench to reinstall the woofer into it.

I was pleased with how simple this procedural repair was. Now I am prowling our studios for wayward and tired monitor speakers.

dense objects around the inside edge of the cone, and temporarily used some 5/8-inch lag bolts we had in the drawer to ensure that the glued surfaces remained in contact and set up well.

The most critical part of the repair requires centering the voice coil properly. I practiced by pressing down near the dust cap on both sides of the speaker cone with equal pressure, making sure the coil was not scraping or making contact as it moved up and down, which it must do to operate.

This procedure is well described in the instructions, and through practice I was able to locate the sweet spot to apply glue on the surfaces to complete attaching the surround to the speaker frame. I again used the 5/8-inch lag

bolts within 10 minutes I had an older Crown D-60 amplifier, which I'd recently repaired, connected and driving test tones from our Audio Precision generator.

I wanted to ensure that the speaker moved easily and freely through its frequency range. I was impressed with the amount of movement the 40-ounce magnet induces into the assembly. The next test was with Carlos Santana's "Evil Ways," which always puts a smile on my face.

PLEASED

I was pleased with how simple this procedural repair was. Now I am prowling our studios for wayward and tired monitor speakers.



Fig. 5: The repaired woofer is on the left.

SpeakerWorks.com carries speaker coils, frames, transformers and cones should you decide to be adventurous and try building your own creation. It also has a selection of repair surrounds and cones.

Perhaps you feel time management won't allow you to take on something like this, but I disagree. After the initial cleanup of the old foam, this repair took about 15 to 20 minutes per day over about a three-day period.

In an age of slim engineering staffs, we often lose sight of the fact that there's still a place for bench work. In fact I find it almost therapeutic,

after hours at a computer working on spreadsheets and the latest compliance inventories, to do this work. The project doesn't require extraordinary tools or knowledge, and SpeakerWorks.com provides helpful products and support.

This is an inexpensive bench repair that will place your prized monitor speakers back into service quickly and hopefully make you smile too.

Chuck Bullett, CPBE, is chief engineer for KITS(FM/HD), KMVQ(FM/HD) and KZDG(AM) in the San Francisco Bay area. His amateur call is WIAEK. Contact him at bullet@sradio.cbs.com.

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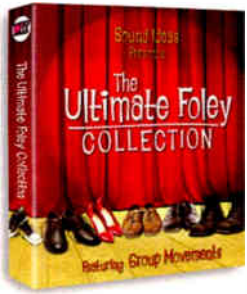
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MARKETPLACE

Foleylicious: Radio drama production is a fascinating niche, and one of the chief tools needed to make a production possible is Foley effects. The really committed, of course, insist upon doing their own



Foley, live, but for the lazy, the busy or the not particularly Foleyphiliac, there's always FX recordings.

Fortunately, sound library producer Sound Ideas has a new collection of Foley effects available, The Ultimate Foley Collection.

Offering 2,300 effects, the package comes on three DVDs. Files are 24-bit/96 kHz BWF with handy metadata. Broad categories include Footsteps, Chair Movements, Cloth Movements, Prop Movements and Movement Reverb.

Foley artists Patti Tauscher and Chase Keehn teamed up for single effects (often male and female versions) and group effects. Many effects are repeated with different surfaces.

Price: \$399.

Info: www.sound-ideas.com

Release the Lynx:

Wireless network specialist Trango Systems is introducing a new pair of point-to-point microwave backhaul devices, the Lynx series.

The series consists of the Giga Lynx (pictured) indoor box and the Apex Lynx



self-contained outdoor system. Both handle standard licensed frequency bands from 6–42 GHz, with modulation levels of up to 1,024QAM.

Trango says, "Lynx series base line models include 440 Mbps available throughput, Physical Link Aggregation (PLA) which enables 2+0 operation at the physical link level, and a programmable packet buffer up to 2 MB to absorb 'bursty' traffic and improve TCP performance."

Other Lynx features include: advanced adaptive coding and modulation, 3.6–60 MHz channel bandwidth (ANSI and ETSI), 1+1 hot standby support with rapid shutdown and compliance with FCC/ETSI and NEBS guidelines.

The half-rack Giga Lynx has four gigabit Ethernet fiber/copper interfaces.

The outdoor Apex Lynx is power-over-Ethernet-compatible and remotely controlled via HTTPS and SSH.

Optional capabilities for the Lynx include throughput speeds of 761 Mbps full-duplex and 256-bit AES hardware encryption.

Info: www.trangosys.com

X Marks the Spot: For years Aphex has made boxes that microphones plug into. Now it has an actual microphone, the MicrophoneX.

The Microphone X is a USB mic and, of course being an Aphex product, it features Aphex's well-known Exciter and Big Bottom processing technologies. An optical processor is said to be inside as well.

Admittedly, it's a bit unusual to put processors into a microphone; but Aphex explains in a release, "The Microphone X is configured to put all of the key analog processing used for recording the voice before the conversion to digital, thereby ensuring the best possible recording quality."

More mundane, the Microphone X is a cardioid-patterned condenser microphone. It has input trim and headphone output controls. Digital conversion is 24-bit/96 kHz. It ships with Reaper DAW and



Harrison Mixbus software and is compatible with Windows XP/Vista/7 and Mac OS X 10.5+.

Info: www.aphex.com

Energy Surge: Energy management products company Staco Energy Products has developed the FirstLine PL, a parallelable three-phase uninterruptible power supply.

The company says the unit is ideal for 10-40 kVA applications. It uses double conversion for increased efficiency. It says, "True on-line, double-conversion technology is achieved through IGBT and digital signal processor control, enabling delivery of a high input power factor of 0.99, and a low input current distortion of less than or equal to 1 percent at full load."

The FirstLine PL will operate at either 50 or 60 Hz with conversion from 45–65 Hz. Filters on the unit act as a conditioning filter. Up to four units can be run in parallel. Front-panel LEDs and display reports items such as alarms, power, battery power, load on bypass and output.

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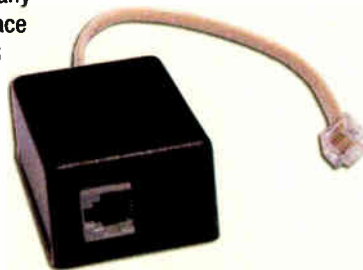
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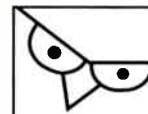
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Return MW to What It Was Born to Do

The AM band is not incurably sick, and high-tech resuscitation is not indicated

COMMENTARY

BY FRED BAUMGARTNER

The thing about the medium waves is that there isn't very much you can do with them.

Remote controls, high data rate links, phone calls are all rather useless at MW. Unlike UHF, no one wants to pay anyone to clear out any chunk of any spectrum below 3 MHz for any new technology or service. The *whole* MW band (300 kHz–3 MHz) is less than half the bandwidth of a single TV channel.

It seems as if virtually half of all the noise in the entire radio spectrum lands in MW. Efficient MW antennas inconveniently measure in the hundreds of feet.



nology loads two adjacent channels with digital noise for everyone that it attempts to save, and it doesn't seem to work that well at distances at night. Any conversion to all-digital would make zillions of radios into decorative furniture.

Besides, listeners looking for more stations to listen to can get an infinite number via the Internet right now, making the idea of running out to buy a new digital MW radio feature seem unreasonable. Oddly enough, if one just has to have more broadcast stations, and *too* many stations aren't necessarily a good thing, the old TV spectrum adja-

of the MW/AM band is perfect for that. One might even split that unused 1700–1800 between the hams and hyper-band broadcast AM. One might make this unlicensed and lightly regulated.

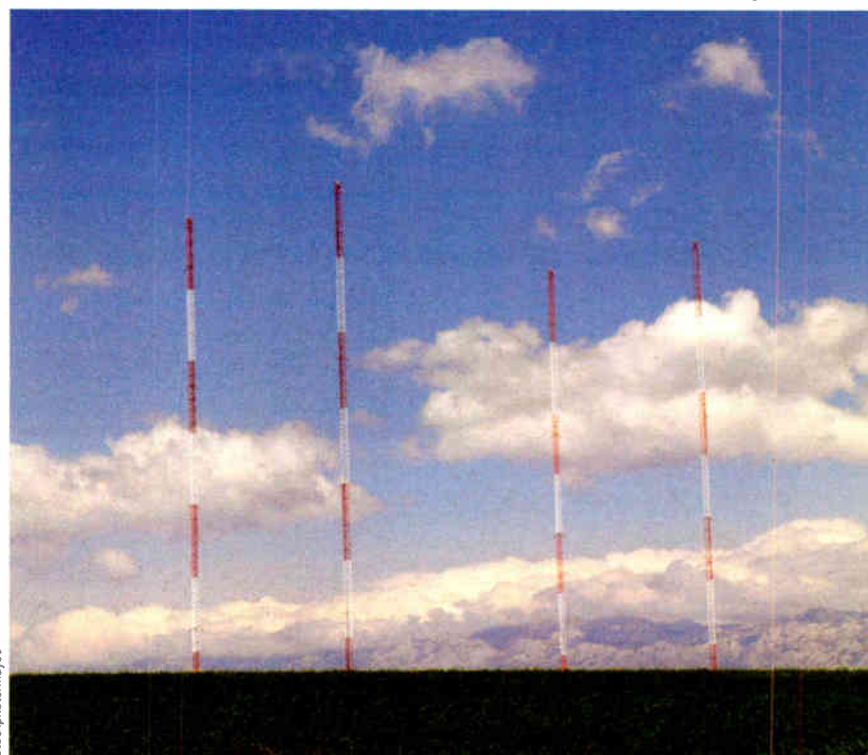
The other tweak is making all the big AM guys suppress one sideband.

Put a 1000 kHz in New York and Los Angeles, but on opposite sidebands so a good radio here in Denver can select between them. Let every top-100

truckers and denizens of the deserts and north woods. This is a case where we *should* move from flood plane to hilltop and build nicer places.

But mostly, a world of many interference-free diverse voices (all also available locally on VHF simulcasts) seems a better revitalization of the MW band than does a cacophony of sizzling digital wideband signals battling the laws of nature and nighttime propagation in an attempt to deliver a purely local service into places where MW just won't go.

Truckers, campers, DXers, arm chair travelers, ultra rural residents and owners of antique furniture-quality AM



istockphoto/mayo5

metro have one or two 250 kW services, and not a lot else. Let every state have another one or two boomers.

Using the sideband technique, we have essentially 200 clear channel stations, giving every location a dozen or so daytime services and of course 200 nighttime. Canada and Mexico, which have more MW needy territory to cover, might play along, considering that a MW radio in much of the world receives nothing at all as MW services have been retired. In fact, Canada and Mexico should have more of a share of MW than the U.S. does in a fair world.

Odds are that this revitalized MW service would result in an interesting and convenient service that better answers the public interest, convenience and necessity. Even marginal AM stations move to better spectral ground too. Even the syndication guys win with FM (or digital) VHF signals in their markets, backed up by the occasional wide-area MW simulcast service for the

radios, two dollar transistor radios and marginal MW stations ... all win. That leaves only the digital-on-MW folks in the cold. Let's hope they will be happy with being able to do all-digital on the VHF expansion and migration.

Let MW return to what it was born to do: a handful of low-fidelity services with divergent voices to the distant corners of the continent ... a place for the unique voices of distant lands. MW is not incurably sick, and extraordinary high-tech resuscitation is not indicated.

The author is a broadcast engineer active in industry education and cutting-edge technology, mostly on the streaming and video side. His first love is AM radio. He says he has four 1,800-foot Beverage antennas and is "rebuilding a Gates BC-1F like some people rebuild old Mustang convertibles."

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

Odds are that this revitalized MW service would result in an interesting and convenient service that better answers the public interest, convenience and necessity.

MW/AM was reinvented at least once before. The original 1920s link budget had a few 250 Watt class transmitters on clear channels being received by long-wire antennas strung up to the silos on radio quiet land. The current link budget is kilowatts being received on ferrite loops and tiny wires buried in windshield glass.

REVITALIZATION

Even MW's good traits are a mixed blessing.

At night, MW stations can cover the continent. Good if there are desolate places to reach and few stations (think agricultural 1930 America) ... not so good if that coverage is just interference for other stations (think today, post urbanization and AM's birth control issues).

VHF and UHF are much better behaved. They better stay in their markets, are high fidelity with low noise, and exhibit good penetration (MW's aperture effect won't even let it go under a bridge or through an open window).

So far, any attempt to "compatibly fix" the AM band with digital tech-

cent to the FM band is much underused.

So, let's just agree that trying to make MW into something that can compete with VHF, Internet and satellite is ... well ... as silly as building in a flood plain and expecting to not float away periodically. However, moving all AM stations to the old and much underused VHF TV slots works just fine.

Could it be that unwinding the MW/AM service with the goal of providing a few simulcast (from their new VHF allotments), wide area coverage and some really very accessible community low-power services is a more desirable revitalization of the MW band?

MY TWO CENTS

I would do two other things with the MW/AM band.

First, I'd provide space for a low-power AM service with a very low barrier to entry.

There really should be a way that any school, church, travelers information service or what-have-you can broadcast for a few miles for not a lot of money or brain damage, when they want, in such a way that it doesn't hurt anyone. The top

Don't Just Keep Us "Down on the Farm"

COMMENTARY

BY LARRY TIGHE

The author is owner of WRNJ(AM) in Hackettstown, N.J.

I've read all the effusive articles in RW about AM improvement and can't help but wonder what is really going on, behind the scenes that is.

I sense that the broadcast spectrum is slowly shrinking (UHF TV auctions, for example). Consider that the tens of millions of dollars spent to move television to new spectrum is far more than it would cost to move AMs to vacant Channels 5 and 6 as other countries are doing.

Is it possible that AM improvement ideas are really attempts to "keep 'em down on the farm" and avoid any tangible improvement at all? Consider that any real improvement is future competition for large group owners, financially heavily encumbered, companies with huge debts to pay.

Let's look at it from the local AM station's point of view. IBOC or iBiquity uses a pay-to-play approach. That's bad. I think their interest is not AM improvement, rather their bottom line. Take a moment to see who the iBiquity stockholders are. That bottom line is in bad shape. Some stations have discontinued IBOC transmissions. Others don't receive even one phone call if the HD Radio is down.

So IBOC and digital AM is out. Has any country on this planet gone for

digital AM or even proposed it? Just one, right?

How about shrinking broadcast spectrum? The FCC is allowing television licensees to effectively auction away some, or all, of their new UHF HD spectrum to be used for data. Now, who is going to buy that spectrum, in all probability?

Could it be Verizon or the other massive spectrum licensees who are now providing broadcast type services with their data streams? Yes, I think so.

zation that's supposed to represent all broadcasters. Remember, the NAB does not represent the listening public, only the (substantial) broadcaster.

Let common sense in here for a moment. Do readers think for a moment the NAB and group owners are going to let new-and-improved broadcast services to the public happen?

I don't think so; and the proof is in the Channels 5 and 6 pudding. There sits available, idle, mostly vacant, not

Spectrum similar to what we use for AM has been abandoned by LORAN, non-directional beacons and other countries because it is unfit for public service anymore.

But there's no spectrum there for AM improvement, which would be tantamount to improved service to the public.

By the way, do the spectrum "licenses" bought by the cell providers have expiration dates of 3 a.m. EST as ours do, or are they not licenses but rather spectrum Bills of Sale?

So where's this going?

We have very large companies now owning broadcast facilities (investing in iBiquity) and experiencing rather minimal competition in their marketplaces except amongst themselves. They bought up all the "best" properties with unlimited, albeit borrowed, money. These very same companies are major "stockholders" in the NAB, the organi-

zation that's supposed to represent all broadcasters. Remember, the NAB does not represent the listening public, only the (substantial) broadcaster.

Spectrum similar to what we use for AM has been abandoned by LORAN, non-directional beacons and other countries because it is unfit for public service anymore. Keeping AM where it is protects highly leveraged properties of large companies. It's that simple. The


public interests in local service are not being seriously considered.

What's the answer? One answer is your local congressman. In New Jersey, a local broadcaster in a large city was a tennis buddy of the late Rep. Matthew Rinaldo, who slipped into an unrelated bill that any city with more than 100,000 residents must have a full-time AM radio station. Elizabeth, N.J., gained a full-time AM station. It was that easy.

That's the fast way of solving the AM problem. Got friends in Congress who want their constituents to have superior, full-time radio service? If so, familiarize yourself with the advantages of the Channel 5/6 transition at www.broadmax.org. For an example of how easy it is to change and expand the use of spectrum, see <http://1.usa.gov/1eNAEgu>.

To file your own comments at the FCC go to <http://lapps.fcc.gov/ecfs/>, click on submit a filing and then enter 13-249 in the proceeding number box and you are good to go. This refers to MB Docket No. 13-249, the "AM Revitalization" NPRM. [Ed. Note: As of press time, public comments were due Jan. 21 but the FCC will take reply comments through Feb. 18.]

I don't think it could be any clearer that the only improvement to the AM band is the transition to new spectrum as others are already doing. Anything else appears to limit competition in broadcasting and limit benefits the public has a right to expect. Other proponents of an AM transition to the Channels 5 & 6 band could well be the SESAC, BMI and ASCAP organizations; it would mean more exposure for their members along with improved local service to Americans everywhere.





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