

Preach and Reach

Christian radio is more than Bible study or 'Jesus Walks.' What's next is even less defined.

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Grab Your FIM and Go

Buc Fitch delves into field intensity measurement methodology.

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Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

March 2, 2005

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BE Acquires Data Firm

Purchase of The Radio Experience Marks Emphasis on Role of Data in Radio's Future

by Leslie Stimson

QUINCY, Ill. Broadcast Electronics and broadcast data entrepreneur Allen Hartle say they want to make it easier for stations to begin using RDS in this country and to step up their data capabilities with HD Radio.

BE has purchased Hartle's company, an announcement that presages a product unveiling at NAB2005. It acquired the assets of The Radio Experience in late January. The parties declined to announce the monetary terms, including the cost, who holds rights to or would benefit from patents involved and whether any patent applications remain pending.

Hartle was sole owner of The Radio Experience, which is based in Bellevue, Wash.; its employees will remain there. He declined to disclose his company's annual revenue. BE, based in Quincy, Ill, is privately held.

The principals were clear, however, about what they believe are benefits of the deal. They said Radio Experience products

See RDS, page 8 ▶

Content Depot Now Slated for Summer

by Randy J. Stine

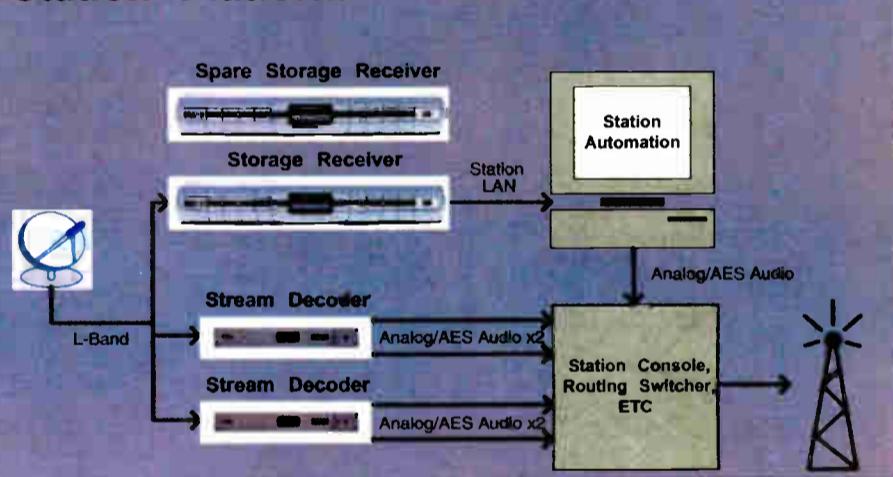
WASHINGTON Now that operational specifications are in place, executives with the National Public Radio Satellite System say they are going forward with plans to launch ContentDepot later this year and transform public radio distribution.

System tests at NPR of ContentDepot,

which will move distribution into a packet-based audio program delivery satellite system, were expected to begin in February. Station equipment is due to ship this spring. The current system delivers audio and programs in real time as analog or AES digital audio, which limits delivery options from producers to public radio affiliates.

See DISTRIBUTION, page 5 ▶

Station Platform



PRSS interconnected stations will receive a base package that includes new satellite storage receivers and streaming decoders. These will replace existing ABR 700 demodulators. The existing SOSS and ContentDepot systems will operate in parallel for a time. This block diagram is from the ContentDepot Web site.

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Broadcasters Appeal For Ownership Review

WASHINGTON Several broadcasters are pursuing an appeal to the Supreme Court in the case of the FCC's new media ownership rules, after the commission said in January it would not file its own appeal.

NAB and several individual broadcast organizations, including Viacom, Fox and Tribune, want the high court to review a lower court decision. The latter ruling blocked enactment of rules affecting TV ownership and cross-ownership. Those

changes would have allowed one entity to own TV stations and a newspaper in the same market, and to own more TV and radio stations in a single market.

Opponents of the rules, such as the Prometheus Radio Project, believe the changes would reduce diversity.

One rule affecting radio was allowed by the lower court, but NAB and radio broadcasters dispute that outcome as well. They oppose the system that uses Arbitron metros to define radio markets.

In its filing, NAB asks whether the new market definition for radio, "leading to a substantial reduction in the number of local radio stations that may be commonly owned and transferred," violates the 1996 Telecom

Act by repealing the decision of Congress to deregulate media ownership rules.

NAB also asked whether the FCC violated the Telecom Act by retaining restrictions on local TV ownership in all markets "in the face of overwhelming evidence, acknowledged by the commission, that common ownership in small and mid-sized local television markets will improve competition and advance the public interest."

The Bush administration decided the FCC would not challenge the lower court ruling. No explanation was given for that decision and the commission has not indicated what it might do next.

Some attorneys believe broadcasters would have a stronger case if the FCC had appealed

the lower court ruling on its own. It could still choose to comment on the other appeals.

NAB said in a statement that it was "disappointed with reports that the Solicitor General will not be seeking Supreme Court review of media ownership rules. We continue to believe the Supreme Court needs to clarify lower court decisions related to media ownership."

FCC Chairman Powell, who plans to leave office in March, has said he regretted not being able to finish the media rules before leaving. Democratic FCC Commissioners Michael Copps and Jonathan Adelstein said the court "correctly recognized" the new ownership rules were flawed; they called for a media policy redesign.

Nautel Users' Group To Meet April 17

BANGOR, Maine Nautel will host its annual Nautel Users' Group event on Sunday, April 17, at the Riviera Hotel and Casino in Las Vegas.

The company described NUG@NAB2005 as a combination of theory and practical application in an informal setting intended to encourage discussion. Topics covered during the half-day session will include Nautel's new HD Radio transmission equipment, including a demo of its FM HD Radio adaptive pre-correction technology. KUVO(FM) Chief Engineer Mike Pappas will discuss his digital conversion; and a roundtable discussion of transmitter issues will round out the meeting, to be held from 9 a.m. to 1:30 p.m. at the Riviera.

To learn more visit www.nautel.com/about.

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Surround: One Small Step for a Radio ...

... One Giant Leap for an Industry?

by Skip Pizzi

We conclude our exploration of surround sound on the radio with a discussion of compressed digital formats and the recent proposals for digital radio applications.

You may recall from previous articles in this series that Dolby Labs became the leading developer of successful surround formats in the analog domain, which appeared first in cinema sound systems, and eventually migrated to the home theater via the 4-2-4 matrix encoding of consumer VHS tapes' hi-fi soundtracks. The company was therefore poised to move surround sound into the digital domain, and did so with equal success.

After an abortive attempt at digital surround for film soundtracks by Kodak in the early 1990s, Dolby released its AC-3 format in 1992 (once again, initially in the cinematic environment only), which provided a 5.1-channel mix based on the analog "six-track" surround system featured in earlier 70 mm films, using a compressed audio data rate of 320 kbps or higher. Subsequently, the AC-3 format — commercially marketed as *Dolby Digital* — was adopted by the Laserdisc, ATSC and other DTV broadcast systems, as well as the DVD-V format, at 384 or 448 kbps. AC-3 also provided a stereo ("2.0-channel") option,

and a small amount of metadata about the technical parameters of the content.

Two other compressed digital surround formats followed, from DTS and Sony (the latter called SDDS), using somewhat higher data rates (i.e., less aggressive compression than AC-3). These were also initially designed for cinematic applications, but DTS has subsequently become an optional DVD format for consumer releases. Most major motion pictures are now released with all three formats included on their distribution prints, since the formats can all coexist (along with legacy analog optical stereo) on 35 mm film. DTS and SDDS can also include up to 7.1 channels of audio. The additional channels are generally placed as "front surrounds," which can help produce more uniform atmospheres in theatrical environments.

More recently, the DVD-A and SACD formats have offered a number of new and catalog music releases in digital 5.1 surround, using Dolby Digital or DTS. These products also offer stereo mixes in the uncompressed PCM format, usually at higher resolutions than the 44.1 kHz/16-bit format used on CDs. (For example, DVD-A can include up to 192 kHz/24-bit audio.) DVD-A also offers an "in-between" format called Meridian Lossless Processing (MLP), which allows those higher resolutions to be used in multichannel mixes.

Importantly, when surround mixes are offered on DVD-A or SACD formats, in most cases separate 5.1-channel and stereo mixes of all content are provided, so that the consumer can choose the one best suited for the playback environment at hand. This is in contrast to digital video formats with surround sound, in which a single 5.1-channel soundtrack is intended to "downmix" appropriately to 4-channel matrix surround, or to stereo, or to mono. So unlike the cinematic and TV sound industry, the music industry has established a tradition of not guaranteeing downmix compatibility of its 5.1 mixes to stereo or mono listening. (We'll return to this point below.)

Radio's choices

Now radio broadcasting comes to the party late, which is not necessarily a bad thing, and considers the many methods available to incorporate surround (or, more generically, "multichannel") sound as it converts to digital broadcasting.

First and simplest, receivers could simply incorporate one of several available systems for derived surround (or "pseudo-surround") sound. Broadcasters would not have to do anything to enable this, because the receivers would synthesize a surround-soundfield from existing stereo content. Most audio professionals feel that this approach falls short of truly enabling surround sound, however, and that if digital radio chose such a path it would be another opportunity missed.

Among true encode-decode systems, then, the simplest alternative is the adoption of a matrixed surround system, along the lines of the home theater environment. Encoding of content would be simple, and existing two-channel infrastructures could

The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

there are those who feel a discrete solution is preferable to a matrix, and this argument is made even more strenuously in the context of a transition to digital radio. This camp advocates that digital radio broadcasting probably is best advised to consider a discrete 5.1-channel compressed digital format rather than an older matrix method. Unlike packaged media, however, bandwidth limitations in broadcasting require a *single* audio coding approach that can compatibly address mono, stereo and surround receivers.

This has led to the development of a system called *parametric surround*, which allows the addition of a "side-channel" of steering data to an existing stereo codec platform. New multichannel decoders can reconstruct a surround mix from the signal, while legacy stereo decoders ignore the steering data and simply decode the stereo audio signal as before. Currently two such formats have been developed, one by Fraunhofer and Agere Systems, the other from Philips and Coding Technologies. ISO/MPEG has initiated an effort to converge these two formats into a single parametric surround coding standard.

Each of the proposed methods has its respective set of pros and cons.

continue to be used throughout the radio plant. Multipath problems that prevented this system's use in analog stereo radio broadcasting would be solved in an IBOC system. The major drawback here is that — unlike the cinema/TV world — there is no large inventory of radio content (i.e., commercial music releases) already encoded in matrixed surround. The legacy nature of this format makes it unlikely that this will change. The commercial music that is produced in surround today (on DVD-A and SACD) uses one of the compressed digital 5.1 formats described above.

Thus to use the matrixed approach, discrete digital 5.1 surround audio content would have to be converted to a four-channel matrix system through a transcoding process, and compatible matrix decoders would have to be placed in digital radio receivers. A company called SRS, familiar to many PC audio users, has proposed just such a system, based on its implementation of the long-standing but not widely implemented Circle Surround matrix. Like any matrix system, surround content is inherently designed to downmix well to stereo or mono, but surround imaging may not be as robust as in discrete systems.

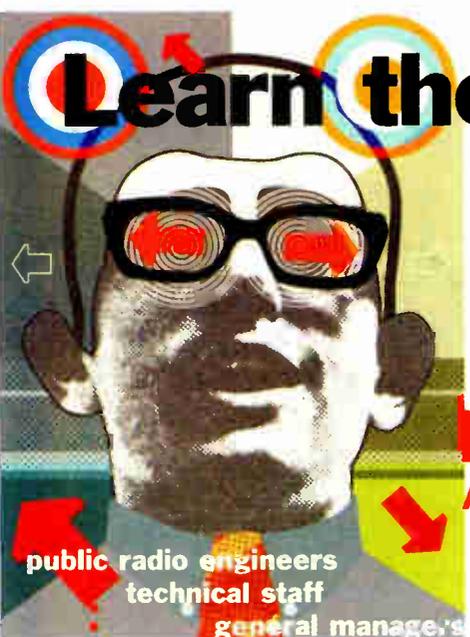
So as it has been since the quad days,

In general terms, this approach would "steal" a fixed amount of the digital audio channel's bits and dedicate them to steering data. Initial systems have used 16 kbps for this parametric steering channel, so in the case of IBOC, this would leave 80 kbps for audio coding. Recent tests of the HDC codec have shown little perceived difference between 96 and 64 kbps coding of audio, so this reassignment of the datastream should not produce much penalty for stereo listening. The surround sound results at these data rates are impressive, and are typically difficult to distinguish from the original discrete 5.1 source material.

Unlike matrixed systems, it is assumed that this type of surround encoding would not happen until the broadcast codec is applied (i.e., in the transmission air chain), so surround audio signals would have to be maintained in discrete (compressed or uncompressed) modes until airing. This presents challenges to existing broadcast production infrastructures.

An third alternative therefore has been proposed, which allows the generation of a parametric steering channel during the upstream production process, with this sig-

See SURROUND, page 15 ▶



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Audio Processing	None	Simple AGC	Digital multi-band AGC with look-ahead limiter by Omnia
Remote Control	No	RS-232 and dedicated computer	Ethernet via Web browser
Auto Dial Storage	19 Numbers	50 Numbers	100 Numbers
Frequently-Used Settings Storage	none	none	30
Standards-based POTS Codec	No - Proprietary	No - Proprietary	Yes - aacPlus (MPEG HEAAC)
Transmit-Receive Quality Display	No	Yes	Yes
Contact Closures	2	2	3
Display Resolution	120x32 LCD	120x32 LCD	128x64 LCD
Analog Cell Phone Interface	Optional	Standard	Standard
Mixer Inputs	1 mic, 1 mic / line	2 mic / line	1 mic, 1 line
Phantom Power	No	No	Yes - 12 volt
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Workbench

Radio World, March 2, 2005 Past columns are archived at www.rwonline.com/reference-room

Dum-Dum Makes You Smart-Smart

by John Bisset

Dave Cox is with BL Broadcasting in Brainerd, Minn. In our Jan. 5 column, he read about the UPS and generator not playing well together. Dave had the same problem in Brainerd. After a number of UPS units and trying to adjust the generator speed, they finally found a solution.

Dave purchased the APC Smart UPS 450. The included software permits an engineer to open up the window for the UPS to be happy with their dirty generator power. Dave reports no problems with the UPS when going onto generator power since making this change.

Hope this helps. If you have any questions, Dave can be reached at dave@brainerdradio.net.

★ ★ ★

With the spate of reported site break-ins and vandalism, security is a topic on the minds of many engineers these days.

Let's visit a neglected transmitter building in the woods. See how many security "issues" you can find in Fig. 1.

★ ★ ★

Eric Suitter is the assistant engineer at KMLW(FM), Moses Lake, Wash. Eric offers a different twist to the generator/UPS battle. If your UPS doesn't have a sensitivity adjustment, Eric's tip might help.

Buy a battery charger appropriate for the batteries used in the UPS, and connect it to an outlet connected only to the generator. Then plug the UPS into an outlet that isn't on the automatic change over. This way, as



Fig. 1: How many security problems can you find?

long as the generator is running, the batteries remain charged. Quick and simple!

Thanks, Eric, for the novel idea. Eric Suitter can be reached at esuitter@nctv.com.

★ ★ ★

Dave Supplee is the northeast regional engineer for Cumulus Media and works closely with Engineering Director Gary Kline. Dave and Gary are proponents of thinking ahead. For them, standard practice includes such steps as adding a spare con-

duit, "for the future."

Fig. 2 on page 16 shows how to ensure the conduit will remain open when you need it.

"Dum-dum" is a malleable, clay-like compound available in hardware and electrical supply stores. It does an effective job of sealing openings. In this case, spare conduit pipes won't become clogged with dirt, leaves or other debris; nor will the conduit fill with water and freeze. Because the compound remains firm but does not harden, it's peeled back easily.

Dave and Gary haven't had any rodents

eating holes in the material — some sealing materials provide a smorgasbord for rodents — but a steel wool plug sure wouldn't hurt.

Dave Supplee can be reached at dave.supplee@cumulus.com; Gary Kline is gary.kline@cumulus.com.

★ ★ ★

O.K., let's see how you did with our security site issues in Fig. 1.

We'll start with the door. The lock hasp is broken and the lock is missing. Maybe the owner *wanted* the site broken into!

The doorknob doesn't appear to be in such great shape, either. The doorframe has some serious gaps and is also rotten; it probably wouldn't take but a couple of pulls with a pry bar to yank the whole frame out. But why exert yourself? Whoever installed the door put the hinge pins on the outside. Pop the pins and the door comes right off.

Gaps between the doorframe and the wall invite insects and rodents, too. All cracks should be sealed.

The plywood may be covering a window; again, a pry bar could pop the wooden cover easily. One tip that an engineer used for plywood-covered windows was to string thin wire between the plywood and the wall — if the plywood was removed, the wire was broken and a siren would sound.

Take a look at that flimsy metal plate covering the door. Who knows what is behind it, maybe a hole for a much needed deadbolt! It's certainly not going to thwart entry; the plate is covered with screws that could be removed easily.

The building is constructed of cinder blocks, so it's sound, but the entry certainly needs some work.

So, how did you do? Find anything else? Let me know at my new e-mail address, jbisset@bdcast.com.

See SECURITY, page 16 ▶

MultiPhones Makes Headphones Happen!

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Surround

► Continued from page 12

nal encoded as a watermark that is perceptually hidden in an uncompressed digital stereo audio signal. Such content can be stored, edited and routed throughout the existing broadcast infrastructure as stereo audio, and broadcast as either an analog or digital signal without apparent consequence, according to the purveyors of this approach, Neural Audio and Harris Broadcast. This implies that the watermark remains inaudible after broadcast processing, and survives the digital broadcast codec's compression so it can be interpreted properly by a surround decoder.

Because the watermark must remain inaudible, this system is constrained as to the data rate it can apply to the steering channel. As a result, the Neural steering signal uses about half (or less) the data rate employed by parametric systems for their steering signals. This has caused some to comment that the watermarked approach provides less accurate imaging than parametric systems.

A potential downside to both the parametric and watermark surround systems is that (for optimal surround results) they rely on the stereo broadcast signal being a downmix of the original 5.1 source, so it can eventually be recombined with the steering data to extract the surround mix on surround-capable decoders. But the surround downmix may not produce an aesthetically pleasing result to stereo listeners.

(As described earlier, 5.1-channel music produced today is generally mixed without regard for downmix compatibility, since the release formats usually include separate stereo mixes on the same disks. In fact, the DVD-A format includes a "Do Not Downmix" flag for multichannel content, and some record companies are routinely turning on this flag in their current releases.)

Consider that it is likely stereo listening will comprise the lion's share of the audience for some time, if not always, so some engineers object to causing this potential problem for the majority of the audience, simply for the sake of a probable permanent minority of surround listeners.

As a reaction to this, the parametric surround camp has developed an artistic downmix option, by which a dedicated stereo mix can be injected into the broadcast downstream of the parametric steering signal generation in the airchain, so the stereo listener hears the "regular" stereo mix. But this can foil the surround decoding, thus potentially defeating the whole point of the process.

Pick your poison

It appears that there is no clear winner here, with each of the three proposed methods (matrix, parametric or watermark) having its respective set of pros and cons. The NRSC and the World DAB Forum have each begun to explore these options for possible standardization or recommendation, but it is uncertain whether any single format will be selected in either the IBOC or DAB environments.

In fact, all of these systems as currently configured can technically coexist, and broadcasters could choose freely among them. Stereo listening could continue, and surround listening would be enabled if the proper decoder were available on a receiver. If multiple systems proliferated, it is likely that receivers could incorporate multiple decoders, just as many of today's home the-

ater systems do for TV-audio surround (e.g., Dolby Digital and DTS).

The music industry — and radio broadcasters who produce their own original surround content — may also consider this movement, and could adapt their stylistic approach to 5.1 mixing such that aesthetic compatibility of surround downmixes to stereo and mono is more commonly assured. If this practice does not occur, such a content-compatibility problem could prove the downfall for the nascent surround-sound enterprise in digital radio.

The topic of digital radio surround will naturally occupy much conversation in upcoming months, but it is probable that the ultimate choices — including, once again, whether surround sound finally comes to radio — will transpire in the marketplace.

Skip Pizzi is contributing editor of Radio World.

MARKET PLACE

Audemat-Aztec Eyes HD Radio Market



Audemat-Aztec will introduce two products at NAB targeting the HD Radio market.

Naviboc is a mobile metering unit for coverage analysis of HD and FM signals. It includes a GPS receiver for automatic mapping overlay.

GoldenEagle HD is a monitoring unit for the permanent monitoring of the quality and continuity of HD and FM signals as well as PAD and RBDS data. An embedded spectrum analyzer is available as an option to monitor power of the sidebands and other

parameters. Features include embedded Web server and SMTP server for alarms notification and a touchpad screen. At the transmitter site, it can be used as a remote control unit by adding up to 16 digital inputs, 16 metering channels and 16 relays outputs.

An AM version is planned for later this year, and the FM version can then be upgraded to include AM.

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Radio Hobby Event Set for March To 'Just Talk Radio'

Organizers call it the largest gathering of listeners to the radio spectrum — “long-wave, medium-wave, shortwave (broadcast, utilities, pirates), VHF/UHF, FM, scanners, television and satellites” — in the United States, and perhaps the world.

The winter SWL Festival takes place in the Philadelphia suburb of Kulpville on March 11-12. It's the 18th year for the event. About 200 attend each year. The emphasis is on shortwave listening and broadcasting.

The event dates to 1988, when a group of DXers met in Willow Grove, Pa.

For information, visit www.swlfest.com. The sponsor is the North American Shortwave Association.

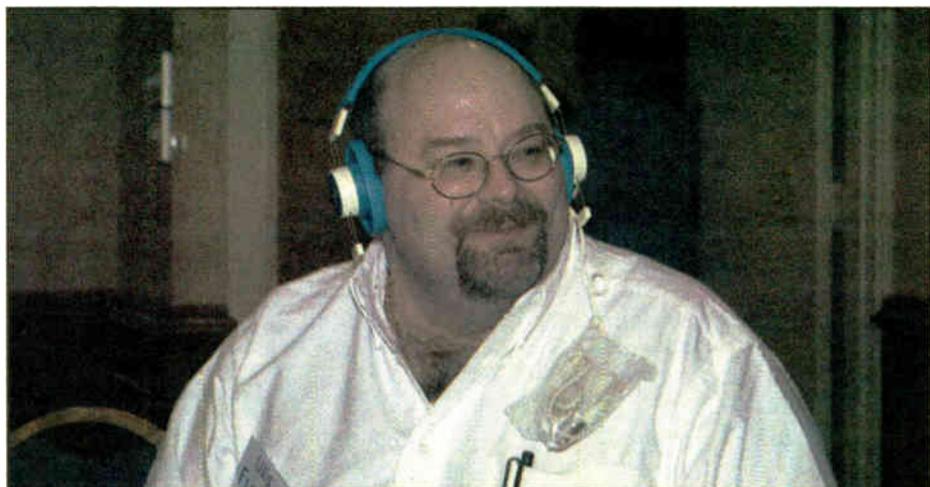


Photo by Ralph Brandt

Attendee Ulis Fleming at last year's Festival.

Security

► Continued from page 14

★ ★ ★

Adding a lock and hasp to a gate or door? Reverse the position of the hasp, so the screws are covered by the hasp, as seen in Fig. 3.

You can see that someone has tried to force the gate, and even bent the end of the hasp, but could not get to the screws. The intruder obviously gave up, and

moved on to easier pickings, maybe like the door in Fig. 1.

Don't forget to add liquid graphite or lubricant to locks at this time of year. You can find them at any hardware store or locksmith.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386 or jbisset@bdcast.com.

Submissions for this column are encouraged, and qualify for SBE recertification credit.



Fig. 2: Use 'dum-dum,' a modeling clay-like compound, for sealing unused conduits.



Fig. 3: Install the hasp so it covers mounting screws to deter illegal entry.

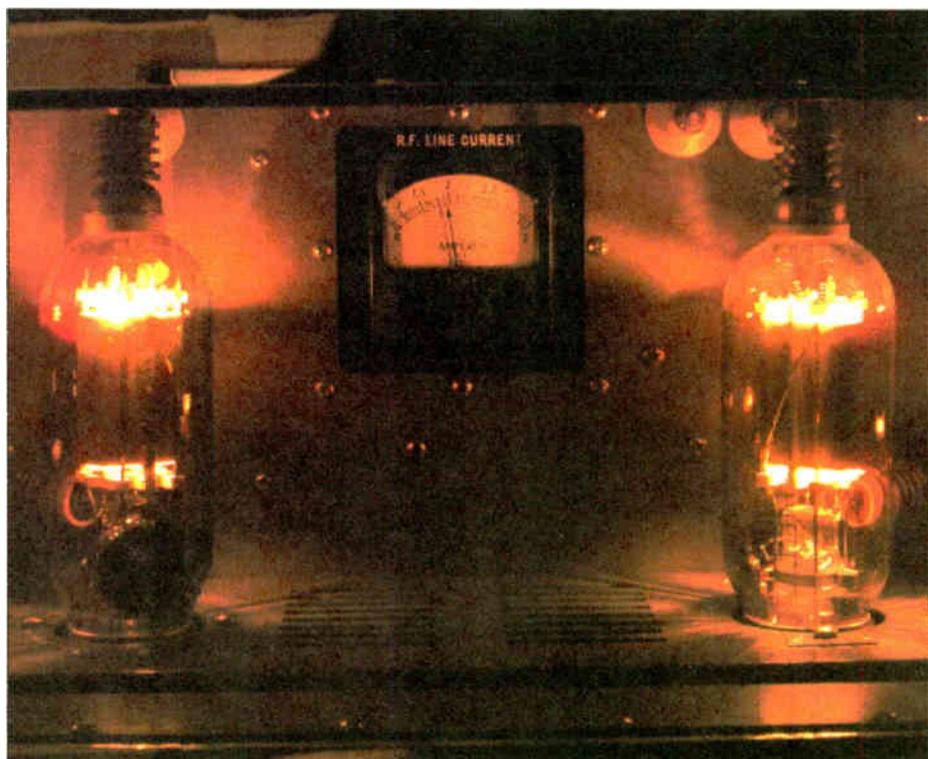
Restored Collins 'Beauty' Now Resides in Maryland

The Radio History Society, based in Bowie, Md., said it now has a restored Collins 300-G AM broadcast transmitter on working display, and retuned to the 160-meter shortwave ham band.

“The 1,370-pound beauty was placed on the air for the first time on its new frequencies Jan. 8 using the special call sign W3R as part of a nationwide ‘Heavy Metal Rally’ among radio hobbyists,” the organization stated. The unit dates to 1951.

The transmitter had been recovered from WFOY's former broadcast site in St. Augustine, Fla.

For information visit www.qrz.com/W3R.





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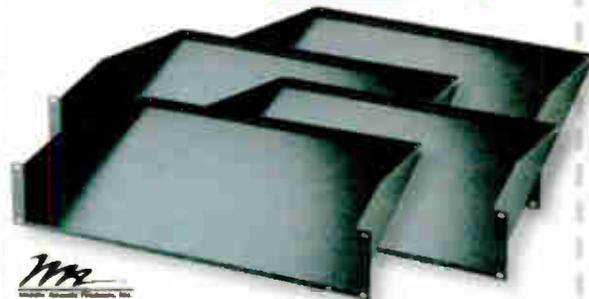


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Engineer's Helpful Hint #43

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 World Radio History

TECH TIPS

Field Intensity Measurement Methodology

Gather Your FI Meter, GPS Receiver, Topos And Foul-Weather Gear Into the 4x4, and Read On

by Charles S. Fitch

Some time ago an engineer friend here in Connecticut mentioned to me that he had put a new AM transmitter online. Jokingly I told him that I would do a field intensity measurement to note the improvement and mark the occasion. Grabbing the meter, I obtained a number and e-mailed it to him in about a minute.

Did this 1.5 mV/m number mean anything? Not really. It told us only that, at my desk, inside the office, there was 1.5 mV of radiation from this station available at the terminals of a 1-meter loop antenna.

FIMs can, however, tell us a great deal. Taken properly, they are valuable to the integrity of our broadcast system and your station.

Therein lies the rub. Most are not taken properly.

Criteria

To be valid, accurate, repeatable and useful in the grand scheme of things, FIMs for any service generally must be:

- Taken on a calibrated and accurate instrument;
- Taken by someone who has knowledge of the methods and physics, and can apply proper conduct and judgment to the proceeding;
- Done methodically so that factors such as weather, time of day, time of year, ground cover and vegetation can be rationalized uniformly;
- Taken accurately by time, location and physical spacing;
- Well-annotated, concise and clear in data and format;
- Repeatable for anyone who follows.

If you can't honestly say that you have met the above criteria, why waste the time taking measurements?

An MP on your side

Let's get down to AM cases.

Most FIMs are taken for one of four reasons: to check monitoring points (MPs) on a directional antenna (DA) system; to proof out a new station or antenna pattern; to arbitrate interference; or to determine ground conductivity for the purpose of an allocation study.

Although FCC rules specify the methodology for taking these measurements and hence the qualities needed in the measurement device, one AM FIM is most widely used, the Potomac Instruments FIM-41, in near-continuous manufacture for more than 50 years, along with its broadcast band-only predecessor, the FIM-21. The industry is lucky to have such an accurate and durable device.

Monitoring points for directionals usually are locations specified by the license that require periodic monitoring to confirm that the directional pattern is formed properly. Ordinarily the engineer tuning up and proofing a DA selects practical and definitive measurement locations identified during the tune-up and measurement of each pattern. These are submitted to the FCC for approval and made part of the license.

Logically and traditionally, these have been located such that, when values are correct, they demonstrate proper pattern operation, protection towards affected stations and rated antenna system efficiency.

On older directional licenses, there usually is an MP for each maxima, each protection null and any critical azimuth towards a protected station. On new and more recent DA licenses, for the most part, the FCC has only been requiring MPs in the pattern minima.



Calibrate before each measurement regardless of how desolate the location. Here, I rotate my meter to identify a peak reading for WFIF(AM) in Milford, Ct.

In the case of a "zero null" antenna system where the radiation in the direction of a protected station is required to come down to a very low level, MPs on the slope of each side of the null are chosen instead of the null point azimuth. This is done so that you are measuring your station instead of the incoming signal from the protected station.

A handful of simple arrays, especially for daytimers, are dinosaurs and can be way out of adjustment yet still meet specification for the small count of MPs dictated by the license.

Most directionals, however, are critical in at least one direction, and many have super-critical tolerances in several azimuths. For these, accurate MP measurements are a must; even a few feet of variance from the specified point can take you over the dreaded Maximum Expected Operating Value (MEOV).

My humble suggestion to my DA clients is to have custom surveyor stakes made up in either hard wood or concrete and install them *exactly* where the measurement point is located. The stake should have the station call and the MP number marked indelibly on it.

If you cannot do this, be creative and find some way to make sure the same spot is used all the time, every time. One MP of a 50 kW DA had an MP on a golf course using the 17th green as the point. We got the groundskeeper to reposition the hole at the exact MP.

Once you get to your measurement point, first and foremost, look up! If there

are overhead wires nearby, they will affect the field strength measurement adversely. Find a point clear of overhead wires. Always check overhead before each measurement.

The G2 on the PI FIM

Next, open the lid and turn on the meter. Tips here assume you're using a Potomac Instruments FIM.

Start by always checking the batteries using the first detent on the FUNCTION switch. If you are going to do a long series of measurements, install fresh batteries when beginning.

Calibrate the meter every time you take a measurement. Begin by turning the

rotate the meter horizontally for a null and note its value.

If the maximum-to-minimum ratio does not exceed 10:1, some local phenomenon such as re-radiation may be affecting the measurement. If this occurs at a licensed MP, it may be necessary to choose and license a new point.

Again rotate the meter for maximum and determine as best you can if the plane of the meter is oriented toward the station. If it is not, a local phenomenon may be affecting the measurement.

Specific data

Once you've determined that the measurement is uncontaminated (and once you are no longer dizzy), step carefully over the MP, maintaining the same address towards the signal source, and note the value accurately in your daybook.

(A 1986 letter to the FCC on the subject of FI meter quadrature to the source, and the response from the FCC, are online. Go to <ftp://ftp.fcc.gov/pub/Bureaus> and click on *Mass Media*. Under *Databases*, select *documents_collection* and download the PDF 960110.)

In the case of contentious measurements, have witnesses. Let them see you go through the exercise and the numbers displayed. Have them record the field strength independently.

Each point measured should be referenced to the name of the measurement taker, date, time, weather and relevant factors, such as snow cover, cranes working nearby or changes in surroundings such as new houses, etc.

Unlike MPs, which are fixed in your license until you turn it in or apply to have it changed, surveying the signal levels on a new antenna system is in your hands except for the non-directional (ND) portion of the submitted measurements.

This ND survey is a series of close-in measurements on evenly spaced radials to determine just how non-directional the individual typical tower in your antenna system is and the efficiency of the non-directional radiator. (In the next issue of Radio World, Cris Alexander will write on this topic; also see Jack Layton's book "Directional Antennas Made Simple.")

Similarly, you must measure the directional as well. These measurements are taken in the form of a series of radials. While it would be nice to do 120 evenly spaced radials, like your ground wires, none of us is getting younger. These radials are long and have many points; our time to make measurements is limited. We'll select just a few meaningful azimuths.

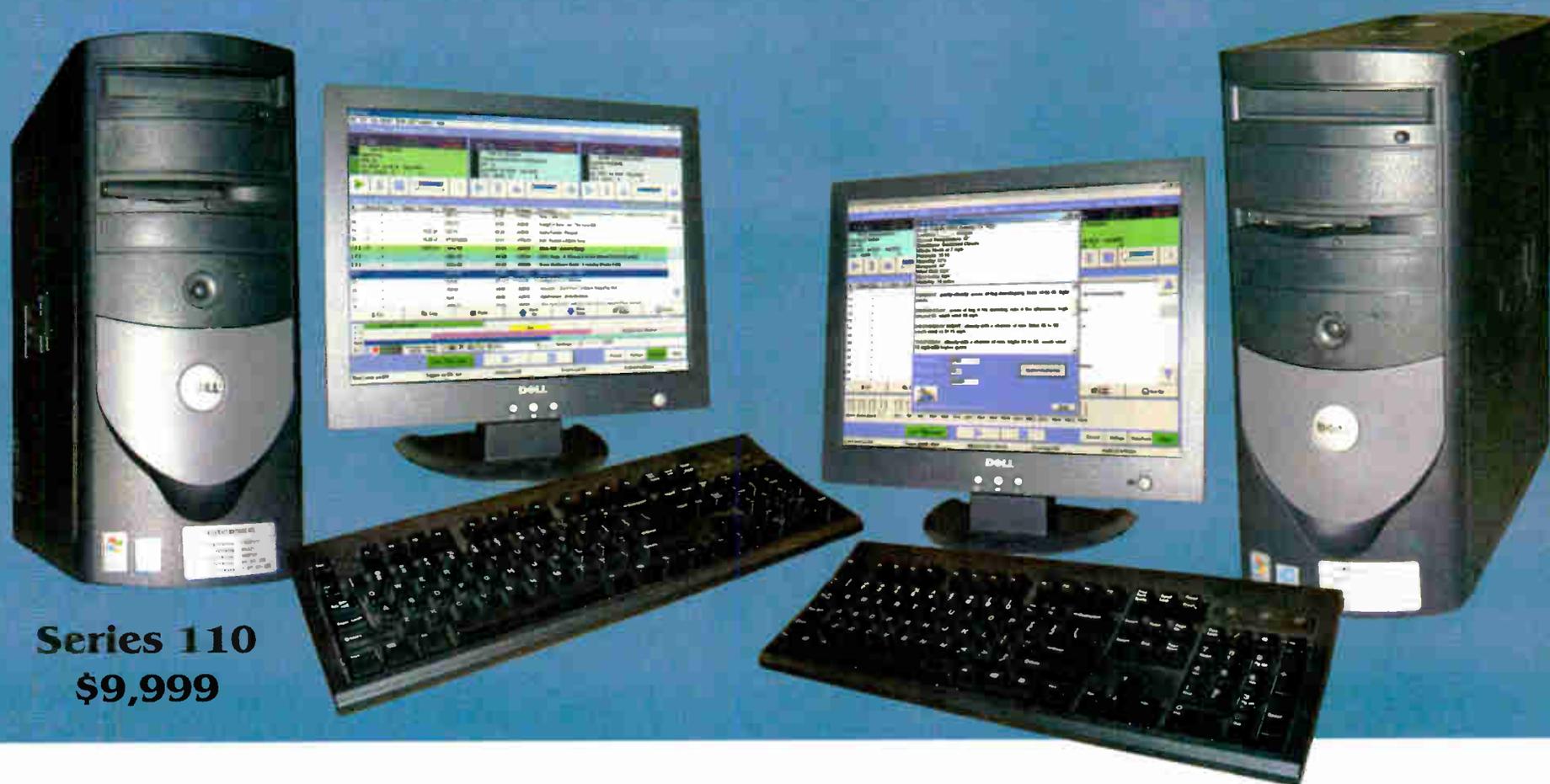
The choice of radials sometimes is driven by outside factors such as the presence of water (rivers, lakes and bays). Major land obstacles such as tall mountains, cliffs or secured federal land — in one case in Hawaii, a combination of rain forest, cliffs and federal land — can force us into compromise in locating measurement radials.

At the least, we want to measure the azimuths towards protected stations and other evenly spaced directions to prove that the antenna is running properly and all protections have been furnished.

Natural wanderlust makes it tempting to just grab the FIM, the compass and some manly junk food, and take off in a 4x4 SUV on our odyssey of measurement. Don't waste your time. Once again, "If you fail to plan, you plan to fail."

See FIM, page 20 ►

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FIM

► Continued from page 18

So let's plan. I am sure every competent consultant has a derivation of the following system. But the fundamentals are as follows.

'Art of the doable'

Either on computer or on paper hard-copy USGS topos, plot the station location and draw in the ideal radials that you want to measure. This is a case of "the art of the doable." You must make adjustments to these radial locations such that the plethora of measurement points are in locations you can reach practically and legally.

Here's the procedure that has served us well over the years. On the radials you've drawn, circle the most *likely* measurement locations, such as anywhere a road crosses the radial. Arrange this material along with any support data (such as local maps and helpful directions from the locals) in a form and size that you can handle in the cockpit of a car and without blinding the driver. Then strike out, searching for each point using map and GPS.

Often you will find that many of the points you thought you'd use are inaccessible due to changes in topography, development or map inaccuracies. Perhaps they are unsuitable because of obstructions, overhead wires or other phenomena that contaminate the indication.

Don't note a point's location, descriptor or coordinates until you have made a successful measurement. This saves a lot of work.

Also, don't worry too much about interval. Just try to hit every accessible location. As mentioned, it's the art of the doable.

One reason DOEs and consulting engineers get paid the big bucks is that they have the ambassadorial skills to get things done. They know how to obtain permission to take measurements on private

property that is normally off-limits. Learn from the masters.

(Some states have extended eminent domain power to allow land surveyors, consulting engineers, registered hydrologists and the like to take legal measurements for the public good on otherwise-private or governmental properties. Check your state law to see if you come under these auspices, should you be cut off from critical locations.)



John Ramsey, DOE of Marlin Broadcasting, and Chuck Dube, DOE of WFCR, wait for me to take the picture so I can take them to breakfast. After breakfast, we each have a radial to measure.

Once your points are selected, determine your measurement interval and mark each carefully on the map(s). Accurately calculate each point's coordinates and note these along with a descriptor, how to reach it by road or foot and associate it with whatever numbering scheme you choose to use.

Ideally, for consistency and validity, your AM DA measurements on each radial should be taken with the same FI meter, on subsequent days, in similar weather and between the daylight hours, starting no earlier than one hour after dawn and one hour before sunset.

If using multiple FIMs in a proof or measurement project, be sure to compare the indications on all the meters and ensure that they agree with one another before embarking. When returning to re-measure a point or radial, use the same meter.

Put your name on it

Take very good care of your FIM. Yes, the PIs are rugged; but a craftsman takes the best care of his tools. The cost of having a unit reevaluated, refurbished and recalibrated is a minor one within a big project. If your last recalibration was over a year ago and the measurements are important, remove this doubt from the project and have it back to the factory for a visit.

Hint: Mark your meter as to ownership well (spray on your station call letters or add durable "decalomania"). Ask the factory to put your ownership ID inside the unit when it is apart and before the calibration sticker goes on. These valuable meters must like to grow little feet when we're not looking, because they're always walking off. Mark them ostentatiously as a deterrent to theft.

These measurements take time and diligence, so maintain consistent work habits. Tank up the 4x4 the night before; check the oil and windshield washer fluid, tire pressure and Perrier supply. Get a solid night's sleep. The next morning, eat a good breakfast and put fresh batteries in the GPS.

Drive to the transmitter and personally check the power output and DA operating parameters so you know they are exactly right. While at the site, zero your GPS unit at the array center coordinates. Let affected personnel know your whereabouts and goals for the day; be at your first point at the appointed time.

For safety and convenience, do this work with a partner. Because of the expense and complications involved, both of you should keep records of the

gratifying. In "Apocalypse Now," Robert Duvall's character Col. Kilgore says that there is nothing more pleasing than the smell of napalm in the morning. Personally, I think it's getting that first FIM logged while the dew is still on the ground.

In the footsteps of giants

No one is well served by inaccurate FIs or those taken under dubious circumstances. Accurate data on your station's field strengths is an excellent tool, probably the only reliable one you have to ascertain performance, including long-term deterioration. It behooves you to do your best job in taking and preserving this data.

Further, extensive FIM data contained in elaborate or detailed proofs will be used again and again over the years by other engineers, drawn from the FCC's records, as a basis for calculating local conductivities and expected propagation.

It is comforting and instills confidence to know the data was taken by a giant such as Jules Cohen, Bill King, John Battison or Donald Everist, to name a few. If your work is of their caliber, you have done a superior job.

The author thanks W.C. "Cris" Alexander for his help with this article. Fitch calls Alexander "the Jedi master of DAs."

Charles S. Fitch, W2IPI, is a registered professional consultant engineer, member of AFCCE, senior member of SBE, lifetime CPBE, licensed electrical contractor, former station owner and former director of engineering of WTIC(TV) in Hartford, Conn., and WHSH(TV) in Marlborough, Mass. 🌐

MARKET PLACE

Dielectric Has 'Hot-Switchable' IBOC Combiner

What's a "Dibrid"? It's a new offering from Dielectric intended to help stations converting to IBOC.

HDR Dibrid is a trademarked name for a combiner that does not use switches; the company says it permits "hot switching" that keeps broadcasters on the air as functions are changed.

"Prior to the introduction of our Dibrid, radio stations had to use fixed combiners and a number of switches to provide HD Radio broadcasts," said John Chapman, vice president and general manager of broadcast products. He called that an "inflexible solution" that required a broadcaster to go off the air to change functions.

The unit comes as a stand-alone with two inputs and two outputs. "Depending on the function, one transmitter or a combination of the two can be connected to the combiner's inputs, while one output is attached to an antenna and the other to a station dummy load."

Transmission modes can be set up to direct the analog transmitter, digital transmitter or a combination in various ratios to the antenna, with residual power directed to the load. The unit also has on-board control for local or remote operation.

Chapman said the company is using "conventional components from existing military technology" to provide broadcasters with a more versatile way to change functions without interrupting service. Another benefit, it said, is longer component life.

For information contact the company in Maine at (207) 655-4555 or visit www.dielectric.com

Engineering Handbook Authors Sought

Radio World contributor Tom Osenkowsky is among the engineering experts who are coordinating work on the next version of the NAB Engineering Handbook.

The association has announced that the 10th edition of the publication is in the works, with TV veteran Ed Williams as editor in chief. Also working on the project are Graham Jones, director of communications engineering at NAB, and David H. Layer, the director of advanced engineering for the association.

NAB has issued a call for industry leaders to contribute. "If you have relevant knowledge and experience that you are willing to share, NAB is offering an opportunity for you to participate in this premiere publication as a contributing author."

The 10th edition of the reference book will contain new sections on advanced radio and television, digital audio, video, and data technologies, "with emphasis on practical information for working broadcast engineers."

Potential authors should contact Ed Williams immediately via e-mail to handbookeditor@nab.org.

Tips

More tips from Buc Fitch for your FIM excursion:

- ✓ Wear Polaroid sunglasses when it is bright or glary.
- ✓ Drink plenty of water.
- ✓ Allot lots of time.
- ✓ Take the time to be safe (e.g., don't park the truck on a blind curve so you shorten your walking distance).
- ✓ In rattlesnake country, stomp your feet so they hear you coming.
- ✓ Relax, enjoy, make new friends, explore the beautiful or at least interesting countryside around you.
- ✓ Don't be perplexed by the numbers you take, or you will be tempted to analyze and fudge them. Review the data in the calm and quiet of an office or hotel room in the relaxing evening hours. Anomalies usually make sense if you have taken time to understand the system, topography and conductivities.
- ✓ Repeat the above about 400 times at 400 locations, and you have the makings of a great day.

Beethoven.com Hangs Tough

by James Careless

Beethoven.com bills itself as "The World's Classical Music Station." However, perhaps a more appropriate title would be "Dot.com Crash Survivor."

The site has managed to stay afloat since 1999, when it first became a commercial Internet radio station. Today, this classical music Webcaster is breaking even through a combination of smart budgeting, canny ad deals and persistence.

"We're just waiting for advertisers to discover Internet radio the way they discovered terrestrial radio 70 years ago," said Alan Tolz, group vice president of Marlin Broadcasting, which owns Beethoven.com. "We don't know when this is going to happen, but at least we have the staying power to wait."

History

Beethoven.com was originally the Web site for Miami classical music station WTMI(FM). However, by the time Marlin Broadcasting sold WTMI to Cox Radio in 2000, Beethoven.com had evolved into a bona fide Internet radio station, one with its own programming, online identity and Web-based ad sales.

This said, Marlin Broadcasting's managers knew the market was not ready to support commercial Webcasting; especially after the dot.com crash in 2000. This is why they moved Beethoven.com's operations to Hartford, Conn., not far from where Marlin owned WCCC(AM) and WCCC(FM). Then, in a "man bites dog" reverse, the AM was renamed WTMI and turned into a terrestrial rebroadcaster of Beethoven.com's Internet feed.

"Had we not found a way to link Beethoven.com to a terrestrial radio station, we would have had to run it with a skeleton crew," said Tolz. "However, by rebroadcasting our Web feed over WTMI(AM)'s 500-watt signal, we could use the same staff to



Promotions and Program Director Nicole Marie works in the Beethoven Radio studio.

program the site and the station.

"Since WCCC(AM) had been doing little more than relaying WCCC(FM) at the time, we didn't lose anything by making this switch. In fact, we've been able to pick up some new advertisers, because (the area) is home to some affluent communities that belong to the classical music demographic."

Technology

Today, Beethoven.com and WTMI(AM) operate out of studios in the basement of a two-story heritage house in Hartford, while WCCC(FM) runs out of the second floor.

"We like to say that we've got Howard Stern upstairs and Sir Isaac Stern downstairs," quipped John Ramsey, Marlin's chief technical officer. Beethoven.com's music feed is produced using Harris Impulse consoles, CD players and a BE AudioVault digital storage system. It is mixed in live assist mode from 6 a.m. to 8 p.m. Eastern — "to serve our listeners during all national day

parts," Ramsey said — and in automated mode the rest of the time.

Encoding this feed for the Web is not complicated. "We simply send it through a digital encoder to convert it into two feeds, which then goes out from our studio via two redundant, separately routed T-1 lines," Ramsey said. "This ensures that if one of our phone lines is affected by 'backhoe drop-out,' our signal will still get out via the other one."

The two feeds — 21 kbps and 96 kbps — go to separate companies. The 21 kbps is delivered to local ISP Veranet, which serves it out free to 4,000 users at a time. Meanwhile, the 96 kbps is sent to RealNetworks, where it is sold as part of Real's paid subscription services.

"We get a share of Real's subscription revenues," said Tolz. "They also cover the bandwidth costs for the 96 kbps distribution, whereas we have to pay for every single user who logs on via 21 kbps."

Alan Tolz estimated that Real pays about \$1,500 a month to Beethoven.com. Although not a princely amount, it helps cover a portion of the combined Webcaster/AM station's \$6,500 monthly budget. Among these costs are Beethoven.com's bandwidth fees — it has to pay for each listener who connects to a 21 kbps stream — and "performance payments" on a per-user basis to the RIAA.

"We make money from local advertising on WTMI(AM), and about \$1,000 a month from 'click-throughs' on our banner ads," Tolz said. "Every time someone clicks on one of our banner ads, it takes them to the advertiser's site. We get paid when this happens."

Beethoven.com has shopping links on its site for CDAmigo (CDs), the Chopin Mall (branded clothing, mugs and gifts) and Naxos (CDs). Naxos is an important partner because it waives performance fees for any Naxos-owned music played on the site.

"Although we play music from other labels — especially because 80 percent of our selections are generated through listener e-mail requests — we use the Naxos library whenever possible," said Tolz. "This helps keep our performance fees down."

Waiting for the wave

By pairing Beethoven.com with WTMI(AM), generating subscription revenues through RealNetworks, selling banner ads and striking a deal with Naxos, Marlin Broadcasting apparently has managed to make Webcasting a break-even proposition. As a result, when advertisers finally grasp the value of Webcasting, Beethoven.com hopes to be ready to offer the audience they're looking for.

Until this happens, "we're treading water," Tolz said. "We may even have to cut back on some of our streams to keep our costs under control. This said, we just increased from 2,000 to 4,000 streams, to keep up with listener demand. Maybe we can motivate some of them to subscribe through RealNetworks." 

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Decode, read and qualify all RadioData transmissions.

Connect the Inovonics 510 to any mod-monitor or off-air receiver to decode and read RDS/RBDS data from your own station and from others in your market. The 510 supports NRSC and CENELEC standards for both the A and B data sets of the more common RadioData groups, and even displays hidden identifiers, text, and housekeeping functions.

A unique, on-screen Glossary utility defines RDS/RBDS abbreviations and automatically calls-up the appropriate presentation.

The large, backlit LCD panel displays all ASCII text, as well as certain language-specific alternate characters.

The 510 also shows RadioData subcarrier injection as a digital readout directly in percent, with a built-in calibration utility to ensure accuracy. A rear-panel serial interface permits optional computer analysis and archiving of raw RDS/RBDS data using the included software.

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Station-Branded: For Love or Money?

by Mark Lapidus

"No question about it; we are gonna sell some coffee."

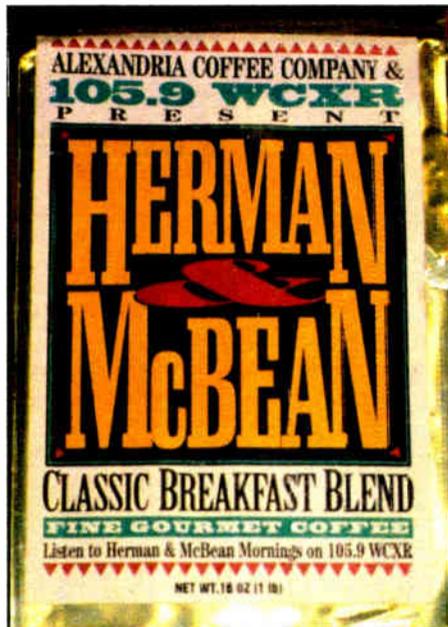
It's your general sales manager talking. "With the marketing power of this radio station, I wouldn't be surprised if we sold a few thousand pounds a month. Our brand means a lot our listeners; and since they trust us, I feel certain we've got a home run on our hands. It's possible we might want to branch out into other products after this takes off."

If you've heard a GSM, AE or PD say something similar, you know the punch line. The coffee is greeted by listeners with good cheer, but it does not, in fact, sell thousands of pounds a month. Why? Your listeners love you as a radio station. They don't, however, view you as a manufacturer of goods.

It's common sense if you think about it for a moment. Can anyone imagine a listener saying: "I love that radio station. I bet they make great coffee!"

They see you

There is one excellent reason to conceptualize and take to market a radio station-branded product: It's great visibility. In most cases, though, don't expect to make big



You can put your brand on just about anything. But be realistic about what you'll accomplish.

bucks off the branded product itself.

You can make money on branded products in ways we'll explore. First let's examine a few common products that work promotionally when branded with a

radio station.

I began with coffee, so let's stick with that for a moment. It's a cool promotional vehicle for a morning show on a radio station. Listeners get this right away. They wake up with a station; they wake up with coffee. Bingo. You won't sell thousands of pounds, but at least it's fun.

In promotional copy, a morning show-branded coffee can have the same attributes as a morning show: It wakes you up; it puts you in a good mood; it can be enjoyed in the car, at work and at home.

I once launched a morning show with a "coffee" commercial describing the new show through the coffee attributes. I placed a radio spot schedule for this "coffee" on the direct competitor. Then I let it air a few times and called the local paper. The competition was not amused, but the market sure was.

If you move forward with a branded product, tie in a charity to receive some of the proceeds for each sale. This adds a nice feel-good for the listener. The charity may also be able to help you sell the product to its members. If you shop around, you may even find a charity that has its hooks into a retail chain that can sell the product.

A station-branded hot sauce ties in with that DJ of yours who has a bit of an attitude. It can be sold through a local chili-oriented restaurant.

CDs with station performances or "best of" seasonal collections will sell, to a degree. The more unique the material — and the more popular the morning show to which the CD is tied — the better it will sell. But sales on station CDs peaked around 1992, when some songs still could only be found on station releases. Downloads have weakened the station CD market further.

Station-branded beers can work for a while. Initially you sell them in bottles or cans; when sales slow, work out a deal under which an area micro-brewery serves it on tap.

So where's the money? It's in the sponsorship of on-air mentions to promote the product and in appearances the station makes to sell the product.

Promo Power



by Mark Lapidus

For example, you can sell a local coffee shop into branding your coffee with you. That's got value to them because it gets their name out and drives traffic to their stores.

Selling it

Perhaps a beer supplier would like to be the presenting sponsor of your morning-show CD release, complete with CD release parties at bars.

I would be remiss if I didn't mention the sale of station-branded T-shirts, coffee mugs, lighters, koozies, key chains, underwear, hats, you name it — typical specialty items. In the beginning these items will sell, at least if you're doing it in conjunction with a rock or country station. But after a year, when hard-core station fans have made their purchases, sales dwindle. Eventually the station or vendor will realize there's not enough profit to make it worthwhile.

If your goal is to sell stuff cheap just to get your call letters out there, that's noble; but the project takes a lot of effort, even when you're just selling through your Web site. Someone has to do fulfillment and deal with the customer complaints, returns and bad checks.

We also forget how well we've trained audiences that we give away specialty items for free. How many times have you heard from a listener, "Hey, got any free T-shirts?"

The author is president of Lapidus Media. Reach him at marklapidus@yahoo.com.

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AIR Atlanta Helps Georgia March of Dimes

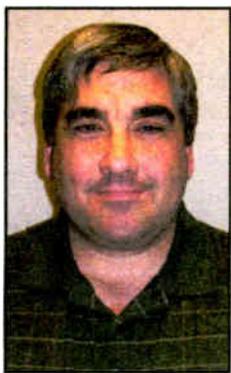


A silent auction raised \$13,000 for the Georgia March of Dimes, part of festivities at the recent Achievement in Radio Awards in Atlanta. Over nine years, the Atlanta event has helped to raise \$600,000 for the March of Dimes. The local award board includes, from left, Andrew Saltzman and Bob Houghton of Big League Broadcasting; Jessica Garcia of 360 Media; Tamala Edmonds of Clear Channel; Joe Tuttle of Radio One; Simon Kornblit of March of Dimes; Melissa Munro of Radio Disney; Bethany Esbrook and Christy Ullman of ABC Radio; Brittney Gray of March of Dimes; Victor Sansone of ABC Radio; Liz Kennedy of Metro Networks; Allen Power of Salem Communications; Tom Matte of Max20; Jenn Hobby of WWWO; Nathan Phaneuf of Max20; Carol Armitage of Max20; Tara Murphy of 360 Media; and Cheryl Ervin of Clear Channel.



Tell us about your job change or new hire. We're particularly interested in hearing news about radio engineers and managers. Send news and photos via e-mail to radioworld@imaspub.com.

Scott Trask was promoted to director of engineering for Jefferson-Pilot Communications' Atlanta stations WSTR(FM) and WQXI(AM). He succeeds Tom Giglio, who continues to oversee technical operations in the company's five markets as corporate VP of engineering.



Scott Trask

John Bisset joined Broadcast Electronics' marketing and sales team as Northeast regional RF sales manager. He had been sales manager for Dielectric Communications.



John Bisset

Beasley Broadcast Group appointed Mac Edwards VP and director of operations of its Fayetteville, N.C. cluster. He was formerly VP, programming for the cluster.

OMT made changes to its board of directors with the addition of Bill Baines, president of AML Wireless Networks, as executive chairman. Board Chairman Dr. Jack E. Peterson retired from the board, as did directors Ted Paley, Bruce McCormack, Scott Farr and Kevin Hooke. Mark Ahrens-Townsend, Stephen Pumble and Steven Stang remain as directors of the corporation.

Staco Energy Products promoted Dave McElvein to Eastern regional sales manager. He had been sales manager for the power quality products division.



Dave McElvein

SCMS Inc. added Suzette Cappell to its staff in the position of customer service and sales support. She had been sales administrative assistant with Wheatstone Corp.

Heidi Raphael was appointed direc-

tor of corporate communications for Braintree, Mass.-based Greater Media Inc. She continues to serve as director of group marketing for Greater Media Detroit, and administers her responsibilities from her Detroit office.



Heidi Raphael

AAA Entertainment added John Ginzkey to its staff as general manager of its Champaign-Urbana, Ill. stations. He left his management role at Union Broadcasting in Kansas City.

Entravision Communications

named Chris Roman general manager of its Las Vegas broadcasting properties. He had been GM for the company's Santa Barbara properties. Gabriel Quiroz had been GM for Las Vegas, and assumed Roman's role in Santa Barbara.

NextMedia promoted Floyd Evans to GM of its Saginaw/Bay City/Midland, Mich. radio cluster. He had been director of sales there. ... Paul Kingman was promoted to GM for NextMedia's Greenville/New Bern/Jacksonville, N.C. cluster.

Clear Channel named Gary Granger market manager for Stockton/Modesto, Calif. He had served as director of sales in Melbourne, Fla. ... Sarah Simpson was named director of sales for the company's four-station cluster in Sacramento, Calif. She had been GSM for the cluster's KFBK(AM) and KSTE(AM).

Infinity Broadcasting promoted Karen

L. Mateo vice president of communications. She was director of communications.

Robin Bryson noted his 25th anniversary at Delmarva Broadcasting in Wilmington, Del. Bryson is "Traffic-watch" coordinator and fleet manager for the group.

Radio Free Europe/Radio Liberty reported that Jan Nowak, the fighter for the Polish resistance during World War II who went on to head the Polish service of RFE for a quarter of a century, died Jan. 20 in a hospital in his native Warsaw. He was 91.



Jan Nowak

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Radio, Beyond the 'Christian-ese'

by Paul McLane

Christian radio is more than preaching-and-reaching or Inspo, more than Third Day or James Dobson, "How Great Thou Art" or "Jesus Walks."

Christian radio is many things. What it will become is even less defined.

Will formats shift? Where does the medium fit in a world of the Internet, MP3 and satellite? What should its business model be? Can it overcome aging demographics? Is "crossover" a good thing? Is Christian radio guilty of playing "the same song over and over" as secular radio is accused of doing?

These were questions faced by attendees as they convened for February's National Religious Broadcasters convention.

Female, and aging

The issues surrounding Christian media seem to attract more attention now. For instance, "60 Minutes" recently featured a segment titled "Rocking for Christ" in which the network reported that Evangelical Christian entertainment is a \$4 billion-a-year industry.

Within radio, Arbitron's Format Trends Report supports those who say the format is growing. In 1998 and '99, the company's figures showed religion with an average quarter hour share hovering around 2.1 or 2.2. By 2004, that had increased to the 2.7-3.0 range (Persons 12+, Mon.-Sun., 6 a.m.-midnight).

However, he said, the "old model" of Christian broadcast and ministry isn't working as well as it could today.

"The secular media has had a field day with us, going back to the mega-ministry scandals of the late '90s. We can't ignore that. But we have this great opportunity. We can't use the 'same old, same old' to communicate the Gospel message."

"Here we are in the 'communications ministry.' Are we communicating? Is what we're doing today — in every break, program and announcer comment — related to the target audience?"

If a station wishes to help listeners understand Old Testament and Hebrew writings, fine — "but are you presenting that information in such a way that nobody will lis-

Teaching and talk continue to be a staple for outlets like KAVX(FM) in Lufkin, Texas, last year's NRB Station of the Year.

Satellite radio is part of the new media landscape. Salem Communications has a programming deal with XM, including its format 'The Fish.'

Statistics from Arbitron's "2004 Radio Today" report also suggest unique challenges for religious programmers. Women are almost 65 percent of religion's adult listeners. Thirty-seven percent of the audience is black. The format skews older, with nearly a third of its listeners in the 55+ bracket, and another quarter is 35-44. The average age of a P1 listener is 45. Programmers are asking themselves where their audiences will come from.

'Denny's test'

Dick Jenkins, president of EMF Broadcasting, faces these issues at K-LOVE and Air 1 Radio networks. Christian broadcasting, he said, is "extremely healthy, and there's never been a more dynamic opportunity since the 'Jesus revolution' of the 1960s" to reach more nonbelievers.

He said NRB delegates should evaluate everything they do by asking whether it reaches the intended target in today's cultural environment. When someone offers Jenkins a spoken-word program, he submits it to a "Denny's Test."

"Let's go to the Denny's truck stop, gather eight people in a booth and play a presentation of what the program would sound like," he said.

"If we can get a reaction of 'Oh, wow' or 'I can see how that might be relevant,' we're accomplishing our purpose — not that they will drop to their knees right there and accept the Lord — though they could — but that they listen rather than shut down their minds. But if we play something that uses language like 'anointed by the Blood of the Lamb' and so on — what I call 'Christian-ese' — they'll say, 'What are you talking about?'"

ten, because of the 'Christian-ese' language and delivery?"

Jenkins said broadcasters also don't realize they will soon have access to distribution systems of almost unlimited capacity. While some worry about half-hour blocks that may reach a market of 50,000, there are "250 million people with cell phones" who soon will be able to watch movies while sitting in airport terminals.

"Shouldn't they be watching a half-hour of Dr. Charles Stanley, or listening to audio about Christianity, or reading an essay on why Jesus Christ was not a figment of someone's imagination?"

Beyond mechanics

Panelist Ron Harris says mechanics may be important for broadcasters but the spiritual element is critical.

"That almost sounds ... *unprofound* for a Christian communicator to say," he said. "But we get so caught up in the technology and demographics and format and hitting all the breaks; and I'm not certain we're always staying equally on the track of our own spiritual growth."

Harris is executive vice president and CEO of Criswell Communications/KCBI in Dallas. The future, he feels, depends on gifted communicators with a timeless message that yet can resonate in 2005.

"If we don't have people with a commitment to Christ and a fresh message to God meeting the needs of today, all the technology won't help. We may have a wonderful conveyor belt that works perfectly; but it's got to have something on it."

In Harris' view, Christian radio is challenged by financial realities, by keeping competitive with commercial stations, even by its own consolidation, with ministries buying more and more stations. Still, he says, "I can't think of a more exciting time to be involved in Christian media."

© National Religious Broadcasters.



Ministers Face Modern Challenges

by Paul McLane

Dr. Ravi Zacharias, president of Ravi Zacharias International Ministries, is many things: a radio host, an evangelical, author, globetrotter, philosopher, expert in cults. His November sermon at the Mormon Tabernacle was praised and criticized.

"To the critics who objected to my being there," he wrote, "I say that all my life, as an apologist, I have spoken across wide chasms of thought and virtually to every major religious group, sometimes at the risk of threats and violence. Differences ought not to keep us from carrying the truth to everyone."

communicators to understand the realities of the 21st century, including the demands of daily life.

"Sometimes the structure into which we get established takes so much of our time to sustain that the priority of personal and message preparation is swallowed up in this high-paced life.

"I find myself in this quicksand of structural maintenance. How do you keep that from sapping the energy of the soul — which you need, in depth, to respond to the challenge of your primary calling?"

He quoted John Stott of All Souls Church in London, saying the "pastor's study" is now called the "pastor's office." This may a matter of designation, he said, but is also a sign of demands on the ministry.

Also challenging to Christian radio broadcasters, he said, is inundation of information.

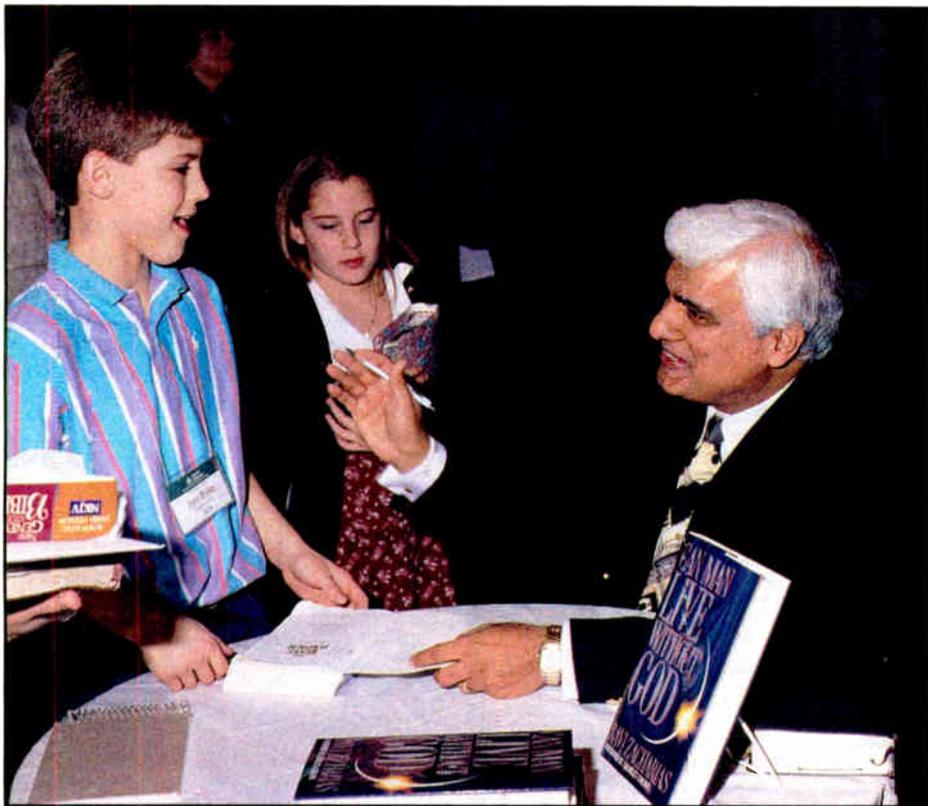
"The ministry is affected very significantly. How do you keep up with the issues, the personalities, the literature, the movie impact, the media impact? Of all professions, we are called upon to know more about more issues; ultimately they all gravitate to the spiritual hunger of our time."

Yet he urges broadcasters to identify their primary calling. Zacharias said he is among those struggling to find solutions.

"My primary calling is that of a Christian apologist. Someone else might be that of a scriptural expert, or (in) a youth ministry or a ministry to the home. We can't literally be experts in everything. Find that primary calling, and excel in that.

"The bottom line is: Plan your day well, or someone else will."

Material in this story is based on an article in the NRB Daily News and is © National Religious Broadcasters.



Dr. Ravi Zacharias, here at a book signing, says Christian radio communicators must avoid a 'quicksand of structural maintenance.'

It was called historic, even by one observer a "spiritual earthquake," because he was the first non-Mormon to take the pulpit at the LDS Temple Square Tabernacle in Salt Lake City in more than a century.

Zacharias, president of Ravi Zacharias International Ministries, was a scheduled keynote speaker at February's National Religious Broadcasters convention; speaking to Radio World, he said he wanted to challenge Christian



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Stations Enjoy New Monitoring Tools

by Lauren Rooney

Station monitoring services are giving radio the ability to see the logs of their competitors and set up sales and programming strategies to combat them.

Power 105.1 — Clear Channel's WWPR(FM) in New York — began using Media Monitor's AirCheck system last August.

"Our sales representatives can look at the logs of other stations and see what accounts and what categories are hot and who's not advertising on our station," said Ron deCastro, general sales manager. He told Radio World that his station had seen "thousands of dollars" in success stories with

AirCheck because the service helps his people put together stronger sales presentations.

"One of the things we look at is what the client is buying," he said. "If you see something that isn't a match, you can say to the client, 'You're targeting women 18-34, but do you realize one of the stations you're on doesn't reach that group?'"

Media Monitors President Philippe Generali said AirCheck also can be used for third-party verification.

"This solves the problem of affidavits because you can listen to the audio of the spot to be sure it aired as it was supposed to," he said.

Media Monitors, a subsidiary of RCS, unveiled AirCheck in 2003. Last November

it announced it announced a contract to provide services for 130 Clear Channel radio stations based on monitoring in 25 big markets. Radio CEO John Hogan of Clear Channel characterized the deal as part of his company's plans to create a less cluttered environment. Media Monitors also is expanding into newspaper monitoring with a new service called PaperVue, and is looking into services for cable TV stations.

A company spokesman said Media Monitors has signed clients that include ABC Radio Group, Bonneville, Buckley, Clear Channel, Cox, Emmis, Greater Media, Infinity, Inner City, Radio One, SBS, Susquehanna, Univision and others, and that the system also is used widely by Wall Street

analysts who cover radio.

Other station monitoring companies, such as Mediaguide, Media Base and Audible Magic, have made headlines with their radio station monitoring services, either pending or on the market.

As reported in Radio World earlier ("Someone Out There Is Listening," Aug. 11, 2004), systems vary in how they present information, but all gather the information in basically the same way. Field and Web recorders capture audio and send it to a central computer. Using either audio "watermarks" or audio fingerprints, the audio is sorted and placed on the monitoring company's Web site in data form. The information is available in real time and can be broken down by daypart, client, market or radio station. The client also can hear the audio that's posted on the site.

At Y100, Radio One's WPLY(FM) in Philadelphia, Program Director Jim McGuinn is using Mediaguide's StationMonitor to track how songs are doing.

"Programming is a mix of art and science, and this helps with the science side of things," said McGuinn.

Mediaguide, created by ASCAP and ConneXus Corp. in 2002, unveiled StationMonitor last October.

"Accurate, reliable and timely information is critical for the kinds of decisions radio stations make on a day-to-day basis," said CEO George Searle. Further, Mediaguide said in February it would be rolling out a new monitoring service for radio stations.

Click-click

McGuinn no longer has to take the time to roll a cassette on the competition to hear what they're doing. He logs onto Mediaguide's Web site and, with a few clicks of a mouse, sees what stations are playing in real time. He can use the service to make sure his staff is following format correctly and get a handle on what stations in other markets are playing.

"When we have a music meeting we listen to a song then go to the Web site to see how it's doing," he said. "We get an accurate picture of where a record company's project is and can cut through the record company's propaganda."

Station monitoring is becoming a hot trend in broadcasting.

ConfirMedia, a division of Verance Corp. in San Diego, is offering a monitoring system to CEOs of radio companies. Its marketing focuses on third-party verification via Ad-ID digital codes in broadcast commercials for verification and reconciliation.

"Currently there is no tool out there that allows the broadcaster system to talk to the advertising agency's system and update change orders," said Steve Saslow, CEO of Verance Corp.

Audible Magic signed a deal with Mass Radio Inc., a Hispanic radio consulting company, to use its technology to launch a Spanish radio monitoring system.

Mediabase, a division of Premier Radio Networks, monitors radio record airplay in 140 markets and will soon offer spot verification.

The technology is meant to help stations do a little client prospecting, make sure invoices are correct and stay on top of the hottest songs.

DeCastro, who doesn't mind if the competition is monitoring him, said it's not meant to replace the human touch.

"I always tell my people that competing stations should be able to come into your office and go through your files, and it won't make a difference; because the difference is how well you know your clients and the ideas that you pitch them," he said.

U.S. Radio Responds to Disaster

Emmis station WQHT(FM) in New York made headlines for its parody song that mocked victims of the December tsunami. The station and owners apologized.

But U.S. radio in general responded to help after the tragic tsunamis of December.

"Our radio stations partnered with KMGH(TV), Channel 7 here in Denver," said Amber Pope, director of marketing for the Entercom cluster. "They brought all their cameras and anchors here to our studios from 3 a.m. until 6 p.m. on Jan. 7 and we simulcast 'Colorado Unites: Tsunami Relief Day.'"

Rather than collect money for a single charity, she said, the stations provided information on 12 organizations including U.N.I.C.E.F. and the American Red Cross. Participating were KALC(FM), KOSI(FM), KQMT(FM) and KEZW(AM).

In Washington, Infinity Broadcasting took a slightly different approach.

"We held a 'Radiothon' on WPGC(AM/FM) and raised about



Many radio stations, like ABC's WJR(AM) in Detroit, worked to raise money for tsunami relief. But Emmis station WQHT(FM) in New York and its Miss Jones morning team parodied the victims.

\$93,000," said Justine Love, director of community/public affairs for the stations. "Donnie Simpson, a personality on our FM station, which plays hip-hop and R&B music, told listeners that anyone pledging at least \$100 could make a song request. We also had recording artists in the area calling in to pledge money."

WPGC(AM), which has a gospel music format, coordinated efforts with Jack Johnson, county executive of Prince George's County. Money collected on air and from station Web sites went to benefit the American Red Cross.

Listener-supported KEXP(FM) is affiliated with the University of Washington in Seattle. On-air and online, the station encouraged listeners to donate to Mercy Corps and other specific charities. A link can be found at www.kexp.org.

"We are also active with our worldwide listeners via e-mail," said Program Director Kevin Cole. "Each of our DJs has his or her own listener database, and we made appeals that way as well."

Locally, KEXP sponsored benefits with the musicians' community at a teen club called The Showbox.

In Moultrie, Ga., air personalities at WHBS(AM) called on listeners to make donations to the Red Cross. President Ron Sailor stated that it was time for people to stop talking about the news and become part of the news. The station raised more than \$2,500 during a telethon.

National Association of Broadcasters President Edward O. Fritts praised local radio and TV stations for donating airtime for victims. "This is a tragedy of epic proportions, and local broadcasters from coast to coast are responding with on-air appeals to help victims of this natural disaster," he stated in early January.

Project Concern International provided a downloadable, 60-second public service announcement available at www.projectconcern.org.



AP Photo/Gregg DeGuire

Tidal waves washed through houses at Maddampegama, about 38 miles south of Colombo, Sri Lanka, Dec. 26, 2004.

— by Ken R.

They Don't See the Sky Falling

by Scott Fybush

The threat of satellite radio? Howard Stern's defection from the terrestrial airwaves? Teenagers turning to their iPods for entertainment? FCC fines galore?

Never mind all the negatives. Programming executives, at least those who assembled for a session at last fall's NAB Radio Show, seemed to feel the outlook for good old radio is sunny and bright.

"I think radio's in tremendous shape," said Pat Paxton, senior vice president for programming at Entercom. "I think we're lucky to be in the business we're in. People still need to listen to radio to find out what to download," he said.

The gathering came at a time of big changes, including Stern's announced move to Sirius Satellite Radio.

"I'm glad we've already absorbed that blow," said Tom Owens, senior vice president for programming at Clear Channel Communications, which pulled Stern's show off its stations last spring.

"Howard certainly signals to me and to my company the need to develop live, local talent so we can control our own product and our own destiny," said John Dickey, executive vice president of Cumulus Media, which doesn't carry Stern's show on any of its stations.

The challenge of developing the next Howard Stern is one that radio executives have been grappling with for years. Mary Catherine Sneed, chief operating officer of Radio One, said her company had begun answering that challenge with a monthly "PD college," in which promising employees learn programming skills from experts. In addition, Sneed notes that Radio One PDs have begun doing regular airchecking sessions with all of the company's air talent, including — and especially — part-timers, whom Sneed says have been grateful for the feedback.

On the booming Spanish-language side of the business, Univision Radio President of Programming David Gleason said "local" has been the key word for his stations since the group's start under Mac Tichenor half a century ago.

"Spanish radio is more dependent on local talent, due to the fact that no two markets are exactly alike," Gleason said.

As a result of that local emphasis, he says, the group is somewhat insulated from the potential for listener erosion that some English-language broadcasters now worry about.

"As long as there is contact with the listener, I don't think any station has anything to fear," Gleason said.

Know the younger listener

To the extent that his English-language counterparts are concerned, it's fickle younger listeners who keep them awake at night.

Entercom's Pat Paxton said radio needs to make a concerted effort to make itself hip again.

"When's the last time anyone here did a 12-24 research study?" he asked. "Until we as an industry decide being hip and cool to the younger demos is important, it's not going to happen."

Radio One's Sneed said satellite broadcasters are doing a better job of marketing to those young, Internet-savvy listeners than most of their terrestrial counterparts.

"I get a freakin' e-mail from XM and Sirius every day telling me what they did,"

Sneed said, "and I wonder why the Radio Advertising Bureau doesn't do a PR campaign like that for radio."

Radio One stations tell local programmers how important it is to them to hear their music on the radio for the first time, a con-

When's the last time anyone here did a 12-24 research study?

— Pat Paxton

Sneed says many of the hip-hop and R&B artists who get their big breaks on

cept she believes would be a perfect theme for such a campaign. (Radio groups have

subsequently launched a promotional campaign called "Radio. You Hear It Here First.")

Univision's Gleason blames advertisers for the lack of attention radio pays to younger listeners, saying there's little demand from the advertising community for audiences younger than 18 or older than 55.

"If there were a demand from the advertisers, we would provide programming for it," he said.

On the other side of that chicken-and-egg equation, Cumulus' Dickey called on other programmers to create the sort of programming — "big imaging, big production" — that will appeal to younger listeners.

"What we do and what we don't will determine how (younger listeners) are introduced to the medium," Dickey said, noting See PDS, page 29 ▶

It's good to be the King

When it comes to audio processing, **ORBAN / CRL RULES** four to one over the nearest competitor in the number of FM audio processors in use at radio stations across the United States.*

AS A MATTER OF FACT, ALL TOP 15 FM RADIO STATIONS IN LOS ANGELES USE ORBAN PROCESSING.

* Ohio State University Fisher College of Business, *Orban: FM Audio Processors 2004* study of 665 major, medium and small market radio stations in the U.S.

65% of U.S. FM radio stations in an Ohio State University study trust ORBAN/CRL audio processing equipment to make their sound the very best it can be. That's because at ORBAN/CRL we are committed to giving your listeners the royal treatment.

Percentage of FM Audio Processors in use in U.S. stations participating in the study

Audio Processor Manufacturer	Percentage of FM Audio Processors in use in U.S. stations participating in the study
Orban/CRL	65%
Nearest Competitor	~16%
Next Nearest Competitor	~11%

ORBAN OPTIMOD-FM 8400 SIGNATURE SERIES

www.orban.com

Marketing Intelligence on the Cheap

On-Site Surveys Can Help Stations Cut Into the Cost of Doing Research

by Joe Dysart

One of the Web's successes has been the real savings the medium has brought to market research. Some stations are among companies cutting the costs of market research while increasing customer participation in that research by using e-mail and Web pages as survey tools.

According to Joanna Belbey, president of Direct Response Marketing in Brooklyn, N.Y., a typical e-mail survey costs about half that of a conventional, mailed survey, response times are cut to about a week and return rates can be as high as 50 percent.

Not surprisingly, those metrics have turned more than a few heads in corporate America. In 2003 this resulted in the catapulting of at least two e-mail survey solution providers into the fastest growing companies in the United States. Web Surveyor (www.websurveyor.com) made Deloitte Technology's Rising Start Fast 500. Perseus (www.perseus.com) made the Inc. 500 List of Americas Fastest Private Growing Companies.

"It's not easy for a young company to get traction in the technology marketplace, let alone report such phenomenal revenue growth," said Mark A. Evans, national managing partner of Deloitte's Technology, Media & Telecommunications Group in 2004. "It's a credit to WebSurveyor's leadership that they've managed to ramp up their business so quickly."

Versatility

A recent browse around the Web found a number of radio stations put these tools to use, many of them noncoms.

KJIC(FM), a noncommercial station in Santa Fe, Texas, was leveraging Web surveys to distill Web visitors' favorite type of music. KMOU(FM), in Roswell, N.M., owned by Roswell Radio Inc., used surveys to get a better handle on visitors listening habits and preferences. KUFM(FM), a noncom in Missoula, Mont., reached out to listeners with a Web survey inquiring about how the station can do better.

Other stations conducting similar Web surveys include noncom KDAQ(FM) in Shreveport, La., and KUSP(FM), based in Santa Cruz, Calif.

Perhaps one of the most extensive radio industry surveys we found on the Web was hosted by noncom WCLK(FM) in Atlanta. With an extremely detailed and probing survey, WCLK delved deeply into virtually every facet of participants' listening habits, preferences, opinions on the station's NPR affiliate — essentially, the full gamut over nearly every aspect of the station's image. (At this writing, the survey was no longer posted.)

Probably one of the major factors behind the success of the new survey medium is this ease of versatility, the ability to research quickly — or exhaustively — depending on need and budget.

Firms are using e-mail surveys to access the efficacy of advertising campaigns, test new ads, distill customer awareness and attitudes, and float trial balloons for new products and services.

Plus, the electronic missives are suitable for product evaluations, feedback on Web site design and functionality, as well as employee feedback applications.

In addition, e-mail surveys have grown more sophisticated during the past few years, offering firms tools for soliciting respondents and analyzing results.



KMOU Listener Survey

It's your turn to make KMOU the best radio station on the planet. We would like to hear from you. We are Roswell's best country, and want to stay that way. Please take time to fill in the survey below. Your feedback is very important to us. Thanks for participating.



Sex: Male Female

Age:

How often do you listen to KMOU? (hours per day)

What time do you listen the most?

Where do you listen the most?

What are your favorite songs? Artists?

Did you find it easy to get around our website?

Yes No

KMOU uses surveys to get a better handle on listening habits and preferences.

Some of the more advanced e-mail survey solutions enable firms to personalize each survey with up to 20, user-definable fields. In practice, that translates into being able to address each potential respondent by his or her own name, and include up to 19 other personalized facts about them in a survey to ensure the recipient does not feel like anonymous drone in some sort of spam-fest.

Tracking

More advanced surveys solutions now track who actually received a survey, who clicked on links embedded in the survey, who forwarded the survey onto a colleague or friend, and who responded to the survey.

Firms are using e-mail surveys to access the efficacy of ad campaigns, test new ads, distill customer awareness and attitudes and float trial balloons for new services.

Such solutions enable a station to embed a survey within its newsletter, and add automatic triggers to existing customer or sales support systems to enable you to send surveys after specific events of your choosing.

Many survey packages will automatically graph your survey responses, create multiple sub-reports based on how one or more questions are answered, and offer simple and multi-level data filtering based on all question, data or system data points. Essentially: if you can dream up a personalized way you want to slice and dice your data, chances are one or more of the solutions providers already has a tool do so or can offer you tools

you can use to do your own customization.

Given that so many solution providers are competing for your business, you'll also have no problem locating free, detailed white papers on how to design and implement an online survey.

Some of the best of this ilk, for example, can be found at Perseus Development (www.perseusdevelopment.com).

Here you can find "Survey 101 — A Complete Guide to a Successful Survey," "Seven Steps to a Successful Web Survey" and "Web Surveys — For Knowledge, Lead Management and Increased Traffic," among others.

Once you've analyzed your data, you can get some extra mileage from your efforts by releasing select results and insights from your survey to the media. In doing so, you can position your company as an industry authority and in the process, win friends in the press corps.

"Surveys and surveys are valuable publicity tools because they tip off reporters to emerging trends," says Joan Stewart, a publicity consultant

and founder of The Publicity Hound (www.publicityhound.com). "Often, they provide nuggets of information that don't take up a lot of space. Or they can result in longer news or feature stories, as long as they don't sound like blatant self-promotions."

Stewart says companies looking to get publicity from their surveys should make sure those surveys have authentic news value. Company Web sites that already generate a great deal of traffic, for example, may want to ask visitors their opinions on emerging industry trends or their favorite products within the industry.

Even more valuable — to both survey participants and the news media —

are surveys that include some follow-up phone call interviews with participants, which are used as the basis of quotes and further insights that can be sprinkled liberally throughout the final document.

"Many people will be pleased that you asked them to participate," Stewart said. "They will also want to read the report once it's done, which gives you a second chance to contact them."

Sampler

The popularity of Web-based surveying has spawned a cottage industry of Web service providers eager to help companies conduct surveys online.

Many provide these services for free in exchange for free advertising space within the survey form. (For more info, type "free surveys" into any major search engine).

Others sell in-house packages for under a \$100. And still others will host your online survey on their own computers for a nominal fee.

You'll want to take a look at the spectrum of survey software packages and service providers before you decide what will work best for your station. Here's a sampling of a few, all of which have earned a number of accolades in the PC press:

- EForm, \$59, by Beachtech (www.beachtech.com): This is a handy service that will collect data both on the Web, as well as via forms that are e-mailed to each individual participant. An "open system" package, Beachtech says the results of its surveys and surveys can be deposited in any company database.

- Surveys and surveys with FORM are hosted Beachtech servers, so your IT department will not have to create special scripts or programming to run the survey from your Web site. Instead, Beachtech's server encodes the survey responses, and e-mails the results to your company's database.

- EZSurvey (\$399), by Raosoft (www.raosoft.com): EZSurvey offers 12 generic question templates (write-in, multiple choice, etc.) to help ease first-timers into the world of online surveying. Plus, it includes its own database module that helps users analyze and manipulate results.

- The program auto-generates the necessary CGI-scripts needed to host a survey or survey on your company's server. And the program is designed to automatically read responses and send the results along to your company database.

- WebSurveyor, by WebSurveyor (\$449-\$3,000) (www.websurveyor.com): Like Perseus Development, this firm was singled out as one of the fastest growing small companies in 2003. It offers an extremely sophisticated Web surveying solution, featuring all the bells and whistles, and then some.

- SurveySolutions XP (\$995), by Perseus Development (www.perseusdevelopment.com): This package is designed to work like a word processor for developing surveys and surveys, and will render a questionnaire for use on the Web, via e-mail, fax, telephone and similar data collection formats.

- Like many service providers, Perseus collects data on its own servers, and forwards the data for integration into a company's database software using its SurveySolutions interface. Recently, the company added an advanced statistics capability for users looking to vigorously manipulate data from survey participants. 

STATION SERVICES

Poker on the Radio

Stations can take advantage of recent interest in poker through a new audio feature. "WPT Poker Corner."

The World Poker Tour is seen on the Travel Channel; the 60-second feature is aimed at radio and the Internet. It is syndicated by 4th Street Media Group, run by former network radio executive Dan Forth, under a licensing deal with WPT Enterprises Inc. It includes tips and trivia



Clonie Gowen keeps a poker face at a WPT 'Ladies Night' event.

about the card game, betting strategy and tournament news. David Stein will host the audio feature.

"The content will cover such topics as poker schools, player profiles, how and where to enter tournaments, poker etiquette, poker book reviews, poker magazines, poker news, playing strategy and life on the World Poker Tour as well as interviews with players and commentators," the syndicator stated. The feature also is airing on XM Satellite Radio and Audio Feast.com.

Forth is former president/CEO of Sony Worldwide Networks; he has held management positions at Launch Media and ABC Young Adult Radio Networks. He said more than 50 million people play poker in the United States.

For information visit www.worldpokertour.com.

AirCheck Spot Ten National 2004

Year in Review
Jan. 1 - Dec. 31, 2004

Monitored data from highest-rated radio stations in top US markets.

TW	Account	Parent
1	Verizon Wireless	Verizon Communications
2	Geico	Berkshire Hathaway
3	McDonald's	McDonald's Corp.
4	ABC TV Network	ABC Disney
5	Fox TV Network	News Corp.
6	Home Depot	Home Depot USA
7	Ford Lincoln Mercury	Ford Motor Co.
8	Chrysler Jeep Dodge	DaimlerChrysler
9	Cingular Wireless	Cingular Wireless, Inc.
10	Toyota	Toyota Motor Sales USA

www.aircheck.net a service of 

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The top radio advertisers of 2004 in 25 of the top U.S. markets, as tracked by the AirCheck service from Media Monitors.

PDs

► Continued from page 27
how network television has used reality programming to change its stodgy image and attract younger viewers.

One key, Dickey believes, is to hold listener panels to help 30- and 40-something programmers connect with the mindset of teenagers.

Another key, says Clear Channel's Owens, is his company's "Less Is More" initiative to reduce the amount of advertising clutter, replacing the standard 60-second radio spots with 30-second spots and placing them in shorter, more frequent clusters.

It's a goal Gleason supported, saying stations will succeed when they "can create and never violate an expectation that you are never more than a tolerable time away from an entertainment element."

And what of the danger of still more FCC fines, perhaps even against the very air talent who provide those entertainment elements?

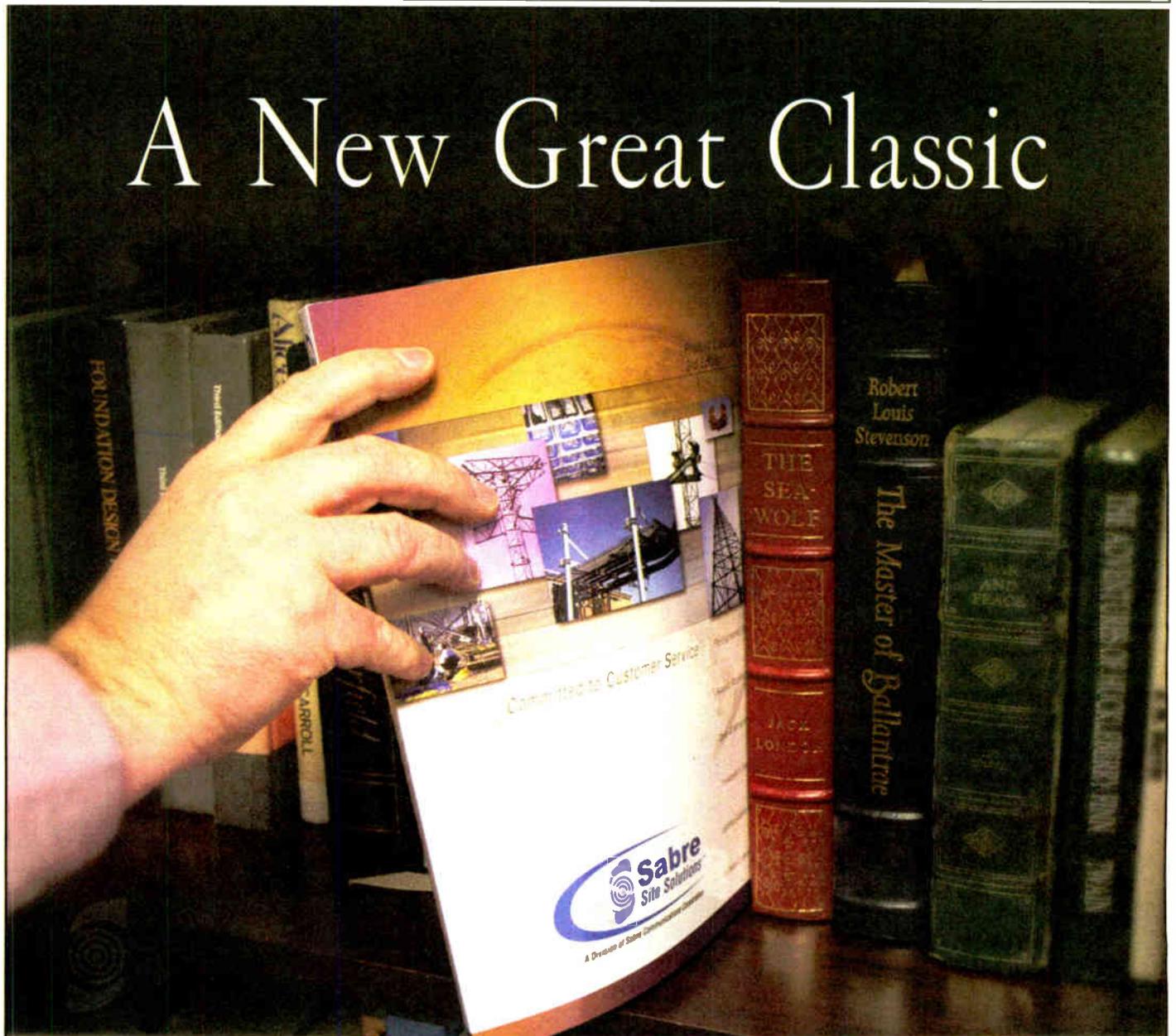
"I think we have to be careful how we define 'talent,'" Dickey joked.

But Clear Channel's Owens says the possibility of fines being levied directly against on-air personalities does pose a threat to the broadcast medium, if fine-conscious shock jocks head for the safer terrain of satellite radio.

"I don't think many of us could afford to pay those fines," he said. "It's a bad time for us to be leaking talent like a sieve."

That notwithstanding, Dickey echoed the overall mood of the panel in assessing the outlook for radio.

"I think you're going to see a lot of people who will regret some of the things they said ... predicting the doom and gloom of radio," Dickey said. ☺



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Get the Most Out of Your POTS Codec

Experts Share Practical Tips for Improving Performance and Avoiding Common Problems

by Tom Vernon

Despite advances in remote technology and the availability of competing approaches, including ISDN, IP streaming audio and satellite telephones, the broadcast POTS codec, now almost a decade old, serves at many stations as an essential tool for events such as sports broadcasts and coverage of local news.

Perhaps not as cool or sexy as some of the other options for getting a signal back to the studio, the codec that uses "plain old phone service" provides quick, affordable audio connections via the near-ubiquitous medium of a dial-up telco line.

Equipment manufacturers and power users have devised numerous tricks to squeeze maximum performance and reliability from the POTS codec. We talked to several, seeking tips for Radio World readers.

Pound it home

Rolf Taylor, applications engineer for Telos Systems, says to reduce the time it takes for the network to make your connection, add a "#" at the end of the dial string. The "#" acts as a "send complete" signal, telling the switch it can process the call rather than waiting for more digits. Doing this can save a few seconds on most local calls, and 10 seconds or more on international calls.

Connection problems sometimes can be solved by using a different long-distance carrier, or reversing which end places the call. Even if the same carriers are involved, the routing of the call may be different.

Proper circuit balance is key to maintaining an acceptable noise floor on telco circuits. Both sides of the line should be terminated identically. Taylor adds that it is also important to use twisted pair cable. Avoid long lengths of flat modular cable to extend the POTS line to the codec. For runs longer than 10 feet, make up your own extension cords from Cat-3 or better twisted pair cable.

Even the non-twisted quad (red/green/black/yellow) common in most older installations should be avoided. Taylor recommends bypassing this wire and plugging twisted pair cable directly into the jack on the network interface.

When using borrowed lines, it's important to disable call waiting by adding *70 to the beginning of the dial string. There is no way to disable call waiting on an inbound call, so check by dialing into the line in question while the codec is connected on a call.

Dave Powers, co-founder of Minuteman Communications in Boston, says one way to avoid problems with poor-quality dial-up lines is to connect the POTS codec to an ISDN line. Since most audio quality limitations are in the local loops at each end of the call, it makes sense to eliminate the one between the studio and the telephone company. In order to do this, at least one of the "B" channels must be configured for "alternate voice/data" capability when the line is ordered.

Powers said a special type of terminal adapter is also required, one that converts ISDN to POTS. An economical example is the ADTRAN Express 3000, which provides a POTS connection to an RJ-11 jack, and provides dial tone, ringing and call progress tones just like a regular analog line. A switch on the ADTRAN box switches between POTS and ISDN, although it may take a couple minutes for the box to handshake with the ISDN before the circuit is ready.

Last line

Kris Bobo, vice president of development at Comrex Corp., said that with the advent of fiber and digital technology, the quality of telco lines has improved considerably over the past 20 years. But it's that last mile of copper that seems to cause most of the problems.

Telco line characteristics change over time due to temperature, humidity and other conditions. Therefore it is a good idea to disconnect the codec from the line and reconnect if possible in the middle of a long remote. Another tip is to be conservative with POTS codec use.

"If the line adapted down, it did so for a reason," she said. "If you try and force it to work at the higher rate, the problems are likely to return."

Mike Morris, sales manager for ATA Audio, agreed and said, "Another way to

establish a solid connection is setting the codec at a fixed rate if this feature is available.

"For example, if you originally connected at 24 kbps, set the unit at the next lower rate, i.e. 21.6 kbps. By doing this, if the line degrades during the broadcast, you will already be at the lower rate. This enables you to maintain optimum performance of your codec by holding the line connection with no dropouts."

He cited an instance in which a customer that broadcasts NFL games from Pittsburgh to Mexico on POTS would connect at 24 kbps; but after 30 minutes or so the line would drop to 21.6 kbps.

"He found this out by getting to location early and testing the line. Therefore, for the broadcast he set the codec at a fixed 21.6 kbps and had no problems with the broadcast, which at times could last well over three hours," Morris said.

Corrosion of terminals is a common problem, particularly in locations near the ocean. The oxidation doesn't have to be visible to cause noise or flaky circuits. Bobo said that a can of De-Oxit should be packed in every remote field kit.

Another tip from Bobo is for stations to hold on to their permanent telco loops. In some parts of the country, the phone company is already making way for DSL, and won't install any new ISDN circuits.

Kevin Webb, president of Tieline Technology, offers these suggestions for getting set up when you don't know what types of lines you're dealing with. Connect an inexpensive palm phone to the line and check for a dial tone. If there is a tone, press 1 and listen for the any noise, hum and crosstalk in the background. If there is no dial tone, Webb said, you either have a dead line, or a digital line which you cannot use. In the worst case, you've destroyed a \$10 disposable phone, rather than damaging an expensive codec.

In instances where a digital phone system or PBX is the only option, Webb recommends the Konnex Office Connector. Costing about \$110, the Connector connects between the phone's handset and the POTS codec, enabling a safe connection for the codec.

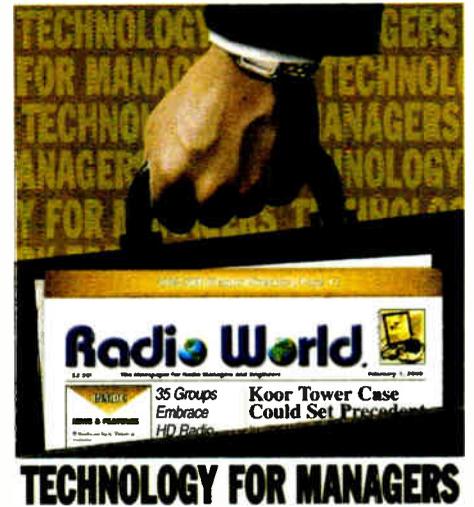
Calling Cairo

International calls can bring a host of unique problems. Taylor recalls a station remote from the Dominican Republic to Chicago. It turned out that calls between these locations only had audio in one direction, regardless of the long-distance carrier. ADPCM coding was being used, limiting the performance to 14.4 kbps. On the third day of the remote, a Monday, quality improved to 21.6 kbps. Taylor speculates that many of the tourists had left, thereby reducing traffic and making better circuits available.

Webb reports a difficulty getting satisfactory lines from the United States to Cuba. Due to the embargo between the two countries, there are no direct telephone connections. In at least one case, the calls were being routed via Spain.

While a logical approach to troubleshooting will solve most telco problems, Bobo recalls a few situations where creativity and thinking out of the box saved the day.

In one case, a station had satisfactory performance from a dial-up line during the day, but performance degraded the same time every evening. Investigation revealed



that the lines passed a turkey farm, where solid-state dimmers controlled the lights in the barn. The RF interference from those dimmers turned out to be the problem. Bribing the farmer with movie passes to keep the lights off till the evening broadcast was finished saved the day.

In another instance, a station doing a remote from a hotel lobby had intermittent line problems that were traced to noisy brushes on an elevator motor. Once the offending elevator was identified, the "emergency off" button was pulled, and an "out of service" sign posted on the door.

Codecs occasionally are used for applications other than remote broadcasts. Webb cites several instances where stations have used the devices as STLs, both for short hops and long-distance connections. In a few cases, the connection has been in place for a year or more without the need to periodically reconnect to maintain quality.

He also said the criminal justice system uses POTS codecs so that court reporters can take depositions from witnesses without having to leave the court house. Closed captioning is another application for codecs, so the transcribers can listen to TV audio while at another site.

A different perspective on POTS comes from Art Constantine, vice president of business development for Musicam USA.

"As the radio industry heads toward HD Radio transmission with final broadcast bit rates as low as 48 kbps (or lower), and with the employment of various compression stages for intermediate program transmission and storage," he said, "the use of POTS codecs at the originating end of a radio broadcast can and will severely degrade the quality of the final broadcast product."

"Consider an uncompressed, linear mono audio signal requiring about 750 kbps, encoded at, say, 24 kbps to squeeze through a POTS line. With no other coding present, it's astonishing how good it sounds — OK, music excluded. But put a POTS codec anywhere in an audio chain along with other low bit-rate coding, and audio degrades, audibly."

"This may be OK, considering the alternative of no audio at all, or the cost and planning needed for higher rate circuits, like ISDN or high quality-of-service IP networks," he continued. "But I think it's important to remind broadcasters that, although POTS lines are ubiquitous, a determination of how much you can crunch the audio before listeners opt for their iPods instead should be made."

Constantine said that as algorithms become even more efficient at transferring intelligible audio at ever-lower bit rates, products will continue to emerge to co-opt the technology. "And yes, someone will invariably use these products as a studio-to-transmitter link, all the while, wondering where their listeners have gone."

White Papers and Resources

ATA Audio

www.ataaudio.com/pages/techsupport.html

Comrex Corp.

www.comrex.com

- Modem Line Checklist
- All About POTS Codecs
- GSM Wireless Info Booklet
- Phone Line Basics
- Tips For Correcting Bad Phone Lines

Musicam USA

www.musicamusa.com, under Tech Tips

Telos Systems

www.telos-systems.com/techtalk/default.htm

- Troubleshooting the Public Switched Telephone Network
- How Do You Tell the Telco the Problem Is In Their Network?

Tieline Technology

www.tieline.com/support

- Tieline Precision Modem Technology Stabilizes POTS Codec Reliability
- The Application Of Stereo/dual Mono POTS Technology

Studio Sessions

Product
Guide



Inside

Radio World

Resource for Radio On-Air, Production and Recording

March 2, 2005

PRODUCT EVALUATION

Digital Processing at Analog Price

*Broadcast Warehouse's DSP-X Processor
Is Lightweight, Clean and Made for 'Tweakers'*

by Stephen M. Poole, CBT, CBNT

With digital signal processor chips becoming ever more powerful and less expensive, it doesn't take a genius to predict that broadcast audio processing will move almost entirely into the digital domain over the next decade. When it's done right, digital processing can sound amazingly good, subtly shaping your sound in ways that analog processors can't even attempt.

Not everyone does it right. The devil is in the details — or more accurately, the algorithms used to control the audio levels on the way to your exciter or digital encoder.

The DSP-X processor from UK-based Broadcast Warehouse takes advantage of the latest DSP chips to offer expert processing, including simultaneous and separately limited digital and analog outputs, for much less than competitive digital processors.

Given that we use digital processing at all of our stations nowadays, I was anxious to test the DSP-X.

Under the hood

The DSP-X is surprisingly small and light. It fits into a single rack space and weighs about 2 lbs. If you've ever thrown your back out lifting an old Optimod, you'll love the DSP-X; the AC cord that I used was heavier than the unit.

The front-panel controls consist of a single multipurpose knob for adjusting

parameters and three small pushbuttons that are used primarily for menu navigation. There are LED meters for the multi-



This screen shot shows a feature that lets the user 'solo' each of the four bands, listening to each separately, to precisely fine-tune a mix.

band processing, input and output levels. There also is an excellent remote control interface; more on that in a moment.

On the rear panel are RS-232 and NET/LAN remote control ports, as well as an additional DB-9 connector for remote switching. For convenience, there is one more RS-232 port on the front, useful if you don't feel like digging into a rack at the transmitter site.

The input and output jacks for audio are XLR types for analog and AES/EBU

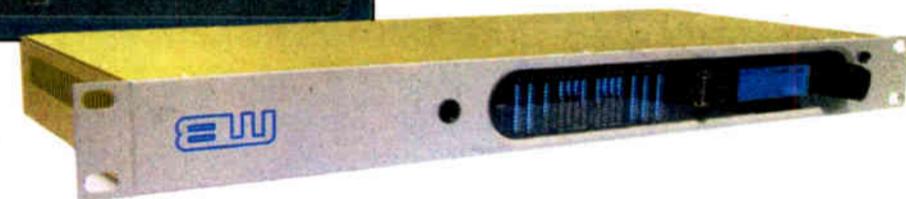
digital. BNC connectors provide pilot and composite output; a third BNC allows you to inject SCA material. An AES/EBU sync input is provided.

Under the hood, the DSP-X has multiple 24-bit digital processors, 128 times oversampling, two stages of four-band

either limiter to drive the XLR outputs. Broadcast Warehouse recommends that the look-ahead output be used with digital streaming. The digital and analog outputs can each be optimized for digital streaming or on-air broadcasting, and can be used simultaneously.

I had tried this unit earlier with Version 1 of the software. After I began testing, Version 2 became available and I downloaded it. Upgrading the software can be done from any computer with a decent communications program, such as Windows' own Hyperterminal. It takes about five minutes.

For my tests, I connected the DSP-X to an Inovonics modulation monitor and used headphones to monitor both the direct audio outputs and the output from the Inovonics unit. My input source was a Denon CD player. I also listened through JBL studio monitors for some tests. Armed with several CDs ranging from classical to metal, I started playing and listening.



AGC and two limiter sections. One limiter is a traditional "brick wall" type for the FM stereo composite generator; the other is a look-ahead type with different dynamics.

The FM stereo generator is hardwired to the brick wall stage, but you can select

The front panel control functions aren't difficult to use. I quickly figured out how to load presets, change parameters and adjust the input and output levels. But where this system really shines is when you use the Windows-based

See DSP-X, page 32 ▶

PRODUCT GUIDE

illbruck Offers Willtec Panels Dyed by Colortec Process

SONEXclassic Colortec Panels from illbruck Architectural Products are featured in light gray and a deeper charcoal gray. The company says they have a modified anechoic wedge design that enables sound control, and the geometric shape of the panels' surface pattern allows for optimum deflection of sound waves. Flat panels without the convoluted surface pattern can be custom ordered.

In illbruck's Colortec process, the company's Willtec foam is impregnated with dye. It says dye penetrates the entire thickness of each panel, enabling a consistent look when pieces must be cut to fit around conduit of other obstructions.

The two-inch-thick Colortec panels measure 24 by 48 inches and are mountable to a wall or ceiling using illbruck's AcouSTIC water-based adhesive. The company says the panels can withstand moisture and humidity without warping, swelling or sagging.

Additionally, illbruck offers acoustical ceiling tiles, baffles and other noise control equipment, such as Squareline metal ceiling tiles, Harmoni and Whiteline ceiling tiles, Contour wall and ceiling tiles and Prospec barriers and composites.

For more information, including pricing, contact illbruck in Minnesota at (800) 662-0032 or visit www.illbruck-sonex.com.

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DSP-X

► Continued from page 31
remote interface, new for Version 2 of the software. The DSP-X system gives you more control over your sound than any comparable processor I've ever tried, and the Windows-based interface lets you do it all in a point-and-click graphical environment.

The screen shot on this page shows just one of many neat features: you can "solo" each of the four bands, listening to each separately, to precisely fine-tune your mix.

Sound?

Now for the part you've been waiting for. How does it sound? In five words,

however you want it to.

Generally speaking, the DSP-X is very clean, with tight bass and clear highs. To get the exact sound you want, the DSP-X comes with several presets that can be used to get it working out of the box; if you like, you can then tweak these as desired.

With Version 2's Windows-based interface, you can easily sit down and fiddle until you get just the sound you want. The remote control program can use either RS-232 or TCP/IP. I recommend the latter. With the TCP/IP interface, you can adjust the unit from anywhere; all you need is an Internet connection and the Version 2 software installed on your PC.

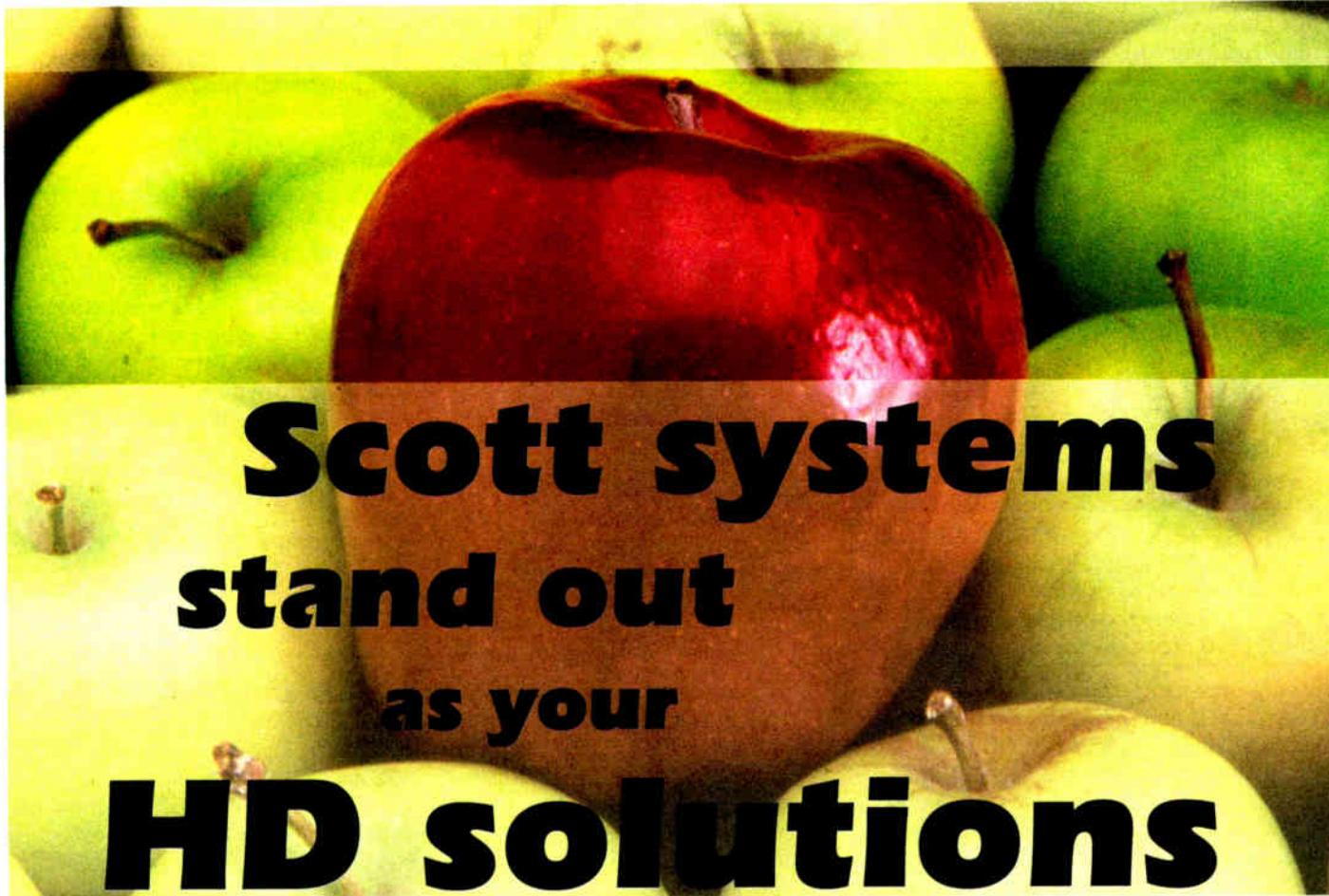
This processor is worth considerably more than the asking price. It sounds good, is as flexible as a hot rubber band

and can drive digital and analog outputs simultaneously, each with its own limiter optimized for that use. This is perfect for a station that streams audio onto the Web; there's no need to buy a separate processor.

The user's manual is adequate, but could use a little more work, such as better illustrations and walk-throughs for the less technically inclined. However, the team at Broadcast Warehouse was responsive to questions via email.

If you're a tweaker, you'll find a lot to love with this unit. The ability to individually tweak each of the four bands, and even better, to "solo" each band so that you can listen for artifacts, is excellent. This processor has features I haven't seen in processors costing much more, but there's no way I can list them all here.

This doesn't mean you have to be a



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gadget freak or a hacker to use the DSP-X. The provided default presets will work for most situations. Simply install the DSP-X and choose the one that best suits your programming.

Stephen M. Poole, CBT, CBNT, is chief engineer, Crawford Broadcasting, Birmingham, Ala.

PRODUCT GUIDE

Lynx Has Aurora Rackmount Converter, 32-Channel Mixer

Lynx Studio Technology says its Aurora line of digital audio converters offer audio quality and control in single-rack-space, eight- and 16-channel modes. The Aurora 8 and Aurora 16 feature 192 kHz analog-to-digital and digital-to-analog conversions, with front-panel control of routing and sample rate options. Extended functions are accessible via computer with the Lynx AES16, or by infrared using compatible laptops and handheld Pocket PCs.

Front-panel controls include sample rate selection; sync source selection; analog/digital output source, selectable from analog inputs, digital inputs or LSlot inputs; 16 channels of input and output metering; single- or dual-wire AES selection; and indicators for SynchroLock jitter reduction status.

The rear has MIDI In and Out connectors and an LSlot bay, for the use of optional ADAT, Firewire and other audio interface cards.

Aurora's 32-channel digital mixer provides routing and mixing options. The company says Aurora acts as its own patchbay-style digital router, and can route signals between analog and digital inputs on a channel-by-channel basis. Mixing capability on each output also provides zero latency monitoring. The AES16 offers detailed metering of channels, and enables Aurora scenes to be saved and recalled.

For more information, including pricing, contact Lynx Studio Technology in California at (949) 515-8265 or visit www.lynxstudio.com.

PRODUCT GUIDE

iMediaTouch, iMediaLogger Enable Tamper-Free Logs

OMT's iMediaTouch digital delivery system complies with Sarbanes-Oxley legislation by enabling air logs that cannot be tampered with, which ensures that the commercial playback affidavit cannot be made fraudulent.

The company says its iMediaLogger provides further assurance by capturing a 24/7 audible affidavit of what played on the air, including the mic skims of station talent.

iMediaLogger is a software-based audio logging, archiving and storage system, which the company says replaces maintenance-intensive equipment used for logging, time-shift recording and skimming, such as DAT, reel-to-reel and cassette tape recorders. iMediaLogger works with automation systems, switchers, satellite receivers, external closure devices and silence alarms.

Features include the ability to record up to 12 audio sources simultaneously

SS32, Maestro Offer Support for Sarbanes-Oxley, Surround Sound

Scott Studios, now a subsidiary of dMarc Broadcasting, says its SS32 and Maestro digital systems offer Sarbanes-Oxley Compliance support. Sarbanes-Oxley is a bill passed by Congress that requires public companies to provide verification and accountability for stated revenues and profits.

In broadcast, the company says, this translates to verification of ad revenue, including gross billings, verification of delivery (broadcast of advertisements) and proof of tamper-free air logs. Ryan Steelberg, president of dMarc Broadcasting, says this act has been interpreted differently by various auditing firms such as Ernst & Young, KPMG, etc., but that many broadcast groups are starting with encrypting/protecting the air logs against human editing or modification post-broadcast.

The Scott Studios Sarbanes-Oxley Upgrade consists of two components: a free software upgrade to SS32 and Maestro for existing customers, which enables the creation of tamperproof air log files; and the dMarc Network Upgrade, which generates broadcast group-level reports showing which stations have activated tamperproof logging, those that have not and a running history for each.

Additionally, the SS32 and Maestro systems include support for HD Radio, featuring Program Audio Data and 5.1 or 7.1 multichannel surround sound.

For more information, including pricing, contact Scott Studios in Dallas at (888) GET-SCOTT (438-7268) or visit www.scottstudios.com.

Run Date	Run Time	Run Duration	Description	Type	Event ID	Copy	Status
01/31/05	15:07:59	00:59	OMT Technologies/iMediaTouch	COM	ZM0000	:00/F	OK
01/31/05	15:08:45	00:05	BEACH RADIO/FAST TO FAST LINDER	IDS	ZM0003	:00/F	OK
01/31/05	15:08:56	00:52	David Lawrence/Hour 2 Break 7	COM	ZM0008	:00/F	OK
01/31/05	15:08:49	00:59	Net Music Countdown/Hour 2 Break 7	RED	ZM4008	:00/F	OK
01/31/05	15:19:40	00:24	Net Music Countdown/Hour 2 Break 8	RED	ZM4009	:00/F	OK
01/31/05	15:09:48	04:22	Vanessa Carlton/Ordinary Day	MUS	ZM1003	:00/C	OK
01/31/05	15:19:40	00:19	David Lawrence/Hour 2 Break 8	COM	ZM3009	:00/F	OK
01/31/05	15:19:40	04:14	Santana w/ Michelle Branch/The Game Of Love	MUS	ZM1002	:00/F	OK

A screen shot of the iMediaTouch LogTools module's tamper-proof log.

and the ability to split each source into four streams; continuous recording mode; and compression technologies like MPEG Layer 1, 2 and 3, PCM, Windows Media Audio and Real Audio.

OMT says it has added features to version 2.5 of the iMediaLogger, such as an enhanced graphical user interface and the ability to split stereo devices into left and right. Additionally, the system's Web server can now be configured for access through firewalls and Internet routing devices.

The company also touts version 2.5's greater compatibility with recorded files and third-party audio editors.

For more information, including pricing, visit OMT Technologies at www.imediatouch.com.



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PRODUCT GUIDE

Sanken Offers Mics Suitable for Speech, Resistant To Wind Noise

Japanese microphone manufacturer Sanken offers a gooseneck condenser mic designed for broadcast speech programs. The company says the CUS-101B uses a transducer and DC-biased condenser capsule, enabling a clear sound for the voice.

To isolate vibration from a table, the mic features a shock absorber that uses a combination of foam rubber and

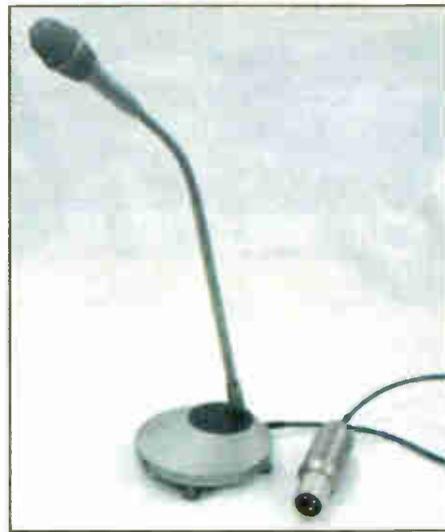
metal spring. Resonance of the shock absorber is set to lower than 20 Hz.

Sanken says the mic is unaffected by humidity thanks to a titanium diaphragm.

Three gooseneck lengths are offered for the CUS-101B: 130, 240 and 300 mm (roughly 5, 9-1/2 and 12 inches). Optional accessories include a urethane windscreens.

Sanken's MS-5CL and MS-7C omnidirectional dynamic mics feature an aluminum voice coil and magnet transducer. The company says these mics are resistant to high wind noise, and suitable for talk programs with a DJ.

The HAD-48 is a mic preamp for dynamic mics driven by 48 V phantom power fed from a side mixer mic input. It does not need batteries, and it



Sanken's CUS-101B gooseneck condenser mic.

has +20 and +40 dB selectable gain and gain select switch. HAD-48 does not pass power to its input, and therefore cannot be used with normal condenser mics unless they are self-battery-driven.

For more information, including pricing, contact plus24 in California at (323) 845-1171 or visit www.plus24.com.

PDAudio Records For Ten-Plus Hours, Transfers Data to PC, Mac

Core Sound describes its PDAudio high-resolution two-channel field recorder as a recording system for PDA, laptop and display. The hub of the system is PDAudio-CF, a Type 1 (extended) Compact Flash S/PDIF interface with optical and coaxial inputs. PDAudio-CF can be mounted in PDA hosts that run Windows Mobile/Pocket PC, or used with laptop and desktop computers running Windows XP, 2000 or Linux.

PDAudio records continuously at 24/96 for more than 10 hours and is able to transfer audio data to a laptop/desktop computer (PC or Mac) via removable solid-state Compact Flash memory cards, removable PC Card hard drives, CF Card Micro Drives, high-capacity external hard drives, SD Flash memory cards and via wired and wireless local area networks.

Core Sound also offers its High End Binaural mics, featuring two Danish Pro Audio 4060 or 4061 capsules, which the company says are matched to within 1 dB. The package includes a battery box, custom cabling, DPA DMM0004 mini detachable mounting clips and connectors.

The mics have a satin-black shell. Beige and white colors are available by special order. Core Sound says the shell is smaller than a jellybean or pencil eraser at roughly 1/5-inch in diameter and 1/2-inch long. The mic cable enters the shell from the bottom. Removable light-duty foam windscreens are available in black.

A shielded 1.6 mm cable exits the base of each mic. The cables from the two mics are bound into a single cable approximately 12 inches from the mics. The cable runs for six feet and terminates in a multi-pin locking mini-XLR plug, which connects to the battery box. Also connected to the multi-pin plug, in a "Y" configuration, is a two-foot cable terminating in a gold-plated, stereo, 1/8-inch mini-phone plug. Other connectors can be supplied upon request, including XLR, RCA and 1/4-inch phone plugs.

For more information, including pricing, contact Core Sound in New Jersey at (888) 937-6832 or visit www.core-sound.com.

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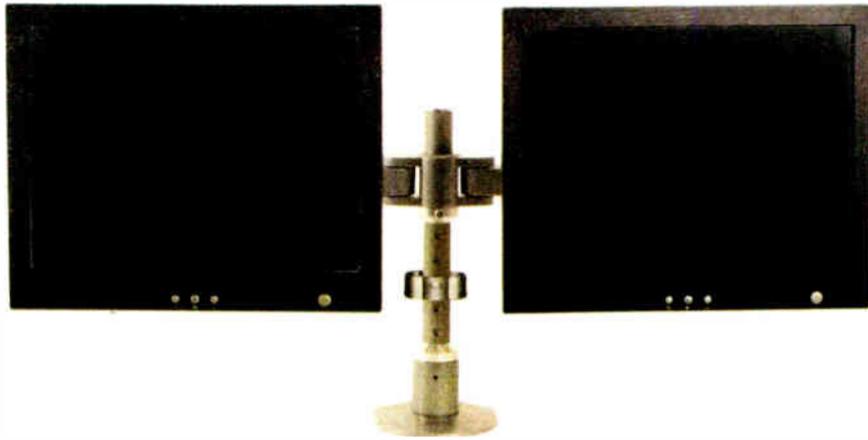
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PRODUCT GUIDE

Mounting Arms for Flat-Screen Monitors

Innovative Office Products, manufacturers of mounting systems for LCD monitors and keyboards, debuted a series of flat-screen mounting arms for one, two, three or four flat-screen monitors. Monitors are lifted off of desks and can be adjusted in any direction. The company says the mounting arms offer ergonomic benefits to on-air talent and radio studio staff.

The series includes Model 7500, which supports one monitor up to 42 pounds; tilts more than 200 degrees; offers 16 inches of vertical movement; extends 27 inches; and folds up into three inches. Cables are integrated inside the arm.



The Model 9124 features two side-by-side flat panels that can be positioned independently.

The Model 9120 dual side-by-side pole mount offers up to 14 inches of extension on the standard arm, with a tilt mechanism that enables over 200 degrees of tilt — upward, downward and portrait to landscape viewing modes. It provides 200 degrees of rotation at two pivot points.

The 9124, part of the Euro series, also holds two monitors side-by-side. Its dimpled pole allows the monitors to be held in position without slippage over time. The company says its design allows nearly three inches of space behind the panels, which can be moved up and down in one inch increments along the 12-inch pole.

For more information, including pricing, contact Innovative Office Products in Pennsylvania at (800) 524-2744 or visit www.lcdarms.com.

DK-Technologies Adds MSD100C to Audio Meter Line

Danish manufacturer DK-Technologies offers the MSD100C, an addition to its range of Master Stereo Display audio meters. The company says the unit is aimed at the broadcast market, particularly small studio applications and secondary workstations where there is a need for a meter that gives important information about the stereo signal.



The MSD100C features a color VGA screen and comes with two audio input pairs, one stereo analog and one AES-3 digital input channel. It accepts up to 96 KHz on the digital input and has 24-bit A/D. Presets include two PPM's analog input mode, two PPM's digital input mode and four PPM's both analog and digital mode.

The meter also incorporates an audio vector oscilloscope and a phasemeter, which enable the engineer to determine at a glance what the audio material is doing. For example, when determining if the stereo signal is mono compatible, the screen shows a straight line if the signal is a pure mono feed, whereas a ball-like figure indicates stereo from the inputs.

Additional features include a level meter with user-definable scales and reference levels, wall-plug power supply and a quick-start user's manual.

For more information, including pricing, contact DK-Technologies America in Phoenix at (800) 421-0888 or visit www.dk-technologies.com.



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Studio Fits in Overhead Compartment

A Portable Studio Featuring Vintage Gear Is Crafted for Voice Talent's L.A. Clients

by Steve Sisk

VANCOUVER, B.C. I have been, at times, a theatrical and concert technician — working with the likes of Mel Tormé, U2, Bruce Springsteen and the Royal Winnipeg Ballet — an actor, producer, talent agent and photographer. These experiences have given me a rather unusual skill set, one that is put to the test as I work daily with voice talent David Kaye as his technical director/personal manager.

We came to the realization that we are not simply selling David's voice talent, but rather — and most important in the TV/radio imaging field — a *sound*. When David's engineer Chris Larke and I set up the studio in L.A., we tried to replicate the sound with modern gear, but it just didn't work.

We tried a cheaper mic from the same company, which gave a nice sound but not the one we wanted. We unsuccessfully tried digital effects racks to compress and equalize the sound.

We needed the same gear in L.A. as we had in Vancouver.

Excess baggage

By the time I came on, David had been using the same mic chain for six or seven years, and that sound had become his brand. Once he saw that the time commitment required for auditions in L.A. was going to take a significant bite out of his schedule, he realized he needed a studio there \ to cover his clients on L.A. days.

We didn't automatically go with the same equipment being used in L.A. because it is rare, delicate vintage gear. The Neumann U67 microphone, the UREI LA/3A compressor/limiter and the Neve 1066 EQ have not been manufactured for at least 30 years. The price on each piece is several times higher than their modern counterparts, but the sound they make together is warm, unique and perfectly tuned for David's voice.

When David spoke to me a few months ago and asked me to create a truly portable version of his studio, I

was filled with panic. The idea of lugging this delicate gear around was frightening. The weight looked like it



The author, right, and his boss, voice artist David Kaye.



The Neve 1066 EQ in position

would be a problem, not to mention the physical constraints. There was no way it could happen if we couldn't store the equipment as a carry-on, for we couldn't check a bag worth \$10,000 to \$20,000.

The biggest obstacle from the start was an ISDN codec to enable David to do direct studio-studio recording sessions. We have a standard rack version of the popular Telos Zephyr in Vancouver, and a "portable" unit in L.A. But the latter unit weighs in at

almost 20 pounds and would take up half the portable case.

After a great deal of research, I found that Spain-based AEQ manufactured a much smaller and lighter ISDN codec called Swing that claimed to work with the Telos system. BSW, a



Sisk compiled a portable studio for Kaye's work on the road, which includes a Neumann UM-75 microphone, UREI LA3A limiter/compressor, AEQ Swing ISDN codec, M-Audio MobilePre USB Audio Interface, Apple iBook and Neve 1066 EQ in a Pelican case.

distributor in Tacoma, Wash., permitted us to test a unit for a month or so. By the end of that time, we found it met our needs.

So my task was this: find a way of making vintage gear travel-worthy.

We already had an extra LA/3A and

Neve that served as our backups, so I pulled them from our rack and used them for the portable studio, which in fact gave us added security in case of a fire in the Vancouver studio. If there's a fire, he can just grab the case and head out the door — taking time to grab his wife and kids, of course.

The Neve, originally designed to slot into a custom rack, has had \$1,100 in upgrades. Brent Averill Designs in Sherman Oaks, Calif., the only company in North America that does full, precise restorations of Neve equipment, refurbished, cleaned and installed new capacitors in the unit, as well as provided us with a new, much smaller (and lighter!) power supply.

Ian Griffith from Boutique Audio in Canoga Park, Calif., placed the unit in a custom stainless-steel enclosure that should armor-plate the unit from any bumps or knocks. A laptop Mac with an M-Audio Mobile PreUSB external audio interface does the actual recording.

Traveling light

Aside from the codec, the only change we made in compiling the road equipment was ... yes, a new mic. We actually replaced our mic, which seems strange considering my preamble, but this is a special mic.

When we were checking out options for this setup, we were sure that the one thing we would need to buy was another U67. But they are old, rare and fragile; and the power supply is comparatively heavy. We turned to our mic engineer John Vrtacic, who suggested a possible replacement, the Neumann UM75. We tested it and it was perfect, but twice the cost of our already expensive U67s. However, it just may be the finest mic ever.

Launched last year, it is the company's 75th anniversary commemorative microphone. Only 75 were made, or ever will be. It features a hand-wound transformer, gold-evaporated capsule and a sound so close to the U67 that a small tweak on our equalizer put us right where we needed to be. This is the Rolls-Royce of microphones.

The gear is connected with shielded microphone cable and Neutrik right-angle XLR connectors, to prevent the possibility of breaking off when carried, and it is all packed into a Pelican 1600 case. This case is airtight and will float, even when full of our gear. Perhaps I should label it with a disclaimer: "In case of water landing, your studio will act as a flotation device."

That's the recipe for a studio in an overhead compartment. The whole purpose of this project was to give David a little latitude outside of work. He has a quarterly break built into his contracts, usually after sweeps, but that doesn't mean that his clients stop needing him. Now David can travel anywhere, and for about \$200 can have ISDN lines installed in nearly any higher-end hotel room, and can record live from around the world.

So maybe David will take a vacation — and I can take a nap before the next challenge.

The author is technical director/personal manager for voice talent David Kaye.

Have you solved an audio problem in a creative way for your radio operation? Tell us about it. Write to kbrooks@imaspub.com.

PRODUCT GUIDE

Soundcraft Brings Back UREI Mixers for DJs, Turntablists

Soundcraft says it reintroduced the UREI name on a range of DJ mixers suitable for the turntable performance sector. The first in the series is the UREI 1620LE, an updated version of the UREI 1620 rotary-based mixer for the house-mixing sector. Features include six input channels — two phono and four aux inputs (three line and one mic, each with phono options available) — headphone monitoring of any input, House and Booth master output volume controls and two-band EQ on the output.

The company says the 1601 was designed with the hip-hop DJ in mind, featuring selectable line or phono inputs and three-band EQ on each channel, high-pass filters for removing turntable rumble or stage noise, an FX send and return loop with selectable signal feed locations and an independent mic/line input with two-band EQ. Each input fader has selectable response curves, as does the cross-fader.

The 1601's headphone outputs — both 1/4-inch and mini-jack connectors are provided — have an EQ control that allows the DJ to tune the phones to his own ears.

The 1601S is identical to the 1601, but features a two-bank, 32-beat, 96 kHz/24-bit auto-looping sampler with one-shot and reverse functions. The playback from wither sample bank is assignable to channel one and/or channel two. A BPM lock indicator shows that the BPM engine is ready to sample, and a footswitch connector allows control while the DJ's hands create the mix.

Soundcraft says additional mixers in the UREI Series are planned for release this year.

For more information, including pricing, contact Soundcraft USA/Harman Pro North America in California at (818) 920-3212 or visit www.soundcraft.com.

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- A double handful of format-specific presets to get you up and running quickly.

Announcing Omnia-3fm Turbo.

There's a reason we call it "Turbo." This new Omnia has more than enough DSP muscle to grab and hold button-happy listeners, and burn your brand into their memory. Omnia-3fm Turbo's 3 new bands of AGC, 3 bands of precision limiting, and distortion-cancelled clipping stage work in harmony to deliver bold, thumping low end, crystal-clear highs and the warm, natural, open feeling for which Omnia is famous.

Clients rave:

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— Mike Oberg, WGMO-FM

"We installed two Omnia-3s... our competitors have noticed the change in the audio quality, and they are wondering what our stations have that they don't!"

— Allen Osborne Maldonado, Cocatel, Honduras

"We installed the Omnia-3 on KQAK-FM and noticed an immediate difference - so did our listeners! We sound louder, crisper and better than ever before."

— Keith Shipman, KQAK-FM

The new Omnia-3fm Turbo has a US MSRP of \$3,995.00. But for a limited time, you can get it for **only \$2,995.00**. Call your Omnia dealer for details.

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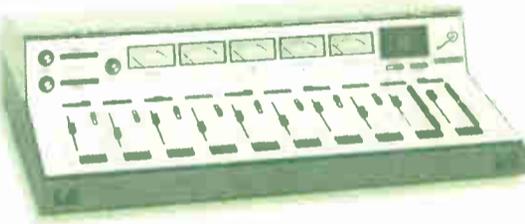
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Radio World

INDUSTRY PROFILE

Early FM Owner Cleans Up

Bill Cook Parlays an Audio-Rich Lifetime Into a Sound Restoration Company for Historic Recordings

by Ty Ford

There are few people who have blazed as many trails as Bill Cook. You may have wandered down those trails years later, not knowing he had come before. Cook, now 74, lives near Colorado Springs, Colo. I had the rare chance to have a confab with him and revisit a fascinatingly full life.

Cook became enamored with radio broadcasting in 1938, when he was 8. In 1942, at age 12, he wanted to build a hi-fi, but government rationing for World War II prevented him from getting the necessary parts.

"I found parts to build my amplifier in old radios. I had a chassis made with holes punched for the knobs and tubes. I built a speaker cabinet and turntable base in shop class," he said.

After graduating high school, Cook attended Western Michigan University to study physics. In 1949, he left college for about a year and a half to work at Radio Recorders in Hollywood, Calif.

"There were only five or six studios in Hollywood back then. Radio Recorders was the big one. Capitol Records cut their tracks there until the spring of 1949, when they took over KHJ(AM)'s old studios," he said.

"Magnetic tape recording was just coming in. Radio Recorders bought 12 of the first Ampex 200 mono 1/4-inch tape recorders. I still have one in my warehouse. I worked there for about eight months and then I moved to Ryder Sound Service and did film sound for another five months before going back to college."

Armed with the degree in physics from WMU, Cook moved to Baltimore to work for Glenn L. Martin Aviation as an R&D electronics design engineer. He worked on the P6M, a jet-powered, four-



Bill Cook in the Audiophonic Sound Restoration Studio

motor seaplane. The company built 18 planes for the Navy, "but they had problems getting out of the water when they were fully loaded," he said.

Cook segued out of aeronautics and into radio while working at Bendix Corp. in Baltimore soon after. During that time he applied for a license for 97.9 MHz,

with the call letters WFDS, for "Full Dimensional Stereo." The station, now WIYY and owned by Hearst, operated at a horizontally polarized 15 kW.

"Ed Hackman was a white-haired gent at the FCC. I told him I wanted to start an FM station in Baltimore. I remember he said, 'If there's anything I can do, I'd be delighted to help you.'"

Using the classic "room-within-a-room" design, Cook floated both the studio and control room. He used Armstrong load-bearing cork to isolate the floors, and put the air-conditioning system in a separate outbuilding. "The duct work was low-pressure, high-volume with oversized fiberglass-lined ducts," he said.

Cook designed and implemented custom splays and traps to create an extremely quiet studio with controlled acoustics.

"None of the surfaces were parallel — not the walls, ceiling or floor. I designed the room with just a little reverb," he said. "The original wall panels were made of Transite, a pressed asbestos material made by the Johns Manville Company. It was very hard, with a reflective surface. There were holes in the panels and we installed padding behind them to create bass traps. I designed triangular splays for the walls, tuning each wall to handle different frequencies."

Cook says he used Munchausen doors for the airlock and studios. They were four inches thick and composed of layers of wood and felt. A strip attached to the bottom of each door would rise when the door opened, setting as the door closed to complete the seal.

"Our studios were so quiet that the Navy came up from Washington, D.C., to test their underwater sonar transducers," he said.

In 1956, after building the studios and transmitter, Cook went to the FCC to talk about multiplexing for stereo.

"FM stereo was very experimental at the time. The FCC wasn't in favor of anyone promoting FM stereo then," he said. "We were using the Crosby Labs stereo system. It had much better stereo performance out on the periphery of the pattern. The commission, of course, eventually went with the GE/Zenith system, which was a wise thing to do."

Cook recalls getting several calls from the FCC during his year and a half ownership of WFDS. "I remember one call questioned how we were able to get the quality of sound we were getting on our FM. I had designed cascade preamps and amplifiers and ultra-linear program amps with some negative feedback judiciously applied. We also weren't using a limiter

See COOK, page 40 ▶

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Cook

► Continued from page 39 between the board and the exciter.”

WFDS(FM) signed on at 5 p.m. and broadcast until 11 p.m., programming classical music and what Cook describes as schmaltzy jazz.

office systems builder and integrator.

“They were building computers for NORAD. That lasted for two years,” he said. “In 1964 I moved to Colorado Springs and started KRYT(AM). I put KRYT(FM) on the air in 1967. I owned and built those stations and at the same time re-engineered the studios at Alexander Films, also in Colorado Springs. I started work there in 1965 and

Cook recalls approaching the FCC in 1956 about multiplexing for stereo. The FCC wasn't in favor of anyone promoting FM stereo then.

Among the many unusual technological experiments with which he was involved was three-channel stereo multicasting.

“We were one of the radio stations chosen by Disney to broadcast ‘The Peter Tchaikovsky Story,’” he said. “The picture and one channel of audio were broadcast by one of the TV stations in Baltimore. We broadcast a second audio channel and a local AM broadcast the third channel.”

Bring the noise

According to Cook, after two partners sold the station out from under him, he eventually moved from Bendix to Borroughs Corp., an early computer and

was the head of their sound department.”

Cook also worked in Denver as a senior electronics engineer on the advanced communication studies for the Apollo space program for Martin Marietta.

“I left Martin Marietta to develop high-powered hearing aids for Vicor. That's when I was getting KRYT(FM) on the air,” he said. “I continued to work there until 1979, when we sold the station. Then I joined Scott Science & Technology as a project engineer, designing various electronics sensing devices, mostly structural design flaw indicators for aircraft.”

When that lab closed its doors, Cook and a partner started Research Associates,

an Ampex dealer in Colorado Springs.

“We went until 1983, when Ampex stopped making tape machines,” he said. “Although we kept selling Ampex parts, we switched to selling Studer and other broadcasting and recording equipment. I still have parts for the Ampex AG440 machines. I have a Ampex 440C with an 8-track Scully in my living room and an MM1200 8-track down in the warehouse.”

Continuing to gather no moss, Cook now runs Audiophonic Corp.

“For the last three and a half years, I've been working through each of about 10 or 11 libraries I own; that's a total of 25,000 radio transcription discs from 1934 to 1953. These are the big-band radio programs that the radio stations played. I now have 80,000 selections catalogued,” he said.

Cook catalogs, cleans, de-noises and remasters old recordings for Time/Life, Capitol Records and Crescendo Records in Hollywood, U.K.-based music company Jasmine and Soundies in Chicago, among others.

He uses a combination of CEDAR real-time noise reduction hardware and Sound Forge software to clean up the recordings. “Sound Forge is not as transparent as CEDAR, so I use it sparingly,” he said.

The process involves a transfer to DAT and then to CD.

Historic recordings can be sent to the company for de-noising and sweetening using equipment such as turntables, tape recorders and 8- and 16-channel Ampex and Studer machines.

The service removes the background hash from wire recordings, cassettes and tapes. Additionally, the service covers 16- and 12-inch transcription discs, 78s, LPs and 16 mm film soundtracks, optical and magnetic.

Cook says that for broadcasters who have hung on to their vinyl and carbon discs, the thought that these records can be cleaned up and digitized, giving them a whole new lease on life, is attractive. “This is an area where we can be of value, especially if they want to do a large quantity of work.”

He adds that he has developed a secret procedure for removing the warps in records. “You need an oven big, wide and deep enough so you can put the LP in there and not scorch it,” he said. His advice is not to try this at home.

Cook may be reached via e-mail to wsc007@juno.com.

Visit the Ty Ford Audio & Video Web site at www.tyford.com.

PRODUCT GUIDE

Esoteric Sound Rek-O-Kut Converts Aux Inputs to Phono

Record lovers, this one's for you. Esoteric Sound says its Big Foot “sorbothane” isolators solve a big problems of turntables, their inability to reject vibration well. The company offers stoppers made of sorbothane, a pliable but inert rubber-like material, to be placed under the table after removing mounting feet from the factory, if possible.

The company also offers the Rek-O-Kut Professional Moving Magnet Preamp, which can be used to convert any aux input to phono use. Additionally, it enables the user to add a turntable to an amplifier that has no phono input or a second turntable to an amp with only one phono input.



Esoteric Sound is promoting several accessories for its Rek-O-Kut line.

The company says the preamp makes it possible to use a line-level input on any amp or mixing console for playback with a turntable equipped with a conventional moving magnet phono cartridge. Typical input sensitivities of such inputs are roughly 250 mV. The preamp boosts the level of the magnetic cartridge and also applies “record compensation” in the form of the RIAA curve. This adjusts the relative levels of bass and treble to match that of modern records.

The Surface Noise Reducer reduces the clicks and pops found on most types of phono-graph records. Esoteric Sound says that while a graphic EQ or “scratch filter” is effective, the Surface Noise Reducer's circuit topology employs digital integrated circuits and a design algorithm, which can identify and remove many clicks and pops found on LPs, 78s and other vintage records, improving the quality grade without causing degradation.

The company says the Surface Noise Reducer also is effective in reducing ignition noise from FM radio broadcasts.

For more information, including pricing, contact Esoteric Sound in Illinois at (630) 933-9801 or visit www.esotericsound.com.

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◆ READER'S FORUM ◆

Show and Tell

On page 34 of the Dec. 1, 2004 issue, there is a short piece about the new Crosley turntable and radio unit. How interesting. The retro look is making a comeback!

Funny thing is, I like the retro look, but not as much as the retro *sound*. I attached a couple pictures of some of the fully restored Crosley radios in my home. I have several. All of them are hooked up and working. They get used frequently, too. I also stuff them with appropriate-era Crosley brand tubes so they are still original — a testament to the superior quality predating the “throw-away” society.

True, the Crosley radios are considered by many as the Model T of radios; however the engineering was far superior to many others from GE, RCA, etc. Crosley even rivals Zenith in pure engineering beauty, although the Zenith cabinets were more stunning than those of Powell Crosley.

I do Crosley restoration and repair on the side when I am not fixing radio stations. Stop by my house and check out the hands-on working Crosley museum!

*Paul Shinn
Stockton, Calif.*



Paul Shinn's own Crosley Model 1117, also known as the 'Super 11.'

tor to have it either. And instead of awarding the CP to the second-highest bidder, the channel will lay dormant for years until the FCC gets around to having another auction.

The bid withdrawal penalty is a small price to pay to keep a potential competitor out of the market for several years.

Between the Wall Street types and the out-of-touch bureaucrats, the broadcasting industry has been ruined.

*Larry Fuss
Contemporary Communications LLC
Las Vegas*

'Old School' Broadcasting

Paul McLane's comments regarding my hiring at KGO (“Engineers, Ready for Their Closeup,” Dec. 1, 2004), are right on.

Mickey Luckoff and KGO handled it very well, but this is routine for them. After all, KGO is the station that put Michael Powell and Howard Stern together on the radio to discuss censorship in broadcasting.

My experience at this radio station has been, to me anyway, most unusual. In the past, when starting at a new radio station, I'd become accustomed to being thrown a set of keys, shown the shop and then meeting the air staff as they came to me with broken headphones in their hands. It usually wasn't a big deal; and that's okay. In this business, we are used to being “behind-the-scenes guys,” and I've never minded that.

My experience at KGO has been markedly different.

KGO's approach to radio is what attracted me to this job and the reason that I worked so hard to get it. Its unique approach has been described to me as “old school.” If that means a hugely successful, 100 percent locally managed and programmed, well-engineered, powerhouse AM radio station loaded with professional, creative people who understand how to create something bigger than life, then yes, KGO is old school.

I like old school.

KGO has been No. 1 for more than 26 years in a row. KGO serves its community of license, and is serious about it.

As a radio station is about “theater of the mind” or, simply put, management of listeners' perceptions, it's the skillful and consistent crafting of the station's air sound, promotions and interaction with the listening public that can make it seem bigger than life. Any station can be bigger than the sum of its parts — most simply lack the talent, professionalism and know-how to pull it off.

I'm glad I was able to find a station that gets it. I'm happier still that they saw something in me that they thought fit in. I also appreciate that Radio World was perceptive enough to recognize it through the press release. The quality you identified is present throughout the station.

*Joe Talbot
KGO(AM)/KSFO(AM)/KMKY(AM)
San Francisco*

FM Auction a 'Sham'

The article concerning the FCC's FM auction (“Small-Town Owners Hope for New FMs,” Dec. 1) states that the auction “provided broadcasters a chance to scoop up new FM frequencies for a lot less than it would cost to buy existing stations.” In some cases, that is not true.

I know of an existing AM/FM combo (with owned real estate) that could have been bought for less than what was bid for a Class A FM CP in the same market. A broker friend told me he knew of many such instances.

The “land rush” mentality of the auction, perpetuated by the FCC, drove up the prices to levels that squeezed out all but the big guys and the wealthy. The days of finding an available FM frequency in some little town, petitioning to have it added to the table of allotments and applying for and receiving a CP, are no more. It's no longer about community service; it's all about who has the deepest pockets.

The auction process itself is also a sham. For instance, some of the big guys bid up certain channels to astronomical levels, then withdrew their bids. They didn't really want the channel at that price, but they bid it up because they didn't want their competi-

Our readers have something to say

“Worth having at any station.”

Duane Whittingham
Production/Operations
WTND-LP 106.3 FM
Macomb, Ill.

Radio World

The Newspaper for Radio Managers and Engineers

◆ READER'S FORUM ◆

Radio World, March 2, 2005

GUEST COMMENTARY

Has the Radio Industry Given Up on Analog?

by Scott Clifton

I am writing in regard to the article "AM Bandwidth Issue Catches Fire" (Nov. 17).

Well, it should. How much benefit is really going to be done to our AM broadcast industry by further reducing our AM stations' audio quality, as opposed to other changes?

If my last proof showed my audio bandwidth to be only 20 Hz - 5 kHz, the FCC and I would term that "garbage." I am aware of the limited number of receivers in the market capable of receiving anything over 3-4 kHz, but why do we continue to allow the tail to wag the dog?

Obviously we have given up hope of improving the analog quality and are now willing to accept further degradation in audio and RF interference in order to get to the next stage. By the way, you can thank the receiver manufacturers for their major contribution. Even with the leaps we have made with DSP technology, the AM band has many challenges that have not been overcome.

Our industry has failed to organize properly and mandate standards of transmission receiver design. Further, changing the industry without a plan is reckless.

Mixed signals

I am still concerned about the message we sent the receiver industry by implementing the existing NRSC 10 kHz limit on daytime AM transmissions. It is understandable how much improvement can be realized at night with the 10 kHz band limit, but not in the day. If this solution has helped your station, you should be looking to other places for the fix. To further limit to 5 kHz, whom are we protecting?

As Radio World is primarily a technical publication, I feel it will not be necessary to discuss how this is absolutely non-beneficial in reducing daytime interference issues. As for night, think about whom this is really helping. The biggest issue for nighttime broadcasters is more the noise floor from the co-channel, not so much their first adjacent.

The analog side-band energy from the first-adjacent stations, given their geographical spacing and program-reliant intensities, typically is much less than the co-channel interference. This reduced audio bandwidth suggestion seems to do nothing more than improve the ability to listen to other stations (mostly Class As) outside of your local market at night.

Think about it. What first-adjacent station is affecting you in your local markets? Before you answer, do you really know who the contributors to your NIF really are? You should. Sure, there is reciprocal benefit with first-adjacent content removal, but the real problem is more the Class As pounding the lower-class stations in or near their markets, not the other way around.

I am not particularly happy with the thought of degrading my signal to allow for others out of town to be better heard. I am not against competition, but I can certainly see much better improvements that could be made to the AM band and its industry. What if most of the Class A stations lowered their



Scott Clifton

nighttime power to 10 kW? Then we could allow a lot of those daytime-only stations on at night! Do we really need 50 kW at 670 kHz to cover our markets? When are those

memos coming out?

I look at this as an interim step to bring in digital broadcasting, and on the surface it does seem to be a good one; but I have not seen any discussion directly planning for this. It would require the digital carriers to move in closer to the analog carrier and thus provide less first adjacent-channel interference, assuming our radios are narrow-banded. Does the proposed digital system (transmission and reception) allow for this flexibility?

Of course, I would expect this *only* following a digital solution being accepted/adopted by the FCC before I would back any changes. And before I go telling the FCC to adopt the currently proposed digital system, I want them to make this an open technology.

I don't know about you, but I am not happy about having to pay ongoing licensing fees and being subject to the "growth" limitations such a protected system presents. As a broadcaster, I hope the FCC will not mandate stations to adopt a technology that requires ongoing licensing.

I have heard some broadcasters say that this will go away like the EAS SAME issue, but it will not.

The SAME is a technology that was

designed to improve the safety of lives, which in most if not all cases fails to be protected by patents. The proposed digital solutions patent will most likely be highly protected. Imagine how much money you would have spent if you had to pay to be stereo, or to have an SCA, over the years?

I have purposely woven all over the road because there is a big picture formed by many small pieces. AMs have more to gain, and ultimately more to lose, with this technological implementation. We have to be better organized as an industry — and we need a plan. Not just any plan, but one that has the best of everyone's interests at heart, technically and economically.

We need to advance the industry as a whole, not just hit and miss. We need a technology solution that puts the AM broadcaster in the same competitive arena as the FM. Segregation in other ways went out years ago, why not this one too?

This is the AM stereo debacle revisited. Whether it is the FCC, NAB, SBE, AES or the broadcaster, someone has to step in and dictate a standard for both transmission and reception. Until then, we seem to only be throwing things at a board to see what sticks.

Speak up, broadcasters, or you may soon be laid to rest.

Scott Clifton is the director of engineering for SportingNews Radio Network in Chicago. 🌐

Embracing Our Digital Future

In his Guest Commentary "The Pie-BOC in the Sky" (*Reader's Forum*, Nov. 17), Mike Shane discussed 50 kW Class A AM stations producing first-adjacent-channel nighttime interference when operating using Ibiqity's HD Radio system.

This argument may have some merit, but the author's example is not valid.

The station to which he refers, KCRO(AM) in Omaha, Neb., is a Class D AM station, meaning it is licensed as daytime only. In this case, the station has authority to operate with secondary service at night.

The FCC defines secondary nighttime service as that which is less than 250 watts or has an RMS of less than 141 mV/m, and secondary nighttime service is entitled to no protection from interference whatsoever. Such stations must accept whatever interference they receive. So the truth of the situation is that his 54-watt nighttime signal is not entitled to compete with "5,000 watt jammers right on my frequency."

That aside, the real error the author makes is the assumption that energy radiated by stations transmitting IBOC signals will be at 10 percent of the authorized carrier power. This is not correct.

IBOC stations are still subject to the RF mask specified in 47 C.F.R. Section 73.44, which says that emissions in the 10.2 to 20 kHz range must be attenuated by at least 25 dB below the unmodulated carrier. That means that worst case, the emissions from a 50 kW AM station in the first-adjacent channel range would be on the order of 158 watts, a far cry from 5,000 watts as the author represents.

The truth is the IBOC carriers will likely be several dB below the 25 dB maximum, so the power radiated on first-adjacent channels could easily be half this value.

Assuming that first-adjacent-channel WSCR(AM) Chicago transmits an IBOC signal in compliance with 73.44, the night limit (interference) produced by the IBOC component of WSCR is only 2.0 mV/m. That's just a drop in the bucket compared to the co-channel RSS night limit KCRO has from co-channel WFAN and WBHR. I think it's safe to say that one wouldn't even notice the difference.

The Class A on the other side, WSM(AM) in Nashville, would produce an IBOC-component limit of only 1.28 mV/m. Either way, there would be little impact on KCRO's unprotected secondary nighttime service.

If AM as a medium is to survive, we must lead with our strengths, not expend energy and resources to protect our weaknesses. It's true that daytime AMs and AMs with low-power sec-

ondary nighttime signals are at a disadvantage, but the truth is that they have always been at a disadvantage. Now is the time to push past such disadvantages and embrace our digital future.

Cris Alexander
Director of Engineering
Crawford Broadcasting Co.
Denver

The author is a frequent contributor to Radio World; the opinions are his own.

The IBOC Bubble

Why is Clear Channel's Jeff Littlejohn so interested in hamstringing AM now ("AM Bandwidth Issue Catches Fire," Nov. 17)? If this bandwidth issue is so damned important in 2004 and 2005, with widespread IBOC implementation just around the corner, why wasn't it just as important in 2003 or earlier?

Clear Channel's self-serving ways are really over the top.

To quote the article:

"Several sources complained to Radio World about the proposal, particularly its impact on AMs that don't intend to go digital. In their view, the idea boils down to degrading analog to make digital sound better in comparison, to drive consumers to buy HD Radios."

In many opinions, that's what Clear Channel is doing to FM — degrading the programming to a point that many people will just throw up their hands and go to XM, which is partly owned by ... Clear Channel. Surprise! Kind of hard to buy from any store but the company store in a company town, isn't it?

Who's leading the charge to IBOC? Who else can afford to convert hundreds of AMs simultaneously when many AMs across the country struggle to pay the electric bill from month to month?

Littlejohn lives life in a bubble.

Let it be noted that Littlejohn is also co-chairman of the NRSC and is on the board of directors of Ibiqity. Isn't it enough that Lowry's lap dog Michael Powell rubber-stamps everything Lowry wants? Now this?

I rest my case.

Ron Cox
General Manager
WOXD(FM)
Taylor Communications Inc.
Oxford, Miss.

◆ READER'S FORUM ◆

Questions for IBOC Dissenters

There has been much discussion in the Reader's Forum about the article in which Jeff Littlejohn suggests we AM operators restrict our stations audio to 5 kHz.

How many of those who criticize Littlejohn have been able to do an A-B comparison of an operating AM radio station listening on a widely available receiver while switching the audio output from 5 kHz to 10 kHz? Or performed any tests on popular, currently available AM radios to determine the frequency response?

How many of those who criticize the IBOC system have actually heard it in operation on a consumer IBOC receiver tuned to an HD-equipped commercial AM station?

How many of those who claim IBOC will ruin the AM band have ever driven between two markets and listened to what happens as their vehicle moves from one IBOC signal to another on the same frequency?

Many people who have written on these pages have tried to create the impression that their opinion is fact. Perhaps they should have some factual information or at least personal experience to present first.

Is it a good idea to restrict AM audio to 5 kHz? Based on the facts — the IBOC audio system only allows 5 kHz of analog audio; most radios only reproduce that or less now; and many of us will be transmitting using the IBOC system — I guess it really doesn't matter. I'm betting that radio manufacturers won't suddenly begin to produce better analog radios with digital on the near horizon. I hope those whose units only produce 3 kHz will expand to 5 kHz when most of us are transmitting IBOC.

Is there a better digital system than IBOC for AM? Personally, I don't know. But I do know that most in the industry who have heard it like it.

Ibiquity has put its money — a whole lot of it — where its mouth is. They have talked the talk and walked the walk, creating an AM digital transmission system within difficult industry and regulatory guidelines, and gaining approval of the largest engineering organizations and the FCC. Has anyone else done that?

*Hal Widsten
General Manager
KWED(AM) 1580
Seguin, Texas*

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*Mike Vanhooser
President, Nova Electronics
Dallas*

Your Move, CE

At this winter's CES show, Ibiquity Digital presented a strong showing of radio station groups that made their clearest statement to date supporting IBOC. In a venue at which broadcasters generally keep a low profile, 21 station groups said 2,500 U.S. radio signals now are committed to adding IBOC capability.

At that same show, there was the distinct lack of an equivalent message from the consumer electronics (CE) industry. With a few important exceptions in the auto-aftermarket space, IBOC has not yet gained much declared support from the mainstream receiver manufacturers. As important as the automotive aftermarket is initially, support from the major U.S. car audio OEMs and factory-installed IBOC options from carmakers are needed for IBOC truly to succeed.

The automotive environment is key to the American radio receiver marketplace, given the amount of in-car radio listening here and our far-faster replacement cycle for cars than for radios. But early IBOC adopters may also be found among audiophiles and the younger "iPod" crowds, so IBOC support will also be important in high-end and home-theater receivers, as well as boombox and handheld form factors.

CE's job isn't just getting receivers in the stores. They need to be affordable, appealing products that are well supported by promotional efforts. In fairness, neither is broadcasters' job just getting IBOC signals on the air. The content carried by these new services must be sufficiently compelling and adequately differentiated from traditional radio. Only then will early-adopter audiences be motivated to purchase the new receivers, thereby driving price points down to more mainstream comfort zones.

Note also that the conservative nature of the automotive audio industry is well known, and it's particularly understandable since radio reception problems are among the top consumer complaints registered by new car buyers. However, the mobile datacasting capability of digital radio holds strong interest for the automotive community, so broadcasters should keep this in mind in terms of content offerings if they wish to attract this critical market segment to early IBOC support.

This also implies that the NRSC and FCC should do their part to ensure that IBOC data services are state-of-the-art, open and scalable, and that IBOC is fully standardized and regulated quickly. A healthy digital radio datacasting environment can seal the deal for broad mobile IBOC receiver availability.

History has shown that the success of any new media requires a synergistic confluence of efforts from multiple industries. For digital radio this implies the necessity of three elements (as recent U.K. experience has confirmed): interesting new content, inexpensive receivers and effective promotion of the new format.

Admittedly, we're still early in the process; and the rollout of HD Radio gear can be seen as following an arc not unlike that of satellite receivers before them, with carmakers holding their plans in confidence and with first offerings available only in luxury vehicles. It's safe to assume that the CE industry has much more in the works.

But U.S. broadcasters have taken their first step on this path. Now it's the receiver industry's turn.

— RW

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Radio World

Vol. 29, No. 6 March 2, 2005

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Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: Alan Carter	703-998-7600 x111	Fax: 703-671-7409	e-mail: acarter@imaspub.com

NEXT ISSUE OF RADIO WORLD MARCH 16, 2005

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Radio World (ISSN: 0274-8541) is published bi weekly with additional issues in February, April, June, August, October and December by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church, VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church, VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Emily Wilson, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 2005 by IMAS Publishing (USA), Inc. All rights reserved.

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