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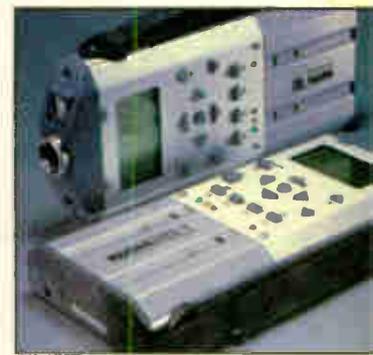
Enhance your regulatory well-being and help your lawyer do her job. Barry Umansky comments.

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USB for You and Me

Al Peterson tries the Nagra RCX220 solid-state recorder.

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Radio World

The Newspaper for Radio Managers and Engineers

September 12, 2001

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▼ Public Radio Capital is a new breed of broker, aimed at the public radio market.

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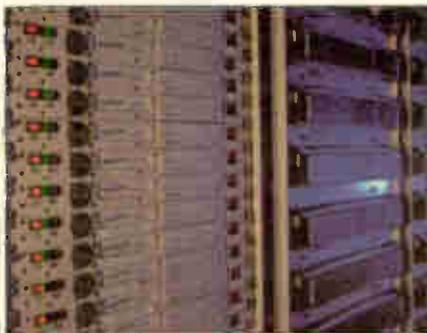
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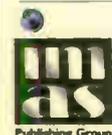
▼ We send an Apex Compellor Model 320A to an engineer in Michigan.



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DIGITAL NEWS

FM IBOC Results Scrutinized

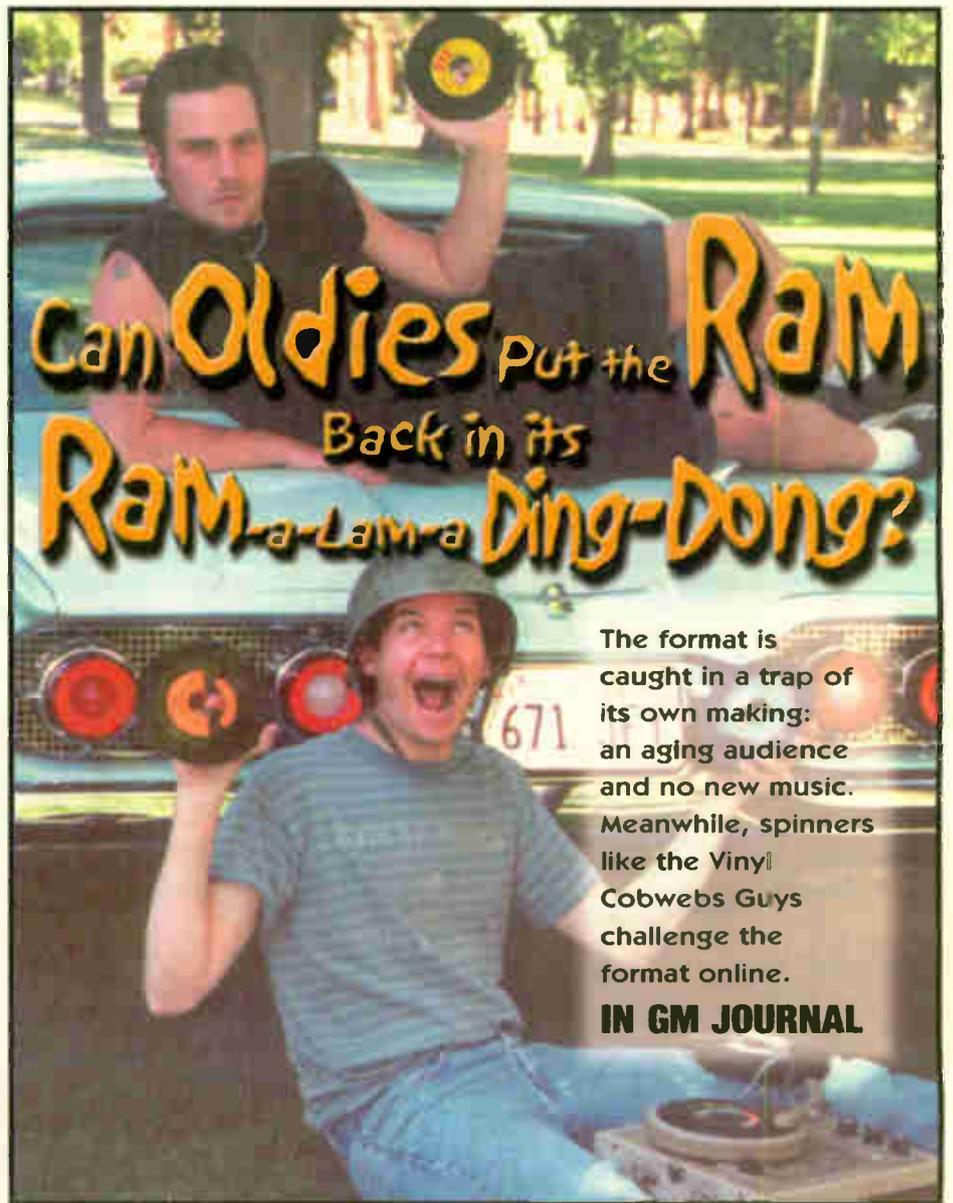
NRSC Evaluators Hunker Down With Ibiqity FM Test Results to Verify Performance Claims

by Leslie Stimson

Key engineers on the standards-setting body looking at the feasibility of adopting in-band, on-channel digital audio broadcasting for America's radio stations now believe they have enough technical information to make that decision.

The landscape has changed dramatically in the past year and a half. In early 2000, two companies were developing IBOC DAB, and after reviewing tests results from the companies, the National Radio Systems Committee said then it did not have enough information to determine scientifically whether IBOC was significantly better than analog broadcasting.

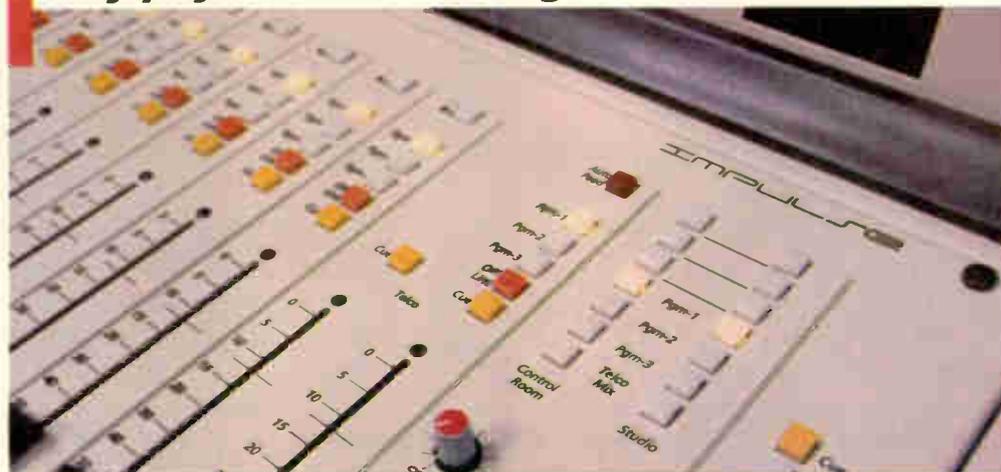
See TEST, page 5 ▶



The format is caught in a trap of its own making: an aging audience and no new music. Meanwhile, spinners like the Vinyl Cobwebs Guys challenge the format online.

IN GM JOURNAL

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◆ NEWSWATCH ◆

EAS Big Part Of WBOT Fines

WASHINGTON Radio One was considering its response in August to FCC fines totaling \$21,500 at WBOT(FM), Boston.

The bulk of the fines were for failing to install emergency alert system equipment and not having a public inspection file.

Radio One acknowledged it did not have operational EAS equipment when an FCC inspector came to the station.

The company said factors beyond its control came into play. It said the station

had had no EAS equipment when Radio One purchased the facility in late 1999, that it ordered the equipment but shipping was delayed, and it had difficulty hiring an engineer to install the equipment after the company's CE quit.

The commission said Radio One could have asked to extend its temporary operating authority pending repair or replacement of EAS equipment but did not.

"Instead, WBOT simply operated in violation of the rule," wrote FCC Enforcement Bureau Chief David Solomon in the forfeiture order.

"We do not find Radio One's difficulty in hiring staff to install the equipment or the departure of its director of

engineering to be circumstances warranting reduction or cancellation of the forfeiture."

Radio One disputes the FCC's assertion that it had no public inspection file.

CCA to Rebuild After Fire

FAIRBURN, Ga. Commercial Communication Associations Inc. is helping customers again after a fire in July destroyed its administrative offices.

An electrical short in a ceiling fan

caused the July 23 fire. No one was hurt.

CCA Chief Financial Officer Connie Fultz said the company lost some records, but recovered others from its computer hard drives.

The transmitter manufacturer is operating out of three trailers on the site while waiting to tear down the damaged portion of the building and rebuild. Production and assembly areas were "relatively unaffected" by the blaze, said CCA.

The address and telephone number remain the same: 360 Bohannon Rd., Fairburn, GA 30213. Phone (770) 964-3530.

The company has been under new ownership since early in 2000. The current president and owner, Scott Benton, took over CCA at that time after the previous owner filed for Chapter 11 bankruptcy and a bank foreclosed on the company.

See NEWSWATCH, page 8 ►

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Nonprofit Gives Pubcasters a Lift

Pubcaster Broker Aims to Position Public Radio to Get More Frequencies More Quickly

by Naina N. Chernoff

LONGMONT, Colo. Public radio stations looking to acquire a new channel in their markets or buy new digital equipment can get quick financial help from what may be the industry's first broker designated for public broadcasting.

Public Radio Capital opened its doors in July. It has helped negotiate a \$4.2 million deal for Colorado Public Radio and is helping The Johns Hopkins University sell its station, WJHU(FM) in Baltimore, for a reported \$5 million.

Three public radio industry veterans, Susan Harmon, Marc Hand and Bruce Theriault, created the nonprofit organization to help pubcasters acquire more stations in their own markets, purchase upgraded or digital equipment and grow the number of public radio listeners. All three are managing directors of PRC.

A vehicle for channels

Because of their varied experiences at public radio stations, Harmon said she and her fellow managing directors understand the market and its needs.

For several years, Harmon served in station management and administration, while Hand worked in the areas of finance, management, and station acquisitions and Theriault specialized in administrative and financial affairs as well as strategic planning.

The three managed the development of Public Radio Capital from concept to launch at the Station Resource Group, which spun out PRC.

Total listeners is an estimated 22 million people a week among the approximately 400 pubcasters that are qualified for funding from the Corporation For Public Broadcasting.

Station values, commercial as well as noncommercial, were starting to rise and \$13 million was a lot of money at the time, one public radio source said.

"I don't think anyone in public radio was prepared to come up with that kind of money."

According to Harmon, educational institutions have long viewed their licenses as assets to be sold to the highest bidders, often commercial or religious broadcasters, thus those frequencies are lost to public radio.

There are approximately 2,000 total noncoms in the United States.

Aside from the 400 CPB-qualified stations, about 1,600 stations are licensed by municipalities, schools, colleges and religious organizations. Should those organizations decide to give up their licenses, PRC is ready to help other pubcasters try to acquire them.

Though there hasn't been much movement in that market within recent years, Harmon said, she believes sales will occur more often as these organizations refine their focus and determine whether they are prospering in the radio business.

Whether pubcasters have to participate in auctions of commercial frequencies is still a question. In July, a federal court agreed with National Public Radio and other non-com broadcasters and reversed an earlier FCC decision that said non-coms had to participate in auctions for commercial frequencies. Noncoms are exempt from auctions for frequencies in the reserved portion of the FM band.

Competition

The FCC has several options, including appealing the decision. The commission was reviewing its options in late August.

Many pubcasters haven't gone after channels in the past because the process is so quick and many of them don't have the capital.

"When there is one more station (in a market), there's more listeners," said Harmon. "We hope PRC will be a vehicle for getting new channels and program services for public radio."

Although some public radio stations have used brokers in the past to help them acquire new stations, PRC says it's the first entity to devote itself to brokering for pubcasters and helping public radio amass more channels and offer more programming.

Demand for such a group can be traced back to at least 1997, when non-commercial WDCU(FM) in Washington sold for \$13 million to C-SPAN by the financially troubled University of the District of Columbia after religious broadcaster Salem Network backed out of the deal.

Harmon and her partners will help public radio managers compete against commercial stations for new channels they might never have gone after by monitoring the industry to find out which stations are being sold, raising funds for pubcasters quickly and finding the least expensive method of financing.

Many pubcasters, Harmon said, haven't gone after channels in the past because the process is so quick and many of them don't have the capital. Likewise, banks didn't realize that overall, the public radio industry is quite stable financially and stations are good borrowers.

Using a pooled loan program sanctioned by Colorado legislation, PRC can get public radio stations tax-exempt financing, Harmon said. The group gets tax-exempt bonds from around the coun-

try and pools them in Colorado.

For Colorado Public Radio, PRC negotiated and structured a \$4 million letter-of-credit-backed variable rate tax-exempt bond that provided a considerable annual savings over conventional debt financing, according to Colorado Public Radio President Max Wycisk.



PRC's Bruce Theriault on the summit of Sahale Peak in North Cascades, Wash.

Unlike other brokers Colorado Public Radio has used to buy five other stations, Wycisk said PRC is focused on the public radio side of the public radio industry.

"PRC explains to financial people that public radio is economically viable and that justifies being able to lend money," Wycisk said. "They are able to bridge the noncommercial broadcast world with the financial world."

PRC intends to use the same model of pooled financing as well as traditional bank loans to help stations pay for

expansion projects including new equipment and renovations. The group also plans to help put together financing packages for public radio as well as television stations wanting to make digital equipment purchases.

The financing, Harmon explained, would complement any capital funds stations receive through Public Telecommunications Facilities Program grants or listener donations.

Though PRC has yet to work on an expansion project, it is assembling a team to provide those types of funding services, which, Harmon expects, smaller pubcasters will most likely use.

Public radio benefactors

In an effort to grow public radio's audience to its fullest extent, Harmon said she and her partners would even be willing to acquire at-risk channels. PRC would not operate any of the stations. It would arrange for other public broadcasting stations to manage the channels. When PRC hears of a station that is being sold, the group moves quickly to educate the interested buyer in financing methods.

It was through their networking connections, Harmon said, that PRC found out that WJHU(FM), Baltimore, a public radio station licensed by The Johns Hopkins University, was on the selling block earlier this year.

The university hired PRC to help find an appropriate buyer. PRC helped the university set up an application and then evaluate interested buyers and is now helping its client close on a deal

See PRC, page 7 ▶



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But Will They Sell Off Rate Card?

Snaps, crackles and pops from across the radio band ...

Clear Channel Radio is ramping up its sales efforts by adding 500 account executives around the company by the end of this month.

I'm always skeptical of grand gestures, but I have to hand it to CCR on this one.

The company's chief operating officer put the case succinctly: "The radio business is as good as we make it." That's great advice for any company trying to grow in this time of economic uncertainty.

Firms that invest now, that seek not only

★★★

We recently invited our readers to show us pix of their interesting remote vehicles.

Here's one from Brian Hill of the engineering department at the Sabre Radio Group in Williamsport, which covers northeast and north-central Pennsylvania on WBZD(FM), "OldieZ 93." The station was launched two years ago this month.

The van was designed by a former employee, Tawnya Hockman. The logo works, hand paintings and vinyl decals were



I'm hearing sitar music in my head just looking at this paint job.

to hold position but to advance, will be the ones we will see out in front when the economy turns up again.

That means investing in sales and marketing.

"There are so many opportunities to sell Clear Channel today that our current group of great sellers cannot cover them all," John Hogan continued in his statement. "The new account executives will work on everything from selling the cluster to selling the format to cross-selling the company's multiple advertising platforms — radio, TV, entertainment and outdoor."

I hope other groups are listening. This is one case where following the leader makes a lot of sense. And it means the big boys may be coming after your better sales people.

Hogan said AEs will be added to most of CCR's 200-plus markets.

P.S. — Clear Channel would impress me further if they led an industry effort to develop 500 new engineers and technical people.

produced by Signs & Designs, owned by Annette and Bill Metcalf in South Williamsport, Pa.

The WBZD van, Hill writes, still needs a "remote-sounding name." Maybe readers can give us some suggestions. Write to me at radio.world@imaspub.com or to Brian at afisher@wzxr.com.

★★★

The National Institute of Standards and Technology is surveying users of its time and frequency services, including broadcasts on radio stations WWV, WWVH, WWVB and satellites, Internet- and modem-based time services and phone voice service.

If you use any of these services, NIST asks you to complete its survey by Sept. 30 at www.timesurvey.nist.gov.

I had to chuckle at a post from my old friend Gary Liebisch, the AM applications engineer with Harris Corp., who wrote this

on broadcast.net: "I've come up with my own Top 10 Suggestions for hyping WWV:

10. Buy the rights to "bee-doop" from old Mutual network.
9. New Station ID: "WWV, Fort Collins ... DENVER!"
8. New Slogan: "Give us 22 minutes — we'll give you 22 minutes!"
7. Hire "Perfect Paul" away from NWS to do side-splitting morning show.
6. Have music director expand playlist to include "Theme from 60 Minutes."

From the Editor



Paul J. McLane

5. Do station promo poking fun at Canadians on CHU.
4. Drive-time slogan: "Propagation and Solar Weather Together on the :15s."
3. Live solar flare remote from surface of the sun!
2. Hire low-paid female sidekick for announcer who laughs hysterically every time he gives the time.

And the No. 1 promotional idea for WWV:

1. "Ninth Caller wins an Atomic Clock!"

Our Silver Sweepstakes prize this issue is an Apex Compellor Model 320A, retail value \$1,350.

The Compellor celebrates its own 16th birthday this year. It has become a broadcast standard for invisible gain riding, combining proprietary processing algorithms — Dynamic Verification Gate, Dynamic Release Computer and Frequency Discriminate Leveler — with a pristine audio path.

"Intelligent interaction" between the leveler, compressor and limiter controls dynamic range without pumping and distortion.

Dan Greer of Flint, Mich., will be enjoying that new Compellor. (Hey, Flint was the name of my Little League team in the early 1970s!). Turns out Dan already has two Compellors among the five stations for which he engineers, and is excited to put another one on the air.



Dan is chief engineer of Cumulus Broadcasting of Flint, who wrote on his entry form that we should write more articles about education of engineering rookies. No greenhorn himself, he finds Radio World extremely valuable in his career. (That didn't influence our random drawing, but we're pleased to accept the compliment.)

Register for our contest at www.rwonline.com.



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Test

► Continued from page 1

Now there is only one proponent, Ibiquity Digital Radio. It submitted some 600 pages of FM test results to the NRSC in August.

Ibiquity President and Chief Executive Officer Robert Struble said the document was one of "most comprehensive" set of IBOC test results conducted in United States broadcast history.

"The tests results demonstrate conclusively that Ibiquity's system represents a significant improvement over existing analog service and that IBOC can be introduced without meaningful interference to existing analog operations," the company stated in its submission.

"We're very happy with what they've given us," said NAB Science and Technology Vice President John Marino. "They've given us more than what we've expected as far as a system description."

The NRSC will seek to verify Ibiquity's claims, especially those concerning power levels and coverage. "Broadcasters will want to know the pros and cons of introducing the system. Using existing spectrum with existing allocations is a compromise. Ibiquity seems to have really done their homework," said Marino.

Field tests were conducted on eight FM stations representing all classes and conditions. Even at 1 percent of the power of analog, IBOC provided high audio quality throughout the market, comparable to analog FM, Ibiquity stated. Ibiquity claims that

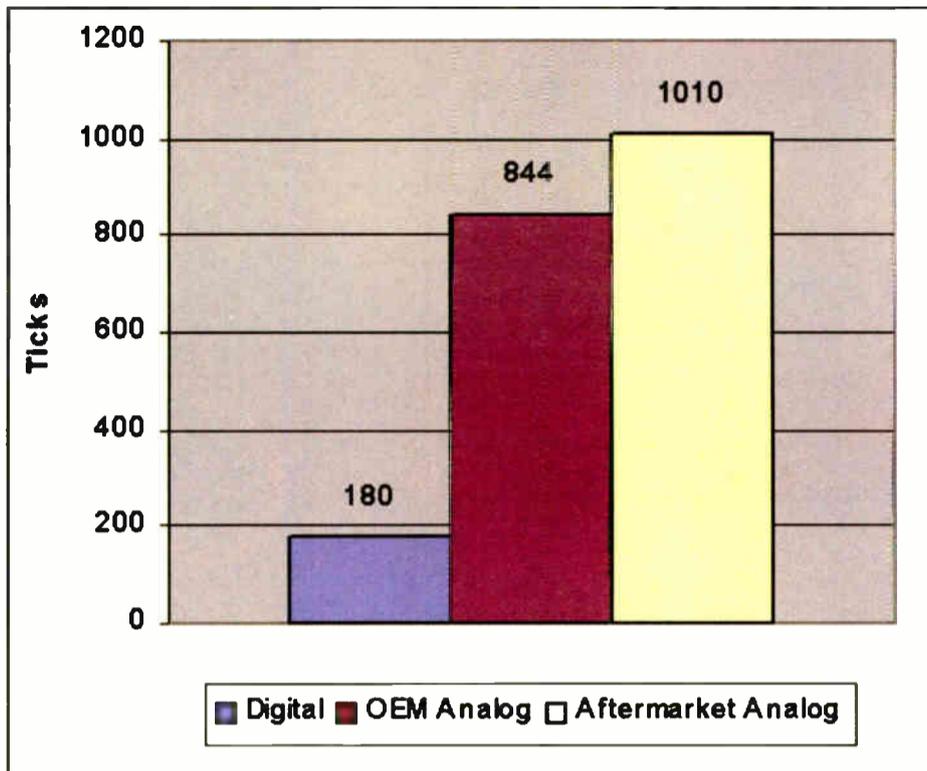


Fig. 1: Ibiquity designed an extra robustness test, the 'Ticker Test,' which was used to evaluate impairments on audio samples for both digital and analog auto receivers. This shows the number of temporal impairments heard on average. See sidebar, page 6.

digital coverage consistently extended to at least the 45-50 dBu signal level and, in some cases, to the 15-25 dBu signal level.

According to Ibiquity, the compatibility of IBOC with its host analog station doesn't seem to be at issue, but NRSC members will look carefully at the digital signal's impact on adjacent channels. In the Ibiquity

system, the digital sidebands of the host station literally sit in the first adjacent channel of the next station.

The amount of digital energy being transmitted is relatively low, around 23 dB below the analog signal level, but Ibiquity states that field test results indicate there could be some impact on analog first adja-

See TEST, page 6 ►

Ibiquity, Hyundai Team Up

Ibiquity Digital Corp. and Korean-based Hyundai AutoNet have reached agreement to exchange technology know-how and marketing expertise for digital radios using Ibiquity's in-band, on-channel digital audio broadcasting technology.

Hyundai AutoNet is the primary automotive electronics supplier for Hyundai and Kia automobiles.

The deal is a first for Ibiquity, which has been in similar discussions with Ford, DaimlerChrysler and General Motors.

Why Hyundai?

"Hyundai is one of the fastest growing car companies in the United States and it has plans to bring high technology into their vehicles," said an Ibiquity spokesman.

IBOC DAB "fits nicely with their plans to be recognized as a technology leader," allowing Hyundai to offer customers new telematics applications delivered through AM/FM digital radio.

In 1999, Hyundai and Kia accounted for 300,000, roughly 3 percent, of car and light truck sales in the United States. That percentage is expected to grow, Ibiquity said.

No target date has been set yet for IBOC-compatible receivers to be in Hyundai and Kia automobiles.

— Leslie Stimson

JackHammer: The Next DAB?

A group comprising mostly former Ericsson Wireless RF engineers believes it has developed what might become the *next* generation of digital audio broadcasting — meaning after IBOC and satellite radio.

The system could use broadband technology to deliver audio and video signals. Calling themselves JackHammer Digital Radio, the company principals were granted time to present their idea to the National Radio Systems Committee meeting at this month's NAB Radio Show.

The project has been in development for about a year, said Chief Executive Officer Steve Pearson, a chemical engineer and production manager for a Georgia Pacific paper mill by day.

He said a few hundred thousand dollars has been spent on the project so far. JackHammer Vice President of Marketing and Chief Operating Officer Chris Bowes said none of that money has come from Ericsson, but neither Bowes nor Pearson would disclose specifics.

The company needs more funding, about \$5 million, to build a prototype system. If it received that amount, JackHammer would need roughly \$30 million to \$50 million more to bring the system to the point where the technology could be licensed to consumer electronics software and hardware makers.

That's where the NRSC comes into play. Jackhammer is looking for exposure to consumer electronics components manufacturers that may be willing to give them development funding.

"If we can get interest, we can go to market in two years," Pearson said.

Getting a CE manufacturer to buy into the concept could be difficult; most would want to see more than a concept to make sure the technology would be a viable manufacturing prospect.

The company would seek NRSC endorsement with the goal of having its technology included in a DAB standard. Jackhammer does not want to be locked out of the FCC's ongoing DAB Rule Making.

"We're not here to slam IBOC," said Pearson. "We think IBOC DAB is great for the short term. We believe this is good for later."

He said the company has filed for several patents for its technology, which, theoretically, could deliver up to four channels on one radio frequency. Those channels, he said, could be audio or video. Pearson did not want to give system specifics, but said the system would use the broadband connections of the Internet to send up to four signals from the origination source, within one FM frequency, to a tower.

JackHammer has less than 10 employees, mostly RF engineers who used to work for Ericsson Wireless who work on the project on their own time.

The NRSC agreed to give JackHammer a slot on its meeting agenda to make a presentation.

Several sources close to the NRSC said it's late in the game for another DAB developer to be considered. A new developer, they said, would need test results in hand now, so as not to delay the NRSC's evaluation.

— Leslie Stimson

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Test

► Continued from page 5
cents. The company said the number of potential listeners affected is "exceedingly small" at 0.6 percent.

Test review

Ibiquity's statements are theoretical. The true impact is hard to predict until each station and its neighbor goes digital. The NRSC will do its best to "get a handle on this," as one source stated, before a system is officially implemented.

Two factors are expected to lessen the effect over time. Ibiquity predicts future transmission and receiver technology will reduce analog listener impact. It also expects listeners to substitute digital receivers for analog versions.

The evaluation working group, a subset of the NRSC's DAB subcommittee, is reviewing lab and field test results of Ibiquity's system in 10 specific performance areas: unimpaired audio quality, service area, durability, acquisition performance, auxiliary data capacity, behavior as signal degrades, stereo separation, flexibility and the IBOC signal's impact on the host and neighboring stations.

The evaluation working group, headed

by Voice of America's Dr. Don Messer, has begun meeting every other week.

Ibiquity claims the results show superior quality over analog in key areas such as audio quality, coverage, signal robustness and host compatibility. It said it is on track with its commercialization schedule, and expects RF manufacturing partners to have IBOC-compatible equipment for sale on the exhibit floor at next spring's NAB2002 convention.

A report soon?

Several companies conducted the tests using NRSC guidelines.

The Advanced Television Testing Center conducted the lab tests, and Ibiquity conducted the field trials in the presence of NRSC observers.

Dynastat conducted subjective listening tests with approximately 480 members of the public trained to detect signal impairments.

The NRSC planned to conduct similar two-hour listening tests at the NAB Radio Show in New Orleans to see if broadcasters rate the samples differently than did the general public in the Dynastat tests.

The NRSC's goal is to evaluate the results and develop a report to submit to the FCC within 90 days, which would be by the end of November. That timeframe

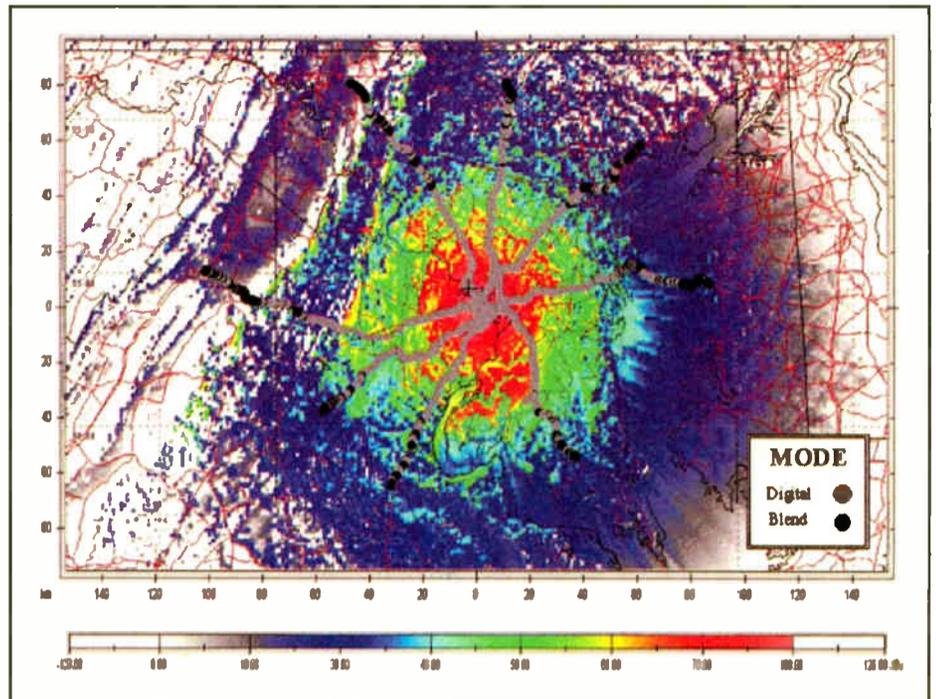


Fig. 2 plots the Ibiquity test radials for WETA(FM) in Washington against the predicted analog coverage for the station.

holds if Ibiquity submits test results this fall on its AM system and results from IBOC's performance on FM subcarriers, according to DAB Subcommittee Chairman Milford Smith.

It's unclear at this point how the FCC would proceed, as the DAB proceeding underway gives the agency flexibility. NAB and Ibiquity have urged the commission to set a single IBOC standard; however, Ibiquity believes its rollout and commercialization can progress under any situation.

More markets

One source said Ibiquity might add San Diego and Dallas to its previously announced early target rollout markets now that XM Satellite Radio plans to begin its subscription satellite service by targeting those markets.

Ibiquity also intends to submit results of an unimpaired audio quality test once its Perceptual Audio Codec has been fully integrated into the system. This specific test looks at audio fidelity in a clean-channel environment to assess codec performance.

The former USADR version of the AAC codec from Fraunhofer was used for the August submission.

Some radio observers feel the NRSC would rubber-stamp an IBOC system and declare it the standard, no matter how it performs. Marino said he could see how some may feel that way because there's only one IBOC proponent now. He said some NRSC members have had some skepticism about IBOC, but said Ibiquity "in no way" drives the evaluation process. ●

FM IBOC Is Unmasked

Here are sample findings from Ibiquity's submission to the NRSC.

All results are from the hybrid waveform mode rather than the all-digital mode.

Host compatibility — An analysis of the subjective evaluation of audio samples with IBOC turned off and on indicated that listeners did not perceive any meaningful difference from the introduction of IBOC.

Service area (Fig. 2, above) — Even at 1 percent of the power of analog, IBOC provided high audio quality throughout the existing market, comparable to analog FM coverage. Figure 1 plots the test radials for WETA(FM) Washington against the predicted analog coverage for the station. At the point where analog coverage is depicted as dark blue, broadcasters would expect to find noticeably degraded analog coverage.

Even at 1/100th of the power of analog, IBOC provided high quality audio throughout the existing market. Overall, digital coverage consistently extended to at least the 45-50 dBu signal level.

Durability — Subjective evaluations of audio samples from digital and analog auto receivers resulted in consistently higher scores for digital performance with first-adjacent channel interference, second-adjacent channel interference and multipath.

Throughout these tests, digital performance remained consistently strong even as impairments increase. This contrasts with analog performance, which degrades progressively as impairments become more severe.

Ibiquity designed an additional robustness test, the "Ticker Test" (see Fig. 1, page 5), which was used to evaluate impairments on audio samples for both digital and analog auto receivers. Evaluators found that the analog samples had 4 to 5 times more impairments than digital. Even more important, participants reported hearing 6 to 7 times more severe analog impairments than digital.

Receivers: Receivers used in performance tests were:

OEM: Delphi, Model PN 09394139
Aftermarket: Pioneer, KEH-1900
Home Hi-Fi: Technics, SA-EX140
Portable: Sony, CFD-S22

Auxiliary data capacity — Ibiquity anticipates that initial receivers will sup-

port program associated data applications. ... The types of data services available to consumers will depend on broadcasters' decisions regarding audio quality and data capacity. The hybrid system will support a limited amount of data when a broadcaster is utilizing the highest possible digital and analog audio quality.

Broadcasters can gain additional data capacity by adopting one of the extended hybrid modes and adding additional digital carriers closer to the analog host. By adding digital carriers in the 1, 2 or 4 frequency partitions (122.5-129.4 kHz, 115.6-122.5 kHz and 101.7-115.6 kHz) a broadcaster can increase data capacity by up to 50 kilobits per second. However, as broadcasters add partitions closer to the analog host they increase the potential for host compatibility problems on certain lower quality fixed analog receivers.

Broadcasters will also have the ability to increase data throughput by reducing the amount of audio throughput. Reducing audio throughput from 96 kbps to 64 kbps, the digital audio quality level used in both satellite DARS systems, increases data capacity by 32 kbps. Broadcasters will have the flexibility to adjust digital audio quality in 8 kbps steps, providing substantial flexibility in capacity in tradeoff decisions.

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DIGITAL BOX

Could a Light Bulb Snuff Satellite Radio?

XM Satellite Radio and Sirius Satellite Radio have asked the FCC to reduce allowed emissions from a particular new model of outdoor light bulb to reduce expected interference to their signals.

Sirius and XM have asked the FCC to require that Fusion Lighting lower the bulb's emissions levels to 99.9 percent below current standards.

Fusion says that would put the company out of business. The microwave-powered bulbs are still in development and are about a year from commercial sale. Fusion's bulbs operate in an unlicensed portion of the RF spectrum and will interfere with the S-band spectrum occupied by the satellite services, one source said. The Wall Street Journal reports that the FCC has spent several months trying to resolve the dispute. Calls to Fusion were not returned.

ST Receives XM Initial Chip Order

STMicroelectronics has received orders from radio manufacturers for 170,000 two-chip receiver chipsets for XM Satellite Radio. At least 70,000 of these chipsets are scheduled for delivery by the end of this month to support the initial startup of commercial service; the remaining 100,000 chipsets are forecast for delivery before the end of the year.

XM Radio chipsets are being delivered to equipment manufacturers including Sony, Pioneer, Alpine and Delphi Automotive Systems for vehicle and home AM/FM/XM radios.

The sole supplier of XM chipsets, STMicroelectronics condensed the functions of the XM receiver into two chips, reducing the size and cost of radios.

ST completed development of the XM chipset in late 2000, delivering first-pass chip samples to XM for evaluation in October of last year. The production version of the chipset was delivered this March to XM radio manufacturers for final validation, testing and integration into XM-capable receivers.

These receivers are being field-tested across the United States by employees of XM and its business partners.

— Leslie Stimson

News Updates Every Business Day



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PRC

► Continued from page 3 reportedly worth \$5 million.

In an effort to keep the station in public radio, a newly formed nonprofit organization made up of current WJHU on-air talent and staff is buying the station. Harmon said the group is finalizing its loans, which are guaranteed by local fans of the station and she expects the sale will be completed before the end of the year.

To assist Harmon and her partners in advising public radio, PRC has assembled a board of directors made up of business, financial and legal experts to give them advice in different areas.

Until business grows and it is able to

turn a profit from its consulting services, Harmon said PRC will be supported by grants like a \$200,000 gift it received from the Surdna Foundation, a New

York-based charitable foundation that routinely bestows grants to nonprofit organizations providing a public service. Although they will need to rely on sim-

We hope PRC will be a vehicle for getting new channels and program services for public radio.

— Susan Harmon

ilar grants for the near term, Harmon believes the need for PRC exists because listeners want more public radio channels. "Our role in life is to help public radio stations find the cheapest way to finance," Harmon said. "If someone is selling a station, we hope they'll consider PRC." 

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Frequencies: Doing More With Less

Ken R.

It's the day of the big game. The fans crowd into the stadium and the teams are ready to play.

But everyone from the coaches to the hot dog vendors to the camera crews needs wireless communication. With the simultaneous demand for hundreds of channels of spectrum in a given location, the situation can quickly get out of hand.

Galen Hassinger, president of Hassinger Associates, is the new national frequency coordination director for the Society of Broadcast Engineers. He sees the need to bring some unity to these issues in the face of dwindling resources provided by the FCC.

Hassinger's mandate from SBE is to oversee the work of about 30 game-day NFL coordinators as well as the rest of the 100 or so local market frequency coordinators. The latter juggle the demands of everyone from TV and radio remote news crews to presidential candidates and their handlers at political rallies.

While Hassinger is a staff employee of SBE, the rest of the frequency coordinators across the country are volunteers.

"We have begun discussions with PAC 10 and we feel that other football organizations within the NCAA will find a need for our service as well," said Hassinger. "These discussions are ongoing."

All news all the time

"The situation is never static because the wireless industry is expanding, but the FCC is continuing to nibble away at the spectrum," said Hassinger. "This means our frequency coordinators will require greater expertise, so we are developing an accreditation process to provide a better service."

While SBE does not now require a training program to qualify for these positions, it is the responsibility of SBE frequency coordinators to provide the best means of communication with the least interference.

Under current rules, if a breaking news event occurs outside a broadcast station's area, the station can invoke

FCC Part 74.24, which allows them to broadcast from that area, but they must coordinate frequencies with stations in that locale to avoid interference.

National news organizations like ABC have a national license, but are still required to coordinate with local broadcasters.

"Often, a national news organization will work with their local affiliate to provide reports that are fed to the network," said Hassinger. "For example, when Hurricane Andrew was supposed to head down here to Fort Myers, CBS had a crew here and we were prepared to handle the national feed."



Companies like Shure say they include information with their products to help users understand wireless spectrum management.

"It's already happening with TV, and may happen soon with radio," said Hassinger, referring to loss of available spectrum. "TV stations are losing two channels of Broadcast Auxiliary Service, which are used for electronic news gathering. The ramifications of this are going to be painful to broadcasters."

Hassinger said a mobile satellite service has been licensed to occupy these frequencies and that he is worried about loss of quality in the signals.

"Cell service is trying to cut into our radio frequencies in rural areas," said Hassinger. "Spectrum is limited. But the big looming monster is 3G, third-generation wireless Internet."

Hassinger said there are techniques to maximize use of the spectrum.

"Analog modulation does not fully use the channel assigned, as the center of the channel is more densely utilized with tapering off toward the edges," said

Hassinger. "With digital modulation, the band is more fully occupied and those techniques will probably be the FCC's savior so they can squeeze more service into the existing spectrum."

Sales faults

Karl Voss, head of the Arizona Frequency Coordination Committee, believes many of the wireless frequency clashes that routinely occur are the fault of manufacturers and retail sales people.

He ought to know; his experience includes game-day coordination for the Super Bowl.

"The manufacturers submit each piece of equipment to the FCC for type approval," said Voss. "The majority of the wireless stuff falls under Part 74, which is 'broadcast auxiliary,' but this category can only be used legally by people holding FCC licenses such as radio and TV stations.

"So the rock bands, churches and hotels using wireless equipment are using frequencies they really aren't supposed to."

Voss said this new wireless equipment is inexpensive, and that is part of the problem.

"Folks are buying all this wonderful equipment and then finding out they can't use it," said Voss. "The FCC should be responsible for letting people know about this, but the people who make and sell it have an inherent conflict of interest."

Another problem Voss cited is the new crop of wireless LANs, which are usually in the 2400 to 2483 MHz band.

"Let's say a radio remote van pulls up outside an office building and goes live with a news report from the scene," said Voss. "That truck could wipe out all the wireless networking in that whole building."

Voss had an experience in which unlicensed cell phones took out half of the in-car cameras at a NASCAR event. The company broadcasting the event had some very sudden and



Galen Hassinger

severe problems.

"I get someone who is licensed calling me up complaining about unknown interference," said Voss. "It can take hours to find the problem with a spectrum analyzer and an antenna. Broadcasters are always the licensed users," said Voss. "Everyone else must be secondary."

Very few problems

Shure Inc. is one of the larger manufacturers of consumer and professional wireless microphones and related equipment. It is the company's position that its products provide the flexibility to avoid frequency conflicts in most situations.

"Despite the fact that there are so many wireless mics in use, very few problems with interference have occurred," said Rick Frank, director of microphones for Shure. "With our products you can select from among several possible frequencies to avoid these issues."

Frank said his products are made available to secondary users who are provided with access to a Web site and a customer service department including applications engineers who can assist customers.

"We can't comment on what the retailers do, but we do provide information in our packaging so the consumers get the information they need."

At www.sbe.org, engineers can find useful downloads including suggested game-day frequency procedures, a game-day coordinator handbook and a list of official coordinators by state. ●

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On The Air

A Monthly Newsletter from Broadcast Software International

Issue 7

Quote of the Month

"You have a great product that seems to only be limited in use by a person's imagination."

Alan Burton, WKLV-
Paintsville, KY

News

A Letter from BSI's President



This is one of the most exciting times in BSI's history. In the next month, we will be releasing three new innovative products that will give incredible capabilities to broadcasters at all levels.

Our new automation software package, **Simian**, redefines power, reliability and affordability. This new program has the capability of automatically healing itself of errors and even notifying us here at BSI if something isn't right. We are able to remotely correct or repair an installation before our client is even aware that there's a problem.

Skimmer is a wonderful new tool for PDs and air talent to air check themselves and the competition. It will also undoubtedly be popular with media tracking services.

Perhaps the most exciting new offering is **TimeShift**. This ground-breaking application is capable of storing a year's worth of network programming, including all cue tones. West Coast stations can permanently delay an East Coast feed. Stations can effortlessly and instantly create "best of" programs. Never again will anyone need to "dub the network feeds" for sports, business or other features.

In true BSI tradition, despite the products' amazing capabilities, all three of these new offerings are priced affordably like major brand software, not "black box" broadcast products.

The real software can be downloaded to test and try from our web site at www.bsiusa.com. I encourage you to visit the web site, try the software and ask us any questions you may have. Our open approach and dedication to our customers are the reasons we have thrived when others have fallen by the wayside. We look forward to hearing from you.

Sincerely,

Ron Burley - BSI President

Calendar

October, BSI is accepting beta team applications for Simian through October 31st. See our website or next month's On The Air for details.

Birthdays:
Sept 25 1944, Michael Douglas
Sept 25 1969, Catherine Zeta-Jones

Tip

Easy Air Checking

Skimmer, one of our newest products, is a great tool for air checking. It was specifically designed to record, play-back and cut-out air checks. When you set it to record, you can stop/start using the microphone button. Triggers are another way to control Skimmer externally. Using the software is a reliable and affordable way to record your broadcast. Skimmer also makes this a lot easier to do than tape decks or in-house "hack" software.

User File

Radio Wanaka - W. Johnson

Wayne Johnson works at Radio Wanaka 92.2 FM in beautiful Lake Wanaka, New Zealand. He says, "Our station has been on air for about 8 months. We have a full and part time staff of 5 very dedicated people. The heart of our system is, of course, WaveStation. I loved the way that you guys let me download a working system. I had it running within the hour."



"Some of the other companies made you send, by email, all of your details before they would let you look at their systems. Bit like the secret service," Wayne says, "I got the feeling that you guys had nothing to hide and that anyone in the market could check it and see how it works without any obligation."

"In the end we got WaveStation and also purchased 1000 titles through the Music Store (Now there's another great thing), loaded it up and went to air. It was pretty much as easy as that. I can honestly say that WaveStation has NEVER let us down."

We at BSI want you to know that even though we have developed a new automation system in Simian, we will continue to support WaveStation on our website and through our free e-mail technical support.

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GUEST COMMENTARY

An Inspector's Perspective on Logs

An FCC Inspector Helps You Avoid the Problems With Record-Keeping He Has Seen at Other Stations

Ronald Ramage

The author is assigned to the FCC Enforcement Bureau's Kansas City Office, from which he has conducted broadcast inspections for more than 17 years.

For most of us, the mere mention of "paperwork" produces many responses, rarely positive.

Unfortunately, documentation of our activities is a necessary part of business. Station logs and records are no exception.

All licensees are required to keep them. But are the logs kept simply because the FCC requires them, or used as a helpful and inexpensive tool?

Log now or pay later

It has been my experience that licensees who properly maintain logs of FCC required items have significantly fewer violations, less downtime and better managerial control of their overall operation.

The reason is fairly simple. With the exception of Emergency Alert System requirements, logs document observed problems and corrective actions. When done properly, the logging of observed technical problems can lead to the detection and correction of problems before they cause major down time, equipment failures or fines.

Logging also can provide managers with some assurance that station personnel are detecting and correcting problems to their satisfaction and in a timely manner. Best of all, when done properly, logging costs only a little paper and a little time.

Items that must be in the station's log include all EAS activations, sent or received, entries documenting why an

EAS test was *not* sent or received, and entries documenting circumstances where a problem with any station equipment or operation required corrective action to maintain compliance with the rules and station authorization(s).

In addition, AM directional stations must log field intensity measurements made at designated monitoring points.

If managers can't understand from their logs how a problem was handled, I probably won't either.

Except for the logging of EAS activations, the emphasis should be to log observed problems *and* corrective actions. For non-EAS equipment, FCC rules require a log entry whenever a meter, transmitter, antenna or other necessary piece of equipment is found out of calibration, out of service, repaired for any reason, replaced, damaged, changed, etc.

If the licensee owns the tower, then he/she also is required to log any tower light outages, regardless of the position of the light on the tower.

Note that the FCC does not require licensees to log routine transmitter readings, time that tower lighting is checked and many other items that licensees may log on their own. Licensees check many of those items for operational purposes and most elect to log the information for their own use, for good reason.

However, sometimes the non-required logging becomes routine and the required logging is ignored or neglected.

How often should station personnel make the observations that lead to a log entry?

In an effort to allow licensees as much flexibility in their operation as possible, the rules do not specify a schedule for monitoring operating parameters, calibrating equipment and inspecting the transmitting system. The rules do specify that the licensee is to maintain compliance with his/her station authorization and the technical rules pertaining to the operation of the station.

Keep in mind that licensees are to correct any out-of-tolerance conditions that could cause interference, or go off the air, within the three-hour or three-minute time periods specified in 47 CFR §73.1350(d).

The three-hour or three-minute time period in which the station must take corrective action is from the time the station begins the out-of-tolerance operation and *not* from the time station personnel decided to check on the station.

FCC rules require licensees to establish schedules and procedures for monitoring station operation and for calibrat-

ing required equipment as needed to maintain compliance with the technical operation of the station. See 47 CFR §73.1350(c).

The rules do not specifically state that these schedules and procedures be in writing. However, putting the schedules and procedures in writing provides station personnel with a written reminder of what is expected of them with regard to making observations of power, frequency, modulation and, where applicable, tower lighting, AM directional parameters and

was and what was done to correct it. If they cannot read it or understand what occurred, I probably will not either.

The log is your record of what you did. It can be a valuable tool to cover yourself and your efforts.

If the tower light was out and you called the FAA, but they cannot find any record of your call, do you have sufficient information to prove you made the call when asked days or weeks later?

What number did you call? When? Who did you talk to? Did they give you any tracking numbers? The rules do not require the logging of these specific items, but think of the problems such documentation can eliminate.

Chief operator review

In my opinion, the chief operator's weekly review of the logs, as required in section 73.1870(c) of the rules, is one of the most important functions that can be done to maintain compliance.

With this one review, the operator can detect a lot of problems. It is a check and balance system. The other operators making log entries may not realize that, over the course of the week, no EAS test was received from one of the two (or more) monitored sources or that the power readings have slowly drifted indicating a bigger problem.

The chief operator also can make certain that complete and detailed entries are being made.

When a chief operator does the review, he needs to make certain he is looking for FCC required entries. In too many cases, I have found the operator reviewing logs for operator sign-on times, or to ensure that commercials run on time, or for other things that have nothing to do with FCC requirements.

When the chief operator does find an item of concern, the operator needs to follow up and make certain it is corrected and properly documented. The chief also should provide feedback to those making log entries as needed to ensure complete documentation.

An example of logs that are not properly documented is often found when a station does not receive an EAS test. On several occasions I have found log entries made by chief operators that contain nothing more than "called station" and the call sign of another station. There are no entries explaining what happened when the chief operator called the other station.

Did the station not send the EAS test? Was it sent and you did not receive it? What exactly occurred to cause your station to miss receipt of an EAS test?

The boss

Again, this is where station managers should get involved and do a periodic review themselves to see if they can understand not only what was wrong, but what it took to correct the problem.

Also keep in mind that any other stations that monitor yours for EAS activations, may be calling to ask if you sent a test that they did not receive. I would recommend you log this as well, again as a check and balance system. You may not know you have a problem sending a test until someone calls.

Of course, I have had some chief operators tell me how they get frequent calls from the same station to find out when the test was sent so they can log it after the fact!

From my perspective, the main problem

See LOGGING, page 19 ►

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WIRED FOR SOUND

A Re-Volting Idea for Speakers

Steve Lampen

In the Aug. 15 issue, we began a discussion on 70-volt distributed loudspeaker systems.

This approach uses transformers inside the power amp, and on each speaker, to change the impedance of the system so the resistance of the wire has much less effect.

In background music systems, the use of transformers is valuable because you have different "zones" where you will want speakers at different sound levels. These 70-volt transformers on the speakers have "taps" for different power outputs.

Consistent levels

So the lobby of a business could be set "low," and the warehouse set at "high." Then you adjust the overall level with the controls of the amp, but the speakers will be at the same relative level.

The downside is the added cost of the transformers. In addition, you have to buy an amp with a 70-volt output.

In the past, I have used a regular amp and wired the 8-ohm output into a very large 70-volt transformer, turned around. Now they are hard to find and pretty expensive, but a 50-watt or 100-watt 70-volt transformer can still be cheaper than buying an amp with the appropriate output. If you are using a stereo amp, you need a transformer for each output channel.

The secret is to add up the little wattages of the transformers on each of the speakers and make sure that the total is no larger than the transformers on the output of the amp.

While you can run stereo, especially if you use a stereo amplifier as suggested above, this is rarely done. Most of the time, these systems are run monaural, with identical program material running into both channels.

After all, we're talking background music here, not high-end audio. Of course, that doesn't mean you couldn't have higher quality audio, and run things in stereo.

I have heard some amazing performance from 70-volt systems, with the right speakers, of course. Naturally, the quality of the reproduction is related directly to the quality not only of the

speakers also have a back baffle or "can," to give a bit of acoustic loading to the speaker and improve bass response.

And once you have your amplifiers, speakers and transformers, you're ready to wire it up. And here's the real joy of 70-volt systems.

First, you just run all the speaker lines in parallel. And 24 AWG wire

The 70-volt approach is useful in background music systems, where various 'zones' need audio at different sound levels.

speakers, but of the transformers as well.

It is pretty hard to find 70-volt transformers that rise above the "background music" quality. In addition, if you do run stereo, the placement of speakers can be difficult, or impossible, in most office, studio or similar commercial installations, especially if you are using ceiling-mounted speakers. This would require a listener to be standing in exactly the right location to even get the stereo effect. Stick with monaural.

You can easily tell that background music speakers, such as ceiling mounted speakers, are intended for 70-volt systems because they have a mounting plate on the speaker perfect for the little transformer to feed it. The better

(i.e., telephone wire) will get you 500 feet with almost no loss (0.5 dB, 11 percent).

To see how far you can go with a 70-volt system and different gage wire sizes, check out www.belden.com/products/catalog/help/techspeaker.htm.

Unless you plan to go miles, you can use just about any wire you want, with a couple of cautions.

Considerations

It's a sure bet that most of your speakers will be ceiling-mounted. That drop ceiling probably is a plenum area. Then it's a question whether your fire inspector or planning board subscribes to the National Electrical Code.

If they do, then plenum cables will be required in that plenum space. Of course, you could use the cheapest plenum cable, even 24 AWG plenum telephone cable, and your 70-volt system would work just fine.

The second consideration is the voltage rating of the cable you are using.

If 70 volts exceeds the rating of your cable, then you can change the entire system to a 25-volt distributed system. This means an amp with a 25-volt output, and 25-volt transformers on every speaker.

However, a 25-volt system cannot go as far as a 70-volt system, and the transformers are much harder to find.

If 70-volt won't get you far enough, 100-volt distributed loudspeaker systems also are available. This requires much higher voltage rating in the cable, but can go very far.

Unless you are wiring up a factory that is many blocks long, it is doubtful if you would ever need this option. Transformers for this application are much harder to find and are expensive.

This is the final word, at least from me, on resistance and speaker cable.

So let's examine the next parameter from the list a couple of columns ago, capacitance.

Capacitance

Any time you have two metal conductors separated by an insulator, you have a capacitor.

As you probably know, a capacitor can hold an electrical charge. The one really bad thing about capacitance is that it is frequency-based — that is, the effect of capacitance gets worse as the frequency rises.

This effect is called "capacitive reactance," and you might recall the formula from your electronics classes in school.

Capacitance runs in parallel, "across" the cable. So if you know the capacitance per foot, you simply multiply that number by the footage. This is yet another reason why short speaker cables can outperform long cables: lower capacitance.

If you pull out any wire and cable catalog and go to the speaker cable section, one of the things you will note, which you may not have noticed before, is that capacitance is rarely listed.

Why? Because it is probably very low. Even low-grade zip cord runs around 20 pF per foot. And the larger the wires, the more insulation is extruded over them, so the capacitance never gets much larger.

At even the highest audio frequency (20 kHz), the reactance is pretty small. In fact, we could go almost 17,000 feet before we were only 1 dB down due to capacitance. So most catalogs, and most installers, just ignore the capacitance.

Now, if you really must know, you can always call the cable manufacturer and ask them what the capacitance of a specific cable is. I'm sure they know. They just didn't think you cared.

In our next column, we'll talk about inductance, impedance, skin effect and copper purity.

Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill. Reach him at shlampen@aol.com.

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RDS radios are being supplied as standard equipment in a growing number of new cars. This multi-featured encoder communicates with station automation to send song titles, phone numbers, contest results and promo or advertising messages for immediate display on listeners' radios. It also features the "TA flag," capable of temporarily overriding other program choices - even tapes and CDs - when your station broadcasts a traffic alert.

The 711 is quickly programmed with the usual format identifiers, translator frequencies and other static data. Its RS-232 serial interface connects with any PC, and with most automation systems for dynamic messaging. Giving access to all the most-used RadioData groups and features, this versatile encoder complies with both NRSC and CENELEC RadioData standards.



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Fibox Family Expands With AES Digital Audio

The IMS Transmission System is a modular addition to the Fibox family of digital fiber-optic transmission products.

The company touts it as the most flexible Fibox, incorporating the benefits of the existing FBAI and FBAO 20-bit analog modules plus the flexibility of AES digital audio and SMPTE 259M digital video.

IMS is suitable as a stand-alone, single-rack-unit module set for fiber transmission of eight AES digital audio signals, for 16 channels of audio. Optionally, up to six Fibox FBAI-SL and FBAO-SL modules can be slaved to the IMS for a mixture of analog and digital audio plus digital video in one transmission package.

IMS-Tx / IMS-Rx are a 1RU module pair containing eight 100-ohm AES digital audio ports, data connector ports for up to six 20-bit Analog Fibox FBAI-SL / FBAO-SL slave modules and an external plug-in module slot for the VFL 300T/R SMPTE 259M digital video transmission system for AES digital audio.

External sync input and output is provided as well as user-selectable sample-rates. The 12V DC power supply for the IMS is external, and must be provided or purchased separately.

Benefits attributed to the Fibox System include no line loss or ground loops; inherent immunity to EMI and RFI; high common-mode rejection ratio; 20-bit A/D and D/A conversion, 108 dB dynamic range; 48 kHz sampling; a transmission distance up to 2.5 miles; modular design, expandable to 12 channels on one fiber; analog or AES/EBU digital output; and data interface for transmission of SMPTE, RS232/422/485 and MIDI.

For information contact the company in Texas at (800) 777-9528 or visit www.sundancesys.com.

CBT Systems Air Light

CBT Systems offers a version of the classic "On Air" light. Features include traditional sand casting, buffed aluminum housing, Plexiglas window and high-output LED. The unit is UL Listed.

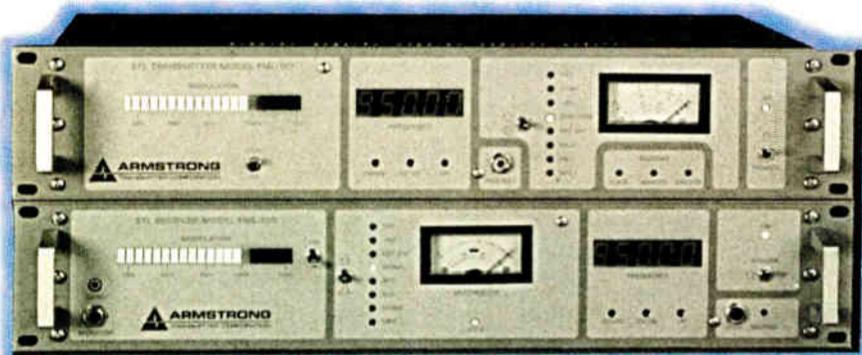
The light installs on a standard two-gang j-box, with optional legends and flasher module available.



CBTS offers a full studio and control room on-air lighting control system that interfaces to audio consoles' status and tally indicators.

For information contact CBT Systems at (858) 536-2927 or visit www.cbt-net.com.

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Audio Precision Opens Resource Center

Audio Precision, supplier of audio test and measurement solutions, has launched an online Solutions Resource Center.

It provides access to the company's audio test information and resources to help engineers in audio testing for various applications.

The company said the center gives engineers the information they need to develop test and measurement approaches. It offers measurement solutions for numerous applications; diagrams showing major components of test systems; itemized lists of what is needed to assemble tests for particular applications like Dolby AC3 and DVD testing, transducer testing and broadcast transmission testing; and links to further information, such as in-depth technical notes.

To learn more about the center, go to <http://audiotest.com/solutions>.

For information contact the company in Oregon at (800) 231-7350 or visit <http://audioprecision.com>.

Navigator + MapPoint = FM Surveys

Digigram's Aztec AZ100 FM Navigator now is compatible with Microsoft MapPoint software.

It is touted as a compact, affordable system for easy field surveys of an FM station's signal.

The AZ100 FM Navigator has been updated to include compatibility with the low-cost MapPoint software.

The combination simplifies and enhances data analysis by allowing field measurements to be represented on MapPoint-generated maps.

AZ100 FM Navigator can be set to measure single or multiple frequencies, and includes a built-in GPS receiver for automatic signal mapping.

For information contact Digigram in Virginia at (703) 875-9100 or visit www.digigram.com.



Workbench

Radio World, September 12, 2001

Take the Sting Out of Your Site

John Bisset

Fall is a beautiful season in much of the United States, and it gives us a chance to winterize our sites before the really nasty weather strikes.

One of the biggest concerns at this time of year is to keep equipment secure when it comes to rodents, snakes and insects. We've long suggested the use of mothballs to discourage rodents and snakes, but Michael Bostic, a former broadcast engineer, now with Networx Corp. in Rochester, N.Y., writes that he routinely used mothballs to discourage bees and, particularly, wasps.

guessed it; as nighfall approached, wasps returned to the nest, their body mass effectively attenuating the satellite signal. The discovery nearly knocked me off the ladder.

I don't know an engineer who likes bees, much less angering them by opening the "door" to their home.

In the July 4 *Workbench*, the use of electronic rodent repellents was discussed. The repellents appeared to scare off snakes as well.

M. Chepko of Veni Vidi Video in

More than likely, the snakes disappeared because their food source — the mice or rats — left the area.

By the way, the Indian snake charmers actually are controlling the cobra's movement by the motion of the flute, not the "music"!

on board on/off switch, and uses 24 VDC to turn the transmitter on and off by remote control.

Figure 1 shows the top of the LPB transmitter, with the relay mounted and a barrier strip that was added to provide both transmitter on/off control and status for the remote control.

The status function was wired off the 5 VDC bus inside the transmitter, and is wired to the status control on the Gentner

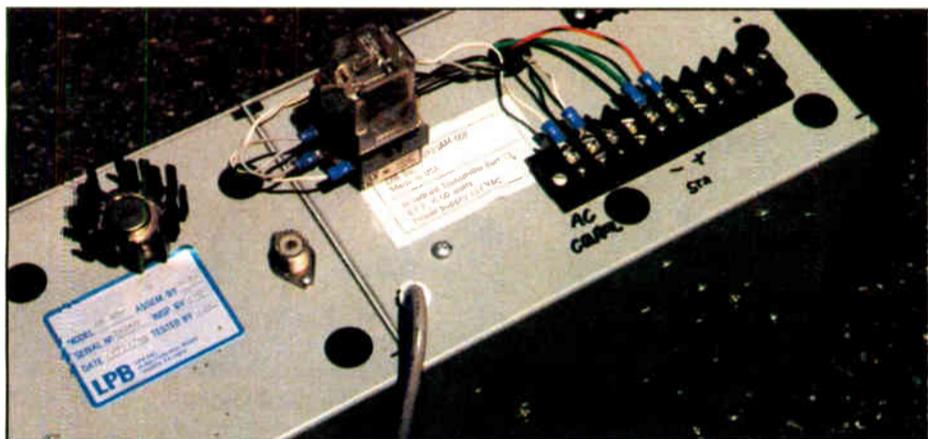


Fig. 1: Handy Modifications to an LPB Transmitter

Not only were the mothballs stashed in transmitter buildings and antenna coupling networks, but Michael put several inside LNB covers as well as the equipment hub in his uplink dish.

The supply was refreshed in the spring. No more bee surprises!

When I did contract work, we were called to a station that lost its satellite signal every evening at dusk. You

Atlanta wrote that snakes are essentially deaf. In fact, three little bones that reside in the human ear are used in snakes to articulate their jaws, allowing them to swallow larger mice or rats.

Snakes do "feel" low-frequency vibrations, however, so they are aware when you walk up to them. But the high-frequency sound emitted by the electronic repellents would go unnoticed.

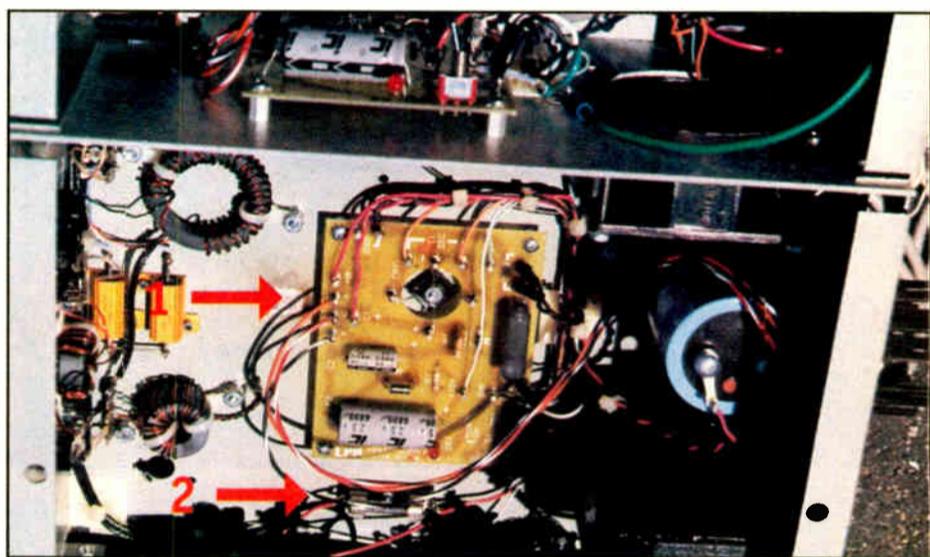


Fig. 2: Arrow 1 is where the old pass transistor was. Arrow 2 points to wires that run to the new transistor on the heat sink.

Ray Fantini works with Salisbury State University's radio and television department, and does some contract work on the side.

During a recent visit, he showed me some modifications he made to an LPB low-power transmitter that one of his stations was using for post-sunset power operation.

Ray's first modification was to add a relay that interrupted the AC power switch. The relay is connected after the

remote control. The 5 VDC bus gives a "high" status when the transmitter is turned on.

Ray's second modification was to "heavy-up" on the power supply pass transistors. In the 60-watt version shown, each side has its own 28 VDC power supply. In the original design, the pass transistor is mounted on the side of the case without a heat sink.

Ray found that the original transistors had a high failure rate, shorting because of the high collector peak

See WORKBENCH, page 18 ▶

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USER REPORT

ENCO and WOR, Perfect Together

Thomas R. Ray III, CSRE

This User Report was to have appeared in the Buyer's Guide section of the July 4 issue of Radio World, which covered Automation and Digital Storage products.

Around the end of 2000, it became obvious that WOR(AM) would need to replace the digital audio system it was using. First, the system was five years old, a millennium in computer years. Next, we simply had outgrown the features the system offered.

I had been familiar with ENCO DADpro32, having installed and programmed several systems with my stint as installation services manager for the now-defunct Northeast Broadcast Lab.

I started looking around at the systems available in the event I found something better that could meet my specifications. When we wanted to start experimenting with our third network, I decided to purchase a single ENCO DADpro32 workstation to see what it could do.

We were impressed, particularly the management of WOR; and we purchased a full ENCO DADpro32 system

5. Storage on a Novell or Windows-2000 server, with mirrored, spanned and duplexed hard drives.
6. Support, support, support.

As with any digital system, the DAD has good points and bad points.

The major good point is that the system comes out of the box with no preconceived notions about how your station should operate. It is powerful and you can program it to do just about anything your station needs, except paint the tower.

The bad point is that the system comes out of the box with no preconceived

notions. DAD has so many features, you just don't know where to start.

The system arrived and was promptly installed in the racks in Master Control.

We then held a meeting with WOR's 15 operators. I introduced DAD to our operators on my laptop in the conference room. Talk about impressing the masses.

The operators took to the DAD fairly quickly with its intuitive interfaces. DADpro32 has many different "machines" or modules, available to run your format.

We insisted that the network logs be run in a playback, or laundry list, machine. This would keep the timing proper for the network breaks. For everything else, the ops are on their own.

Some operators use the on-screen "cart

See ENCO, page 20 ►



Tom Ray, left, and Kerry Richards pose with the ENCO servers.

WOR is a 50-kW flamethrower in the No. 1 market in the country, with a signal that can be heard from Maine to Florida and as far west as Indiana. We have a proud history to maintain, having originated such shows as "The Cisco Kid" and "The Shadow" during radio's heyday.

We produce live programming on WOR for at least 12 hours each day. In addition, we also operate The WOR Radio Network, and carry our own network during the other 12 hours of the day. The network is 24/7.

In 2000, we added Network #2, which primarily refeeds programming from Network #1, all placing a load on the digital system. And we were talking about adding a third network.

in January.

Our specifications included, but were not limited to:

1. The ability to place software flags in the audio cuts to trigger external relays to send cues to the satellite uplink. We had been tying up the right channel with touchtones, and wanted to go stereo.
2. The ability to edit audio files, including the ability to edit the software flags.
3. The ability to run multiple logs on one computer, giving us the ability to refeed both networks off of one computer.
4. The ability to tell the computer to do exactly what we needed it to do.

Workbench

★★★

► Continued from page 17
current. Fuses would blow, as would the pass transistors.

Ray chose transistors with a higher current rating, an Ic rating of 30 amps,

Got a useful tip or suggestion? E-mail or fax your submission to the address or number below, and when printed, you'll qualify for SBE recertification credit.

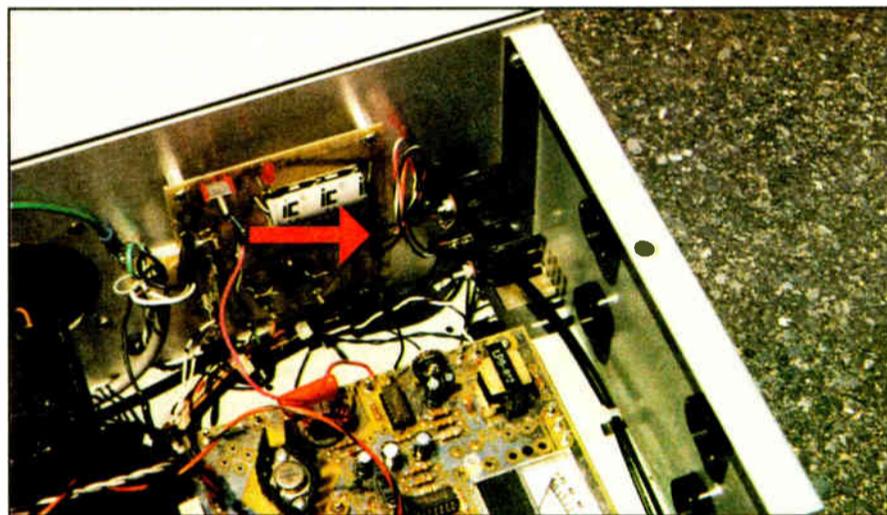


Fig. 3: In the second cabinet, there was more room to mount the heat sink inside the chassis.

typically. Arrow 1 in Figure 2 shows where the old pass transistor was located. Arrow 2 in the same figure points to the wires that have been soldered to the board, and run up to the new pass transistor, mounted on the heat sink.

In the second cabinet, Fig. 3, there was more room to mount the heat sink inside the chassis. Again, the arrow points to the wires, leading to the heat sink, and the pass transistor terminals.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

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

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Logging

► Continued from page 12

with station logs is the combining of the FCC-required logging with non-required items added by the licensee.

Because the FCC does not specify how logs are to be kept, many licensees try to put all of their logging on one form to make things easier for their operators.

As a result, I often find logs with routine transmitter readings, duty operator sign on-off times, daily tower light checks and programming information taking up 95 percent of the form, with little or no documentation that is actually required by the rules.

Avoid distractions

I am in no way trying to discourage any licensee from logging these other items. But combining these functions often creates distractions and difficulties.

Again, with the exception of all EAS activations being logged, the emphasis is to log any item that caused, or could cause, the licensee to deviate from maintaining compliance with the rules and station authorizations.

If the licensee's emphasis is to have operators fill in a small box with names or figures or a check mark to routinely log transmitter readings, shift changes, etc., the typical result is that details of an actual problem are sketchy or left out altogether.

Here is a scenario that is all too familiar: The operators get accustomed to writing down a transmitter reading but fail to observe that one or more readings are out of tolerance even if the tolerances are printed on the top of the form. It was just a reading that became too routine.

The next operator on duty takes the same out-of-tolerance reading, but finding a similar reading already logged thinks nothing of it, logs it and likewise forgets to compare the reading to the listed tolerances.

Eventually one operator notices and tries to log the problem. Unfortunately the form has a space just large enough for a couple of words to document what the problem is, not enough space to thoroughly document what occurred.

Keep watch

Because the chief operator or engineer is not around, the operator on duty puts down what she can and it is soon forgotten. The chief operator, or engineer, is so busy keeping multiple stations on the air that the weekly review turns into a once a month review and that is often to see that shift changes are on time, not to see that all FCC required items are logged.

If, by chance, a problem is observed and corrected, the form has no room to describe properly what corrective action was taken, so nothing is written down. The problem is fixed, so why worry about it?

The manager, who leaves the overview of the logs to the chief operator or engineer, never bothers to check them. The problem may or may not have come to the manager's attention, but in any case, the station is on the air.

It is human nature to gloss over problems. It seems easier to log a thousand readings that are within tolerance and be reluctant to properly log one that is not. Why advertise that the problem ever existed?

The answer boils down to effort. What effort is this licensee putting forth to make certain he or she is watchful over

own, or simply keeping a signal on the air? Will the logs be evidence of the efforts made or indicate a lack of effort?

strikes occur, water freezes and expands, utility companies dig trenches through ground systems and rodents like to chew on things.

So when an inspection of two years of station logs shows no problems at all, then one of two things has happened: either the station has been in a vacuum for the past two years or personnel are not logging properly.

Managers, when was the last time you have seen the logs for your station?

The views expressed in this article are those of the author and do not necessarily reflect those of the FCC. RW welcomes other points of view.

Reach the author at (816) 316-1254 or via e-mail to rramage@fcc.gov.

The FCC broadcast self-inspection checklists can be found on the Web at www.fcc.gov/eb/broadcast/.

the station and maintaining compliance? Are station personnel catching and fixing problems in a timely manner on their

As an inspector and an engineer, I realize that equipment does not last forever. Parts wear out and break, lightning

Licensees who properly maintain logs ... have significantly fewer violations, less downtime and better managerial control.

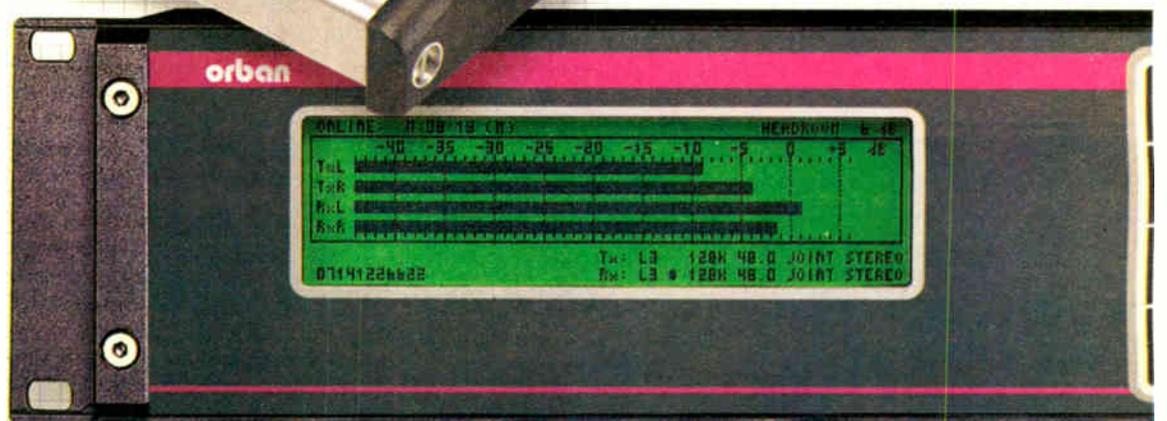
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ENCO

► Continued from page 18

machines." Others use the playback decks. Others use the one-button wonder arrays.

There have been no complaints and mistakes have been reduced to practically zero.

To run two networks plus an on-air station in the largest market in the country, you need reliable equipment that is easy to operate. You also need gear that can morph and change and grow with you.

And you need it to do what *you* want. The DADpro32 uses the DAD Command Language (DCL) to help you make the machine do exactly what you want.

For example, we run automated for the last hour of afternoon drive, and needed to automate our traffic reports that originate live from Metro Traffic across town. Our old automation required at least five system commands to accomplish this feat, and timing was at times a challenge.

With DADpro32, we built a Command Cut with DCL. Traffic now programs one cut number into a traffic break. This one cut fires Joan Rivers' recorded intro, fires off the traffic sounder, switches the studio switcher to the Metro input, times out the 35 seconds for the report, takes the Metro input off the air, fires the remainder of the break, and puts the network studio back on air at the appropriate time.

Unless the Metro announcer blows his timing of the report, you would never know it's automated as a normal listener.

Support

With our new network, "The Best of Everything," we run four playback machines simultaneously. One is the main program element log, two is the commercial log, three is a log containing backtime beds and four is a control log that sends the station ID/time cues and resets the studio switcher.

The backtime beds are various lengths. We simply tell DADpro32 we want the cut to end at, say, 19:59:58, and it fires off playback 3 at a time appropriate so that the selected cut ends at 19:59:58.

Using DCL, we wrote a command that allows the backtime bed to fade in at an appropriate time during programming. It runs like clockwork. And it quickly became obvious that "The Best of Everything" was running on the best system available.

Odd hours calls from operators have

been simplified, as well. DAD responds well to PCAnywhere, and my Chief Engineer Kerry Richards or I can easily get into the system and make changes or simply walk an operator through a task while watching what he is watching.

And support. I judge an organization's support people by an after hours call.

Overnight support

We have had one for a somewhat silly problem. We called at 1 a.m. on a weekend. Our call was returned within 10 minutes. The tech who called had not seen this particular problem before, and said he would call back within 5 minutes, as he wanted to call someone more familiar with the issue. Right.

Five minutes later, he was back on the phone with the simple solution to the sil-

ly problem and everyone went back to bed. Am I impressed? You bet.

Another point is that, with ENCO, you aren't just buying a product, you are buying a team of dedicated people, and those people feed off of the suggestions and comments of its customers. If you have a question or suggestion, you can e-mail the company's president, Gene Novacek, and you get an answer from him in a timely fashion.

The only complaint our operators had was that the time displayed on DAD is real time, and we usually operate in delay. A note to Gene resulted in a new addition to DCL where you could adjust the displayed time to your operational needs. The DADpro32 constantly is evolving; never getting stale.

Finally, it was nice to deal directly

with the manufacturer rather than going through a dealer. Vice President of Sales and Marketing Don Backus and East Coast Sales Director Joe Myers know the product. System configuration and price negotiation were straightforward and to the point. There were no surprises, making the "oops" factor in the budget not necessary.

WOR is happy with our ENCO DADpro32 installation. If it's time for an upgrade of your digital system, ENCO DADpro32 needs your serious consideration. What it can't do, you don't need.

The author is corporate director of engineering for Buckley Broadcasting/WOR, New York.

For information contact ENCO in Michigan at (248) 476-5711 or visit www.enco.com.

MARKET PLACE

SuperLink Audio & Data Gateway

Musicam USA offers the new SuperLink Audio & Data Gateway, a codec, uncompressed STL and network audio server with multiformat streaming audio.

Art Constantine, VP, Business Development, said, "Now you can have a device that answers the phone and feeds your remote audio directly to the Internet. Or use SuperLink as an STL with built-in ISDN backup. Or use Advanced Audio Coding to get stereo on a single ISDN B Channel."

SuperLink is a 2U high, 19-inch rack-mount mainframe chassis with controls similar to those of an advanced audio codec.

A menu window guides the user through programming. A large telephone-style keypad, circular navigation switchwheel, programmable function keys, dual-channel VU meter and headphone connector are on the front panel.

Up to four hot-swappable modules plug into the rear panel. Users may choose modules to configure SuperLink, which recognizes the modules and displays their functions as menu choices.

Modules include:

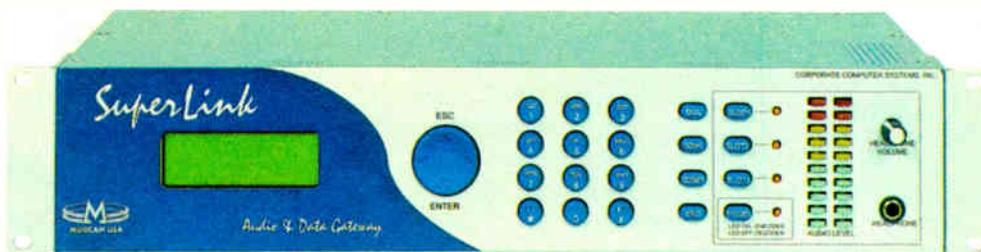
- Control Processor with Dual RS232 inputs and Ethernet port
- 24-bit Stereo Encoder with Analog, Digital and Ancillary Data inputs
- 24-bit Stereo Decoder with Analog, Digital and Ancillary Data outputs
- 24-bit Stereo Encoder/Decoder with Analog, Digital and Ancillary Data outputs
- T1 Multiplexer with Insert, Drop and Add capability
- E1 Multiplexer with Insert, Drop and Add capability
- Single, Dual and Triple BRI ISDN Terminal Adapters with both U and S/T interfaces

- Dual Port V.35 Interface for N x 64 kbps data
- Dual Port X.21 Interface for N x 64 kbps data

When SuperLink is configured as a codec, available algorithms are CCS/Musicam-enhanced MPEG Layer II, MPEG Layer III, G.722, G.711, J.41 (384 kbps mono) and Advanced Audio Coding (AAC).

When used with E1 transmission lines, SuperLink supports bit rates to 2.048 MB and incorporates J.57 coding.

A chassis can transmit two stereo feeds or four mono feeds



over T1, E1, multiple ISDN BRIs or dedicated data circuits. With Insert capability, additional channels are supported. Drop & Add allows the user to build sophisticated networks.

SuperLink works as an audio streaming device when used with a companion server; multiple streaming formats permit direct feeds to the Internet. SuperLink's Ethernet port also supports remote control via Internet, offering password-protected access from any browser.

Equipped with V.35 or X.21 interfaces and a T1 or E1 Multiplexer, SuperLink gives direct access to N x 64 kbps of transmission capacity for the transport of synchronous data. The network management system allows local or remote control setup, testing, and mapping of T1 or E1 time slots.

For information contact the company in New Jersey at (732) 739-5600 or visit www.musicamusa.com.

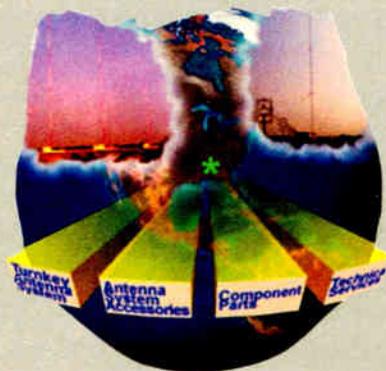
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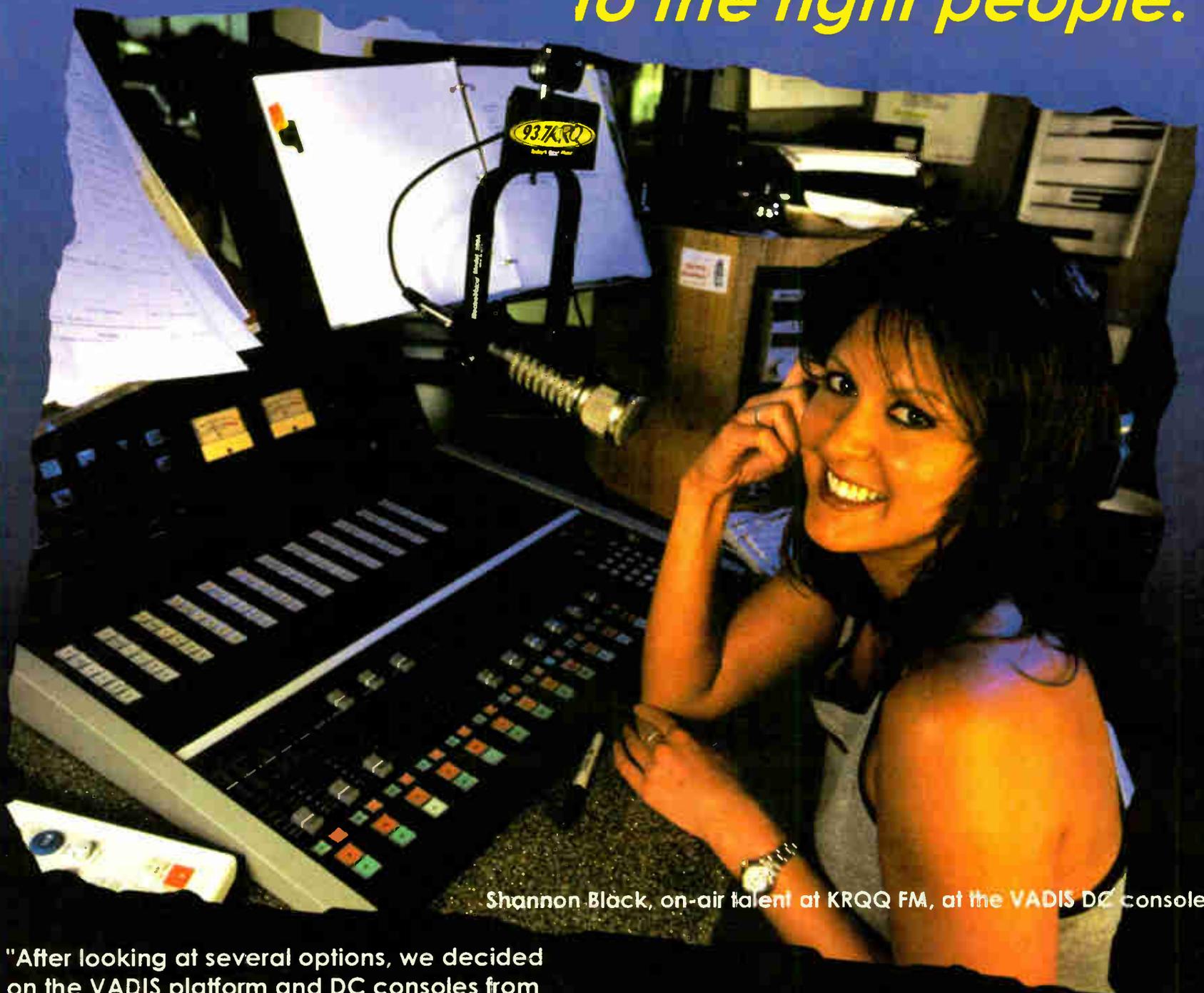
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***"You just have to speak
to the right people."***



Shannon Black, on-air talent at KRQQ FM, at the VADIS DC console.

"After looking at several options, we decided on the VADIS platform and DC consoles from KLOTZ," says John Decker, Chief Engineer, Capstar Communications, Tucson. "Why? First, our install would be much faster since most of the plant wiring could be reduced to a simple Ethernet line and a fiber optic cable connecting each room with our rack room.

"Secondly, all four stations were to be housed in the same facility, and we had to share audio sources all around the plant. This is a function that is part of the KLOTZ system. Our entire plant is now based on a digital audio 'backbone' that provides an improved audio signal.

"We also purchased five DC consoles. The air talent finds the DC consoles simple to operate. They can put any source in our plant on any fader of the console with a simple LCD button in the meter bridge. Giving the operator the ability to call up any source to a fader is great since each operator prefers a different arrangement of sources on the console."

-  Installed in world class facilities
-  Integrated platform concept
-  Fiber optic networking
-  Any audio source, anywhere

 **KLOTZ**

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Boomers Still Drive Oldies Format

Ken R.

Many of us remember the Three Dog Night song "Joy to the World" that seems like it first played on our transistors only a few years ago. Actually, it was 30 years ago.

The Beatles burst upon the scene with "I Saw Her Standing There" in 1964, 37 years ago.

And remember Chubby Checker twisting the night away? Congratulations, that happened 41 years ago. No doubt about it, the baby boomers are aging. That fact presents a dilemma for oldies stations.

"The group born between 1946 and 1955 has had an enormous influence on every era they have lived through," said Larry Rosin, president of Edison Media Research, "but every day more oldies listeners turn 55 and there aren't any new ones being created. Inevitably the 25-to-54 numbers will erode."

Rosin believes that oldies stations have three choices: adapt and appeal to a younger audience; move back to the AM dial as other formats have done; or go out of business like beautiful music stations did.

One way

"I don't see any other likely outcomes," said Rosin.

E. Alvin Davis is president of a consulting company that bears his name. The firm consults oldies stations exclusively for clients in markets such as New York, San Francisco and Los Angeles, as well as smaller markets.

"There seem to be two approaches to the format which most stations take," said Davis. "They either continue to focus on the same target age group as they get older or they try to modify the music mix and appeal to younger people. There are concerns

with both approaches."

Davis agrees that each year, another batch of 54-year-olds moves out of the eagerly sought after 25 to 54 demographic. He said although their listening habits don't change, the group 56-plus is invisible to advertisers looking for the 25 to 54 demographic.

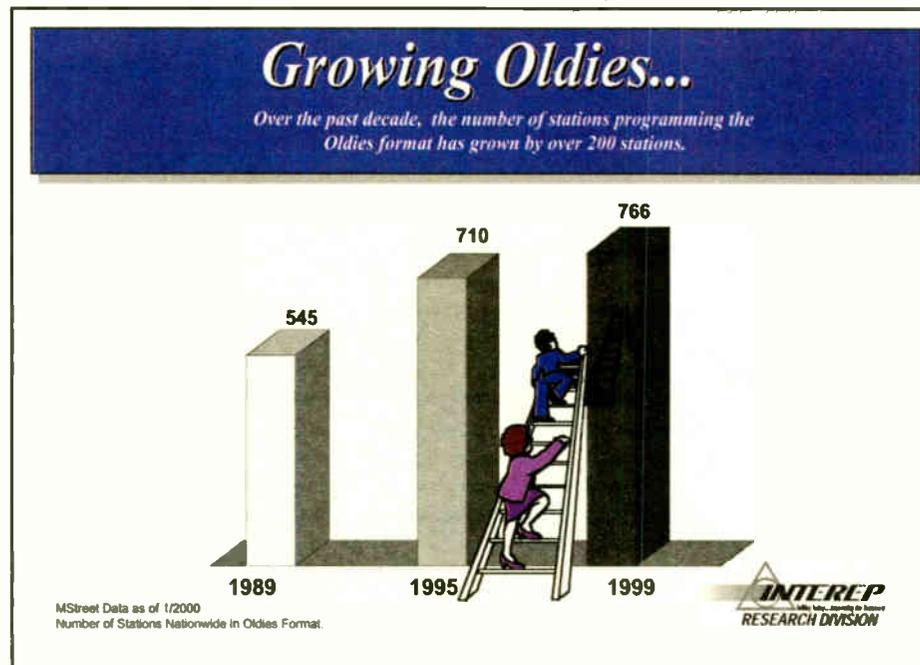
"In other words, some of the audience goes over the cliff," said Davis. "The 'update the music' approach is also imperfect because you are in pioneer mode, and everyone knows that the pioneer is the guy with the arrow in his back."

than the music, that would be helpful," said Davis, "but the trick is in what the personalities say on the air."

Davis said that sharing the values of your audience is vital. Focus groups are essential to getting this right.

Talking the talk

"For example, you might want to get involved with an AIDS project, but your audience might believe that this is a disease people have brought on themselves. To promote an AIDS benefit concert might not be the best thing you can do."



One solution to this demographic conundrum may lie in the nonmusical elements of the format. It may be that features, contests, humor and personality between the songs are what really grab the listener.

"If you have a breakthrough morning show that has even greater appeal

In another example of the thoughtful planning required to target your audience, Davis believes that at an oldies concert, people will stand up, take their hats off and put their hands over their hearts when the national anthem is played, while a rock concert

See BOOMERS, page 24 ▶

BROADCAST LAW REVIEW

Do Your Own Regulatory Legwork

Barry D. Umansky

Clearly, there are certain FCC tasks and processes that *only* your communications counsel should undertake for your radio station.

Although some of my communications lawyer brethren might view this article as sacrilege — on the theory that a communications lawyer *must* be the only person who *ever* should have any contact on a station's behalf with the FCC — there are plenty of self-help things you can do to contribute to your station's regulatory well-being and to aid your communications counsel in his/her work.

And most of these things you can do right at the station, on the computer keyboard in front of you.

As I've touched upon briefly in some past *Broadcast Law Review* articles, the FCC's Web site is your always-available door to a wealth of information that can benefit your station and help you control your regulatory destiny.

If you haven't used the FCC Web site — and particularly that portion maintained by the Mass Media Bureau's Audio Services Division — as a source of information or documents, you really should try it.

Below is a succinct list of how you can use the commission's Web site to help smooth the regulatory

See UMANSKY, page 26 ▶

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Oldies Online: Fans at the Fringe

Ken R.

Tired of your local oldies outlet playing the same safe hits over and over? Go to the Internet, where the real oldies fanatics operate.

Free from encumbrances such as the FCC, program directors, consultants, the need to make money and sometimes even good taste, hard-core people spin those groovy platters online.

Dozens of these alternative oldies sites exist on the Internet, with more springing up every week.

Doo-wop lives

If your tastes run toward the street harmonies of The Satellites, the retro appeal of Fats & The Chessmen, the obscure bleatings of Janis Martin or the soulful stylings of LaVern Baker, you want to check out Vinyl Cobwebs at www.vinyl-cobwebs.freesevers.com.

The current show and several previous episodes are available online.

"Donovan" is host and "Premium Deluxe" assists. Both of these "anti-jocks" have day jobs in Salt Lake City. Donovan provides e-commerce solutions and Premium Deluxe is a meat truck driver. The show, which their Web site proclaims is the "most obscure oldies radio show on the planet," is their hobby.

To keep their Webcasting costs to a minimum, the pair use Live365.com to stream their show, which they run from Donovan's basement.

Vinyl Cobwebs plays an eclectic mix of rockabilly, rhythm and blues, doo-wop, soul and even a touch of '60s psychedelia on occasion. Featured artists include such non-radio staples as Screaming Jay Hawkins, Pat Boone, Jerry Mathers and non-songs by the likes of William Shatner and Frank Gorshin.

"Records we bought at the Salvation Army in the '80s for a dime are now selling for \$20," said Donovan. "But this is the kind of show we always wished we could hear driving back from a long road trip at 3 a.m."

One of the more unusual Internet oldies sites is run by the Central Oklahoma Classic Chevy Club and its president, David Reeds. A Web surfer

dropping in at www.55-57chevys.com will be able to scroll around the site while listening to a playlist of almost 500 authentic oldies in RealAudio format.

Hits such as Fess Parker singing "The

"It goes with the '50s cars," said Reeds, "and we get a very good response to the music."

He calls himself "Daddy G" and his DJ style isn't fancy. But he does play the



Donovan and Premium Deluxe, the Vinyl Cobwebs Guys

Ballad of Davy Crocket," "Clap Your Hands" by The Bean-Marks and "Daddy O" by The Fontane Sisters are not exactly staples of the AM or FM dials, but you'll find them here.

top 40 from 1954 through 1979.

Soft-spoken Gerald Gaule is the "man behind that curtain" who plays rare versions of songs and features legends of the rock world on his streamed oldies show. (Visit <http://members.tripod.com/~K32SGTV/sandee.html>.)

"I like to play 'B' sides of hits, flops, maybe Elvis doing a gospel tune or even something by Johnny Cash when he was part of a quartet," said Gaule.

Side channels

Dennis Winslow, program director of Cox-owned KLDE(FM) in Houston, believes the Internet has a place in the world of oldies.

"We've learned that a mass-appeal FM station like ours must play the hits, but more broadcast stations are providing alternative streams on their Web sites. If your audience wants doowop or '80s, you can give it to them without threatening your main format. There is a group of people out there who are passionate about this stuff."

"The glory of the Internet is that there are thousands of fish in the sea who want to express themselves," said Gaule. "I'm 37 now. I'm just a radio nut and have been since I was three years old."

Ken R. played oldies on the radio before they were oldies. Reach him via e-mail at kenr5367@aol.com.

Boomers

► Continued from page 23
audience might be inattentive or even offended.

"Programmers need to understand the values of their audience and reflect those values," Davis said.

The oldies audience apparently wants to hear people on the radio that are passionate about the music and who speak their vernacular.

"An example of a mismatch for the oldies audience would be a jock talking about 'dissing' someone or 'giving them their props,' which air people might use in their real lives because they are not in the target audience," said Davis.

"These or similar phrases stick out and say, 'I'm not like you.'"

Davis suggested that oldies personalities emceeding live events dress like their audience. This means no earrings on males, no non-traditional hair coloring and certainly no body piercings.

The last several years have seen diverse formats spring from the basic oldies line, including urban, '70s and '80s.

"Most of these offshoot formats have very little impact on the format," said Davis. "When the core oldies audience was growing up, there was probably just one top-40 station in their market, and even when there were two, it was basically like having one."

Short lived?

Several programmers said it's unlikely that these Johnny-come-lately "splinter" oldies formats will ever have shares as large as traditional oldies outlets. The reason: after album rock and other formats became popular in the early '70s, younger people never had the same shared experience with the others in their demographic.

"Today, the pie is sliced much thinner," said Davis.

It comes down to money, of course. The more fragmented the audience, the more difficult to attain the bulk numbers that are attractive to advertisers. It's one more area in which baby boomers

See BOOMERS, page 30 ►



Larry Rosin



E. Alvin Davis



Dennis Winslow



Chris Ackerman

A Sample Vinyl Cobwebs' Playlist

From the Feb. 18, 2001 Show — Vinyl Cobwebs Broadcast No. 81

Song	Artist	Year
Ring A Ling	Johnny Otis Show	1958
Where's My Little People Eater	Russ Reagan	1958
Purple People Eater Meets The Witch Doctor	Big Bopper	1958
Moving Pipeline	The Spie-Dells	1963
Please Betty Jane	Mike Russo	1962
I'm So Lost	Major Lance	1964
Taste Of The Blues	Buddy Knox	1959
E'mezzanotte	Guidone	1960
Cherry, I'm In Love With You	Lee Greenlee	1959
The Wang Dang Taffy Apple Tango	Pat Boone	1959
Reality	The Five Americans	1967
Fla-Ga-La-Pa	Timmie Rogers	1957
Birthday Party	The Pixies Three	1963
Your Friends	Dee Clark	1961
The Bowling Song	The Three Beaus & A Peep	1949
Artificial Army	Jim Edgar	1968

In the background, host Donovan salivates over a recent Vinyl Cobwebs show playlist.



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Umansky

► Continued from page 23

waters and advance your station's interests.

Fee payment planning — Whether it's your annual regulatory fee (see "FY2001 Regulatory Fees and Forms" on page 27.) or the fee that should accompany an FCC application or ownership report, the FCC's Web site can give you the quick answer.

On the commission's Web site (www.fcc.gov) main page, you can click on the word "fees" and get the precise amount that will be due from you.

Find the form — The same can be said to access, review and print copies of

FCC Forms — whether they be the "remittance advice" fee transmittal form (FCC Form 159) or an application form for starting, modifying or

address.

Again, just click on the word "forms" on the FCC's main page and access and print a perfect Adobe

demands, you can work more closely and efficiently with the lawyer preparing your application.

Filing the application — Though this is where you should work closely with your communications lawyer, who probably should do the actual filing for you, 21st century technology now lets you be more involved in the process.

For example, the commission mandates electronic filing of FCC Form 301. When using the Mass Media Bureau's Consolidated Database System electronic filing system for broadcast station application forms, you and your attorney can contribute to and review an application — drafted and stored on the CDBS — prior to actually "filing" it at the commission.

Bidding at auction — The same kind of broadcaster/lawyer cooperation can take place in cyberspace when it comes to an FCC broadcast auction. (The next FM station auction is scheduled for the end of this year, with preliminary filing due in the fall; however, that timetable may slip a bit again.)

For example, your communications counsel can check electronically, during each round of an auction, whether you properly submitted a bid or have taken an "activity rule waiver." He or she also can ensure that you, the bidder, maintain your eligibility for subsequent rounds of an auction.

Application status answers — When you file a new station or modification application, you easily can find out, using the CDBS, when the application was, for example, "accepted for filing."

You also can check on the status of your application as it moves up the Audio Services Division processing line.

When you access the division's site at www.fcc.gov/mmb/asd/welcome.html, you'll find links to frequently updated lists of applications' ranks on the processing line and applications for which a grant is "blocked," along with the reasons(s) for the block.

Calling the commission — The Audio Services Division site also has a list, with phone numbers and e-mail addresses, of FCC staff members to call when you have questions on particular subjects.

However, when the matter involves an application — either yours or a competitor's — be sure to check with your communications counsel to ensure that your contact with the FCC would not violate the commission's "ex parte" rules.

Violating these rules is not a good thing and these transgressions can work dramatically against your interests.

Taking the FCC's pulse

While your communications lawyer usually will update you on major and often minor developments in FCC regulation, you can take steps yourself to be a better educated broadcaster who has a true sense of what the FCC is up to these days.

Once or twice a week, go to the FCC's newly redesigned main Web page. You can learn about the agency's major initiatives, get bios of the five commissioners and their staffs and find links to the information I've mentioned. See UMANSKY, page 27 ►

By knowing what the form demands, you can work more closely and efficiently with the lawyer preparing your application.

transferring a station, getting an auxiliary license or for notifying the commission of your change in mailing

Acrobat (PDF) version of the form you need.

By knowing what the form

Not just another



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Crown designs, scheduled for release in the fall, build on this history with new features for new market requirements, as well as options that can fit current Crown transmitters for new applications.

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PROMO POWER

How to 'Own' Any Show That Counts

Mark Lapidus

Recently, a program director I know was on the back nine of a local golf course when a stranger stopped him. The guy had noticed the PD's station staff shirt.

"I really loved your concert last night," the stranger said.

Ah, grasshopper sees

The PD said, "Thanks very much," and smiled, but it took him a moment to realize exactly why he'd been approached, as he'd completely forgotten what shirt he was wearing.

Although the station certainly was involved with the concert, it had not funded the show, nor had it branded the show with the station's call letters.

Bingo — when listeners believe that their favorite radio station presented a show they saw, you've hit a home run.

Let's talk about how to make this happen.

The first step to obtain the image for a concert appropriate to your for-

mat is to take ownership on-air. This begins with the pre-sale information for the fans, which is followed with call-ins and appearances during the ticket sales.

It continues with an immediate — and hopefully creative — contest for

ins from DJs if possible.

Don't stop there

Afterward, you'll do a playback of the show's best songs as everyone is driving home and finally,

'Way high' is a cool place to stage a broadcast — consider renting a big cherry picker for a DJ at the concert arena.

tickets. Your listeners then hear calls from concertgoers waiting to get into the show, then a live broadcast or cut-

an on-air wrap-up for a few days that will remind the audience of how much fun we all had.

It's really great if you can give away an autographed item you

lets you do it.

And you'll create a special CD to be played over the public address system. But if you're like most stations, the concert promoter keeps both you and your competitor on equal ground and may not even allow you near the arena.

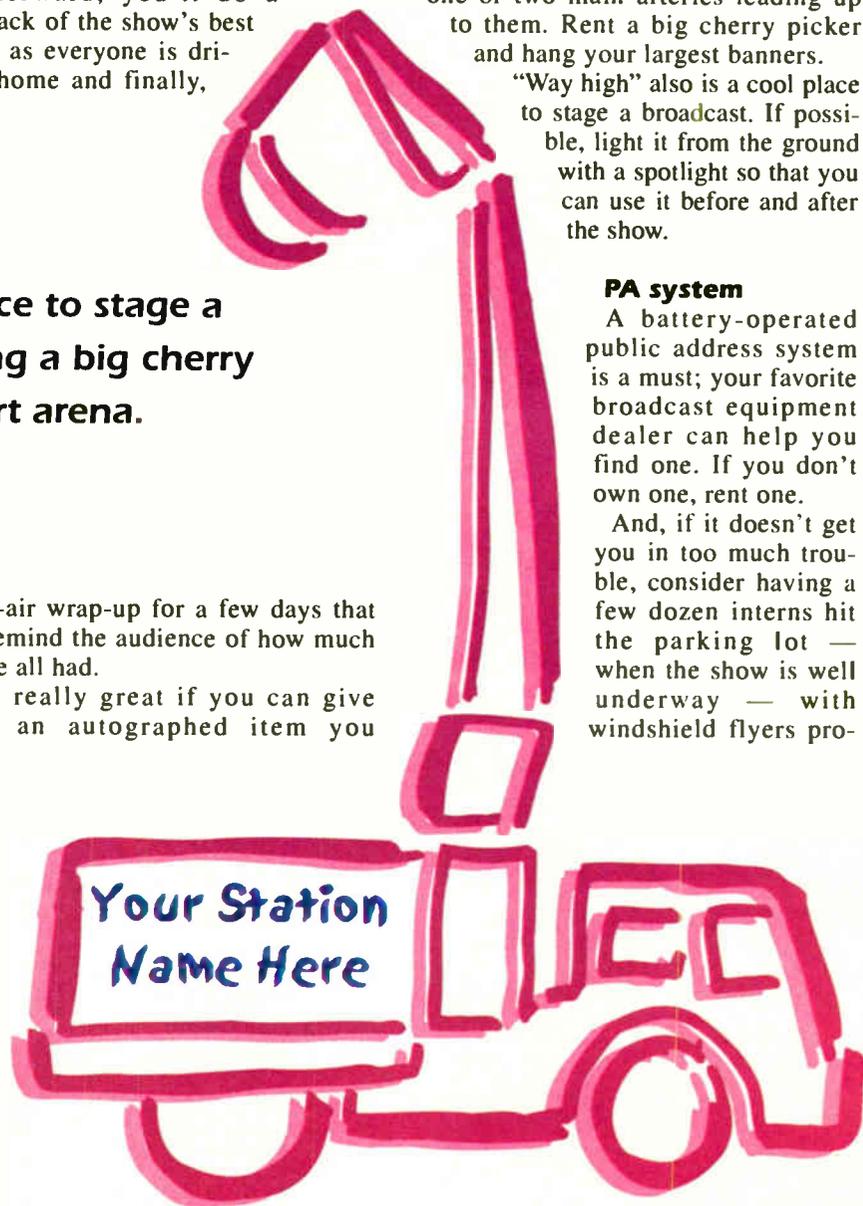
What do you do? Most arenas have one or two main arteries leading up to them. Rent a big cherry picker and hang your largest banners.

"Way high" also is a cool place to stage a broadcast. If possible, light it from the ground with a spotlight so that you can use it before and after the show.

PA system

A battery-operated public address system is a must; your favorite broadcast equipment dealer can help you find one. If you don't own one, rent one.

And, if it doesn't get you in too much trouble, consider having a few dozen interns hit the parking lot — when the show is well underway — with windshield flyers pro-



received at the show to a lucky listener or auction that item off for a charity.

The second step involves marketing off the air: Take ownership of the concert on your Web site. To do this, create great graphics of the artist(s) and stream interviews either with the artist(s) or fans.

Among other markets where the artist is playing, print your sister stations' reviews or link to newspapers in those cities that have reviews.

Offer a coupon that your listeners can bring to the show, which will get them something free ("Be among the first 500 at Ozfest to bring this coupon to the WXXX booth and we'll give you a commemorative bumper sticker.")

Take ownership of the concert in your e-mail blasts. If you can arrange an e-mail/Internet presale before the general public buys tickets, you'll score major points with your listeners.

Paper is cheap

Be sure to link all info back to a special section on your Web site. Flyers are cheap. Print 'em so that four come off one sheet of paper.

Marry your call letters to the show and pass out these handbills wherever your station appears.

The third step takes you on-site. Sure, you'll put up as much banner on a roll as you're permitted. Your jocks will host the show if the record label

moting some cool thing about the show that'll be happening on air the next day with some sort of real listener benefit.

Is this level of activity wise for every show? This depends on the importance of concerts for your audience and on the stature of the artists.

Marry your radio station call letters to the show.

If you don't know these things via your own research, conduct a bunch of listener panels (focus groups) to find out.

After you've followed the steps a few times, show ownership becomes second nature. That's the point at which you'll want to begin the step that never ends: adding new twists to old tricks to excite your audience.

Mark Lapidus is president of Lapidus Media. Contact him via e-mail to marklapidus@yahoo.com.

Umansky

Continued from page 26

here, plus much more.

Each business day the FCC issues its "Daily Digest," listing all the decisions, public notices, news releases and speeches that it issued that day. That too can be good lunchtime reading.

As I've also discussed in past *Broadcast Law Review* articles, whenever the commission proposes to adopt a new rule, change a regulatory scheme, etc., it generally is required to ask for public comment before adopting the rule or making the change.

Though you likely should do so with the aid and counsel of your communications lawyer, you can file your comments right from your computer, by going to the commissions' Electronic Filing Comment System at www.fcc.gov/e-file/ecfs.html.

Your lawyer can help you to draft the comments but either you or he or she can do the actual filing. You can upload your comments (the commission also allows you to file hard copy comments the old-fashioned way) and also view the comments filed by others, over the EFCS.

These are but some of the ways that you, a proactive radio broadcaster, can take some relatively simple steps to be better informed and to aid your station and your communications counsel to achieve success and avoid pitfalls in the FCC regulatory process.

Barry D. Umansky, the former deputy general counsel of the National Association of Broadcasters, is with the communications practice group at the law firm of Thompson Hine LLP in Washington. Reach him at (202) 263-4128 or via e-mail to barry.umansky@thompsonhine.com.

FY2001 Radio Station Regulatory Fees

Population Served	AM Class A	AM Class B	AM Class C	AM Class D	FM Classes A, B1 & C3	FM Classes B, C, C1 & C2
0 - 20,000	\$ 450	350	250	300	350	450
20,001 - 50,000	850	675	350	475	675	850
50,001 - 125,000	1,375	900	475	700	900	1,375
125,001 - 400,000	2,050	1,450	725	875	1,450	2,050
400,001 - 1,000,000	2,850	2,300	1,300	1,550	2,300	2,850
1,000,000 or more	4,550	3,750	1,900	2,400	3,750	4,550

— Barry D. Umansky

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World Radio History

Boomers

► Continued from page 24
are calling the shots.

The oldies format competes well from a revenue standpoint: Its "weighted power ratio," or comparison between a format's audience share versus the revenue it earns, is 1.07.

That means that oldies stations on average "oversell" their audiences by 7 percent, as compared to contemporary hit radio stations that on average undersell their stations by 10 percent.

Rosin believes oldies stations can appeal to a younger audience, move to AM or go out of business.

"It's not a programming problem, it's a sales problem," said Chris Ackerman, vice president of Coleman Research, a broadcast perceptual studies and surveys provider. "Part of the equation needs to be educating agencies and the advertisers about the value of a mature audience."

Why don't advertisers value the 56-

plus audience?

Larry Rosin these listeners may be set in their buying habits.

"Some (advertisers) believe that by the time you're 55 years old, no matter how youthful you may be in your health and lifestyle, you have acquired a lot of what you're going to acquire and your brand loyalties are too locked in to change," he said.

Silver dollars

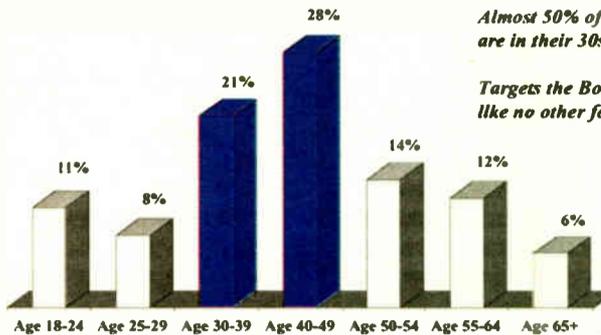
"Advertisers believe they have more of a chance to change brand loyalties with younger people. It's a source of endless frustration to me, because

these 60-plus folks have lower expenses and their disposable income is exploding."

Dennis Winslow, program director of Cox Radio Inc.'s KLDE(FM) in Houston, agrees that oldies programmers need to focus on boomers, not the 25 to 54 demo.

"All of us struggle with this ques-

Oldies Radio is Boomers' Radio



Almost 50% of Oldies listeners are in their 30s or 40s.

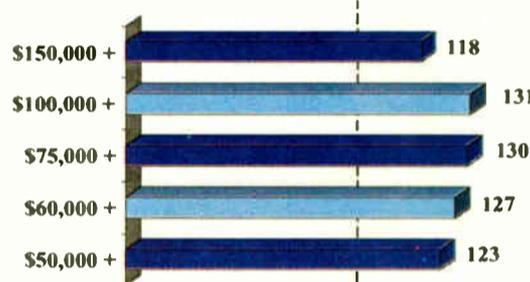
Targets the Boomer decades like no other format...

Mediamark Research - Fall 2000
Adults 18+ Cume/ Oldies M-Su 6A-12M



Household Income

Most Oldies listeners are in their peak earning years... which correlates with higher than average indices for all upper income levels. For instance, Oldies listeners are 31% more likely to live in \$100,000 plus households than the average adult.



Mediamark Research Fall 2000 - Adults 18+
Oldies Cume (M-SU 6A-12M)
Index against all U.S. Adults 18+

National Average = 100



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tion and keep trying to bring in new listeners at the bottom of the 35-to-54 demographic, but it is indeed a matter of educating the advertisers."

"These older listeners are the ones with the passion for the music," said Mark Richards, program director Cox Radio's WFOX(FM) in Atlanta.

Core focus

"The beautiful thing is the familiarity they have with the music. We adjust our approach to constantly reach the 45-to-54-year olds and naturally skew a bit older as the generations grow up."

Based on proprietary research prepared for Coleman clients, Ackerman believes that most attempts to update oldies stations do not work. In markets large and small, stations that add '70s and '80s music to a traditional oldies

format lose their focus and their core audience, Ackerman said.

"There are some exceptions, but the stations that have tried to play more recent oldies to bring younger people into the mix are the ones whose ratings softened the quickest," said Ackerman.

"Oldies is a '60s-centered format, a destination format, and it's locked on this generation and will have to follow them as they age."

"Oldies is still a viable format," said Ackerman. "But programmers should fight the urge to contemporize it or they will shoot themselves in the foot big time. The cure is worse than the disease."

Ken R. was a jock in the late '60s and early '70s, sometime after "Boss Radio," but before disco ruined everything. He now devotes full time to writing.

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Before signing on with "The Nite Show" at Jefferson Pilot's WLNK(FM) in Charlotte, N.C., Church was afternoon drive personality at Entercom's WFBC(FM) in Greenville, S.C. The show was No. 1 overall in the market for 16 straight books.

Church said he believes that a successful show allows the listeners to drive the topics. "I'm basically just an operator," he said. "Not a smooth one, but I like to think I give good phone."

For more information or a demo call Tony Garcia at Jefferson Pilot Communications in North Carolina at (704) 374-3689 or e-mail tgarcia@jpc.com.

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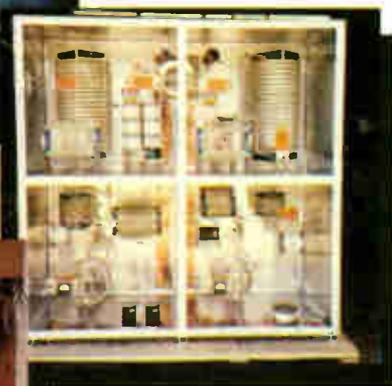
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Real Takes Cue From Broadcasters

RealNetworks' New Streaming Facility Is Built With Efficiencies Typically Found in Radio and TV

Craig Johnston

When RealNetworks decided to rebuild its Broadcast Operations Center in downtown Seattle recently, it had a number of objectives in mind.

Because the customers it aimed to serve with its streaming and signal distribution would include the biggest names in radio and television networks, Real's quality had to be first cabin.

Particular

"These customers are very picky and they let you know in a loud way if something isn't right," said Real's Director of Broadcasting Mark Warner.

Because it stands to prosper as more companies stream their content, Real

wanted to build a showcase facility to let others see the business prospects in streaming operations.

"We had to show how the technology can be used to make a positive ROI," said Nagesh Pabbisetty, vice president and general manager for Real Broadcast Network, referring to return on investment.

Real wanted to build an efficient operation that could reliably deliver the product — a streamed signal — on time, all the time, whether it was serving a 24-by-7 customer or a one-time-only event.

Jim Kreyenhagen, director of marketing for RBN, said, "We adopted a true 'broadcaster' mentality."

Real wanted it to fit an operational and capital budget so they could earn a return

on their own investment.

Real's original operations center had been built on an as-needed basis, largely from consumer-grade equipment. The quality of the equipment was one issue; another was the manpower it took to make it work.

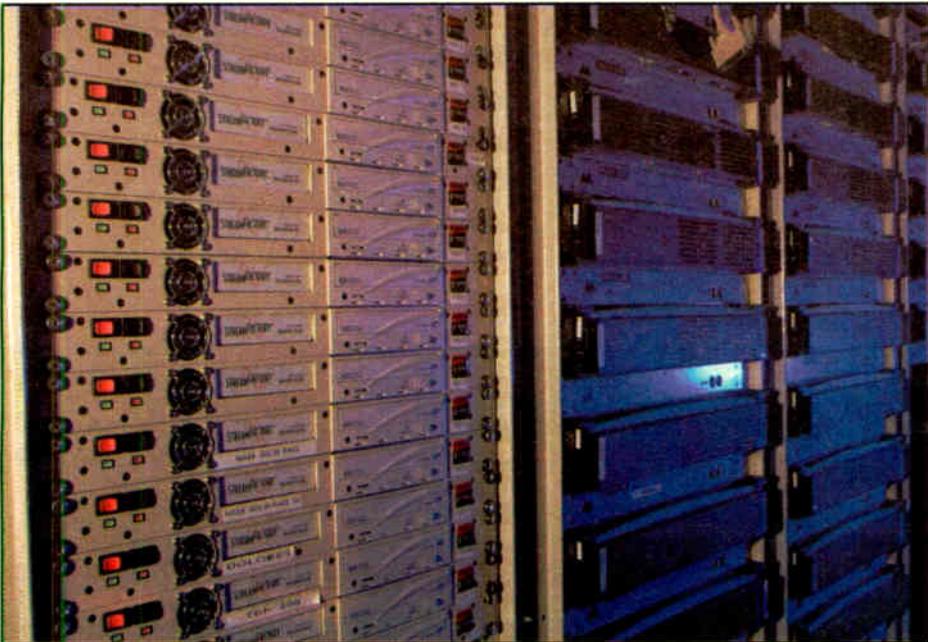
workstation console.

With the upgrade and its centralization of control, a two-operator shift can control more than 100 events.

Video comes primarily via satellite. For audio-only projects, the signal also can come via phone lines and over ISDN. Additionally, the customer can encode the audio into a stream at its studios and send that stream to Real via frame relay or ISDN.



At Real's Broadcast Operations Center in Seattle, two operators per shift can handle more than 100 events.



Pinnacle's StreamFactory encoders allow Real to stream in both Real and WindowsMedia formats. Real was Pinnacle's first customer for StreamFactory.

"They had to get up, tune in the receiver or connect the phone coupler in one location," said Ben Wolk, account manager for DST Systems Inc., an information processing and computer software services provider, which did the system integration on Real's upgrade.

"They had to patch in one location and they had to do the audio processing in another location," Wolk said.

"Then they'd come back into their operations center and actually do the stream. There were four points of contact for the signal for one operator to get one stream out."

A primary project aim was to bring all of those control functions to a single

The phone couplers represented a particular challenge. Because phone levels can come in at different levels and the phone couplers used had an auto-detect and hang-up feature, the phone system on the outside could trigger the coupler to hang up.

"We had to work with the phone coupler manufacture to modify those couplers to make them the most reliable possible," said Wolk.

Except for signals that enter the building already stream-encoded, each audio signal is put through a Symetrix AGC leveler. The Symetrix units automated the level-setting process, a critical function

See RBN, page 37 ▶

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Peter Waak Gives His View of Net

Scott Fybush

It's been only five years since Peter Waak launched one of Europe's first Internet radio stations.

"There were only 56 stations broadcasting live on the Internet at that time," the former senior vice president of the European RTL network said.

Now the head of Stockholm-based Waak International, Waak believes five groups of companies are competing for the ears of online listeners:

- Online services, such as Yahoo! and AOL, offer streaming audio as a "traffic magnet" to keep visitors to their sites to stay longer.

- Music companies use streaming audio for promotion and to drive e-commerce sales of their offerings.

- Wireless networks experiment with streaming audio's mobile commerce applications.

- Technology companies, such as Microsoft and Real Networks, use streaming audio to demonstrate their technological leadership.

Radio broadcasters

The fifth player, according to Waak, is traditional radio companies, such as Clear Channel. Waak said they use streaming audio as a way to promote and extend the brand identities they've developed on the AM and FM dials.

Among those players, Waak said the technology companies could be the biggest threat to broadcasters, simply because of the power they're able to wield over computer users.

"If you're one of their presets on their players, you're going to get a lot of traffic," he said. "If you're not, it's very difficult."

On the traditional radio side, Waak said broadcasters shouldn't be too worried about the shutdown of services such as BroadcastAmerica.com.

"For you, this is good news, because it gives you breathing space and room to move into this area," he said.

Waak, who presented an overview of the state of Webcasting at last spring's National Association of Broadcasters convention in Las Vegas, said Webcasters could tap many revenue streams beyond the traditional banner ads. Audio and interactive advertising within the streaming media itself — whether in the form of a spot played before the start of live streaming or ad insertion within the stream — is one common tactic.

Others include marketing of database information gathered from listeners, selling streaming content to other sites and e-commerce within a station's Web site.

Profitability

"A lot of people (in 1996) thought e-commerce would generate much more money than it did," he said.

Some other business models Waak follows include the idea of "business-to-business radio," now being pioneered at sites such as RadioCentral.com, which targets its audio not to consumers but to radio-industry insiders.

Waak also is optimistic about "permission marketing," in which businesses

develop a list of willing listeners who receive targeted e-mails that contain audio or video content.

One model Waak doesn't care for is the "side-channel" concept, in which radio stations offer Web listeners a choice of streams complementary to the main broadcast service.

"You're going to move your P-1 listeners from a profit-making model (the traditional over-the-air station) to a nonprofit model, a side channel that you're losing money on today," he said, noting that if side channels succeed, they run the risk of diluting the image of the "core product" on which they're based.

the song currently being played, something he said very few station sites actually do.

One-to-one marketing — techniques such as "happy birthday" e-mails, personalized invitations from DJs and station screensavers and wallpaper — is another way Waak believes stations could bond more closely with their listeners.

That sort of close bond will be essential, Waak believes, in an era when competition for listeners' ears is increasing. In Europe, where digital audio broadcasting is farther along, Waak views both terrestrial DAB and satellite radio as serious threats to analog AM and FM. In the more

If side channels succeed, they run the risk of diluting the image of the 'core product' on which they're based.

— Peter Waak

distant future, he believes, even e-mail has the potential to compete with radio.

"The technology is there now," he said. "Any text you have could be translated to audio. That means if you haven't read the report you need for your meeting at 9 a.m., you could hear it in your car."

To compete in that environment, Waak is advising stations to be as clear as possible in their positioning as they strive to find a niche in the increasingly crowded marketplace.

"It will become even more important to own something in the minds of the listeners," he said, encouraging stations to exploit any new technological platform that becomes available for their programming.

"Don't be afraid of them," he said. "Learn how to use them." 

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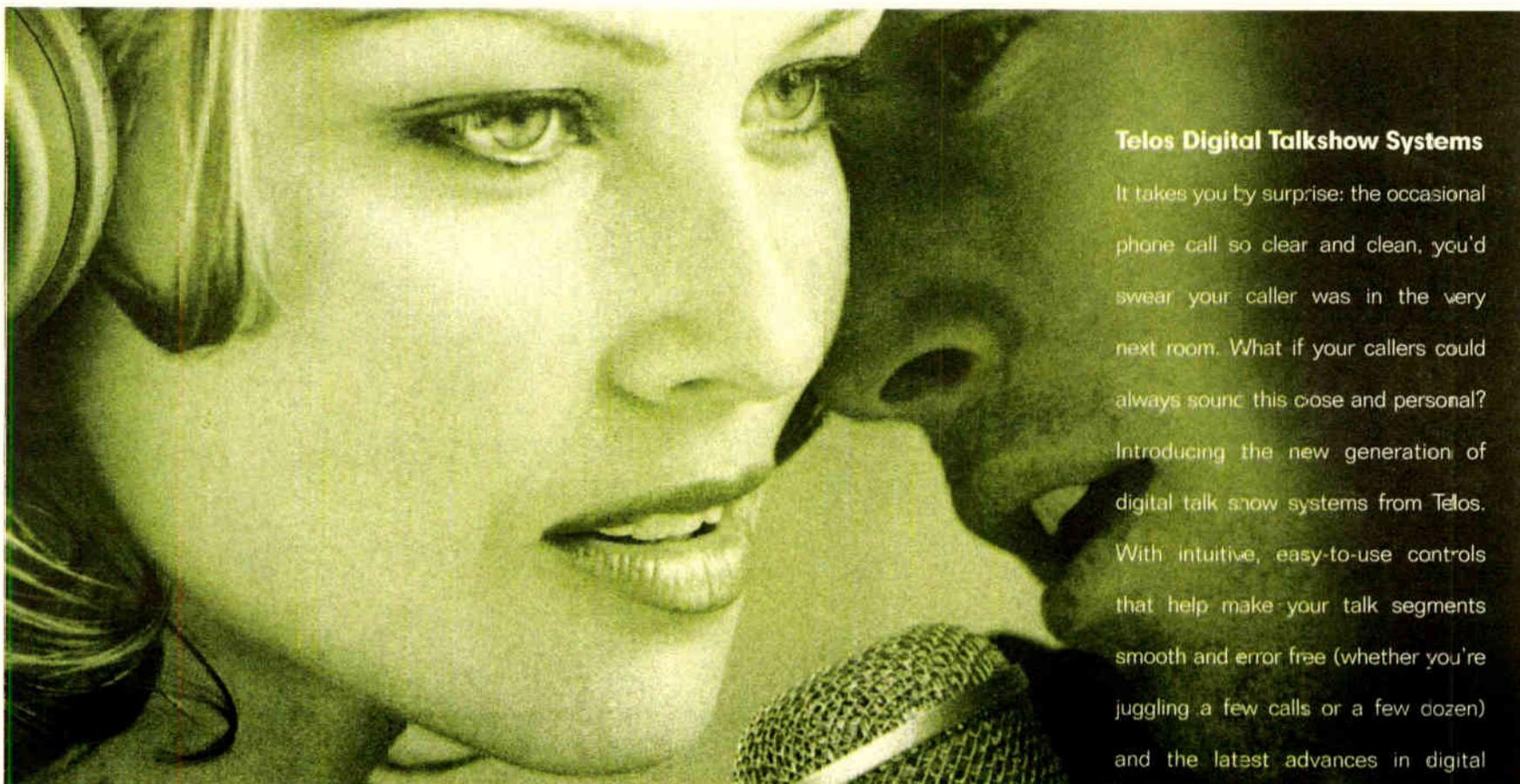
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Streaming Fees Ruling Draws Heat

Ken R.

The U.S. District Court for Eastern Pennsylvania recently upheld a U.S. Copyright Office ruling that mandates record companies pay online fees for streamed music.

The NAB, which was unsuccessful in its effort to have that ruling overturned, was disappointed.

Edward O. Fritts, NAB president and CEO, said that broadcasters, record companies and consumers have enjoyed a symbiotic relationship that begins when radio stations provide airplay of record label's products, a service that produces enormous profits for record companies.

"Any additional fee to compensate record companies would be unfair and unreasonable," Fritts said in a statement.

Appeal likely

The NAB was "considering its options" and was expected to appeal the decision.

The RIAA reacted to the court's action with satisfaction.

"We are pleased that the court upheld the rights of artists and record companies. We now look forward to working with the broadcasters for a smooth transition into this marketplace," stated Hilary Rosen, Recording Industry Association of America president and CEO.

Radio groups also reacted. Lawrence Arevalo, vice president of Hispanic Broadcasting Corp. Interactive, believes

that the court made a good point and that some fees are reasonable.

"We don't want to get out of our obligation to pay for this usage. We want the providers to get their just rewards," Arevalo said.

Amy Van Hook, Internet operations director for Entercom, takes a "wait and see" position. She said the full effect of the court's decision will be known only when ongoing arbitration hearings to decide what rate the industry will have to pay the RIAA are finalized, expected in six months or more.

"The price (we will have to pay) will be the determining factor," said Van Hook. "But it's unfortunate that all these events have happened to the streaming industry."

But what about the people whose livelihoods depend on providing streaming services to the broadcast industry?

How do they view this issue?

Ben Silva is Streaming21's American sales vice president. Streaming21 is a streaming services provider based in Los Gatos, Calif. He said he sees the issue from both the broadcaster's side and the RIAA's.

Not radio

"I can understand their frustration because stations already pay licensing fees to play music on the air," said Silva. "But Internet streaming is a new marketplace and I believe the fees are justified."

Any additional fee to compensate record companies would be unfair and unreasonable.

— Edward O. Fritts

Silva said the Internet is a targeted medium and he predicts that if the Internet were used properly, station revenues would go up dramatically; then new music licensing fees would be a small factor in their budgets.

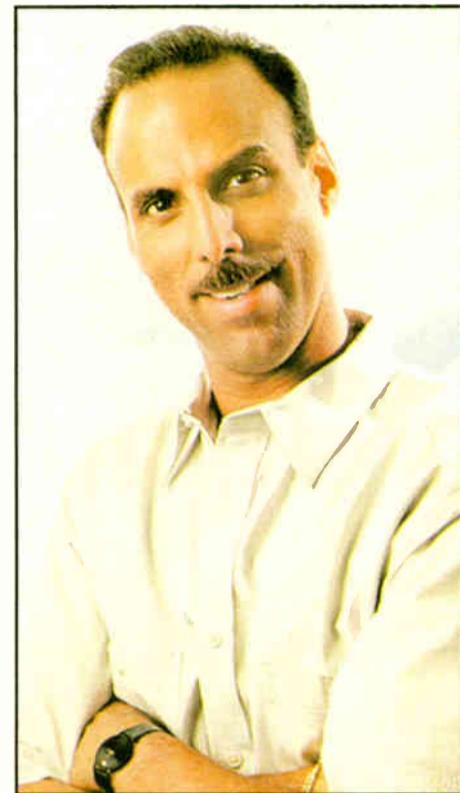
"If I hear an ad on the radio, I can't click on it while I'm driving my car to find out more or to buy the product," said Silva. "But the Internet is a whole new ballgame."

Silva said many broadcasters just don't realize the additional revenue possibilities from interactive radio.

"We're entering a new media evolution that no one can stop. Everyone needs to step back and see this vast audience out there of people who are leaning forward to work with us," said Silva.

"The court rulings are all symptoms of the fact that there is a huge marketplace in the future," Silva said.

StreamAudio, another streaming ser-



Ben Silva

vice provider, is based in Tacoma, Wash. Tom O'Connor is sales and marketing vice president.

"The great thing about the Internet is that it's essentially percolating up from the bottom so now the legislative initiatives can begin," O'Connor said. "It's an embryonic industry and it's too early to predict the fallout."

O'Connor believes that eventually Congress will apply an even-handed and fair solution to broadcasters.

"But right now this thing is ruled by lawsuits and threats of monetary penalty which are just strategic and defensive moves."

Digital Media Online Inc., a news and information portal, is based in Santa Ana, Calif. Frank Moldstad is vice president of editorial.

"I think the ruling puts the cart before the horse," said Moldstad. "If streaming were generating millions of dollars and had an established business model like radio itself, then things would certainly be different." ●

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Clients can send comments and questions to the commentator unknown to the participants. Results are available almost instantly through interactive, filterable online reports.

If a station would like to test music, stations recruit listeners to participate online. Stations tell Troy what music to test and the company takes care of the rest, including secure results online. Troy says Internet music tests are effective especially when you need results quickly, want a large group of P1s to answer or need a sample size of up to several thousand participants.

Troy also provides Internet perceptual surveys with results available immediately after the survey concludes. With an online panel that you build and subject matter you supply to the Troy, results will be available at a password-protected site in an interactive, filterable format.

Jones Research Network is Troy's parent company, which, through its RadioResearch.com service, has conducted national format studies online that tested the same songs and questions simultaneously for each station through many markets. The method reduced research costs for station participants, according to the company.

Services are available on a barter basis.

For more information contact Bill Troy at Troy Research in Ohio at (740) 549-9700 or send e-mail to bill@troyresearch.com.

RBN

► Continued from page 33

because the levels coming from the phone couplers vary so widely.

The heart of the system is a Philips Venus audio and video routing switcher. It is configured to supply 96 inputs and 128 outputs, but can be expanded to 256 by 256. Router functions are handled automatically through the operator workstation consoles.

Along with the functionality and ergonomics of the new BOC facility came esthetic features. While the original room was viewable through glass from a hallway, it consisted of a large room full of equipment racks with a few operators seated at computers.

Installation anticipation

A passerby now finds an operations center complete with a monitor wall and plasma screens reminiscent of a television master control room.

Real had anticipated installing the video portion of the upgrade first, but a flurry of audio-only business required that section to be built in a hurry.

"The timeframe is probably the biggest challenge we faced," said DST's Wolk. "We started out with the large project as the primary one, then we jumped into a Phase II project that kind of took precedence — the audio-only portion, which was the phone couplers with the audio processing and the patching."

DST had planned to build the racks off-site, but the rush to complete the audio section changed its plans for that portion of the project.

stop-shop, RBN aims to offer seamless service from the time the signal enters the building until it's delivered via the Internet to the viewer or listener's computer.

RBN's Network Operations Center strives to bring the streamed signal to the customer using the least amount of the actual Internet possible.

Close to home

That's because Internet routing can be circuitous, possibly zigzagging across the country or even the globe. This can take the stream through unnecessary switching, which can result in slowing and lost packets.

To avoid using the Internet to deliver the signal across the country, RBN sends the signal via private network or networks to the "edge," a location close to the end user.

The initial link a customer clicks contacts a redirecting server at the RBN Seattle facility. Using a number of factors to determine the customer's location, that server directs the customer's computer to a server in his area.

"Everyone has their own software models which tell where to get the signal," said Real's Kreyenhagen, referring to it as their "secret sauce."

RBN normally runs its network at one-third capacity, which leaves enough cushion to handle huge spikes, like the during election or Seattle's earthquake. By incorporating partners with their own networks, it quickly can scale up to handle increased demand of a stream.

RBN assigns a program manager to each project. On a complex project, the program manager enters the process after the conceptual sale, before a final

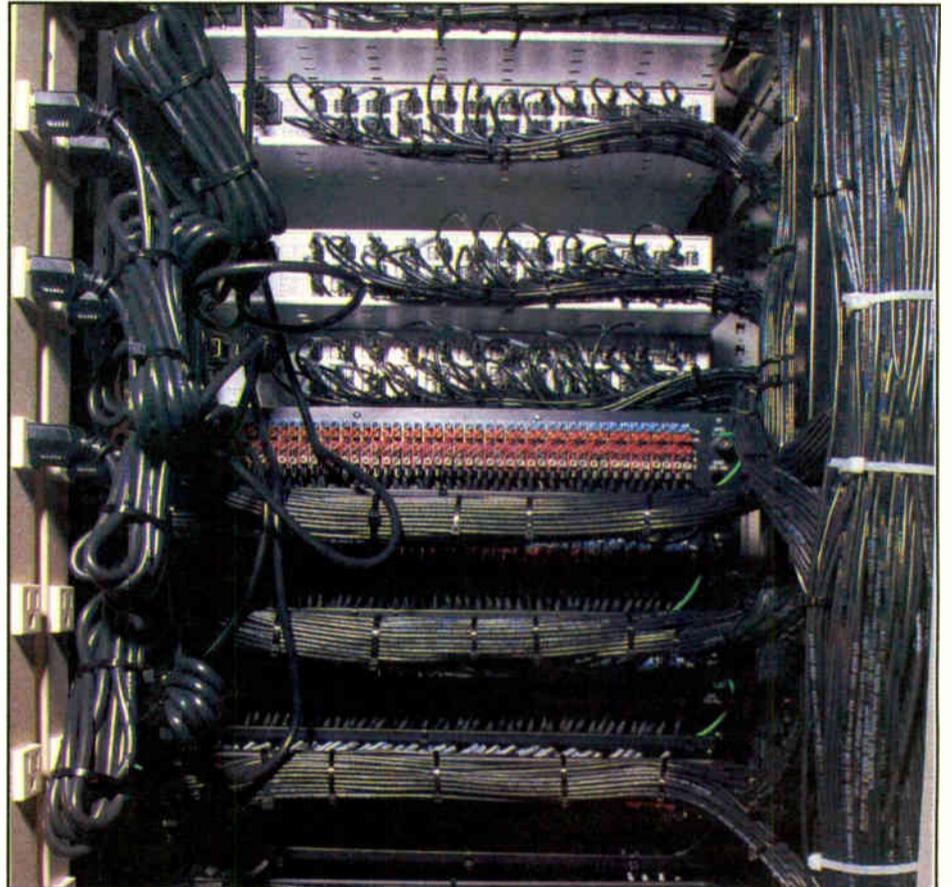
software and broadcast.

"People can have expertise in two of those areas, but no one has all three," said Pabbisetty. He said he came to Real with two: networking and software.

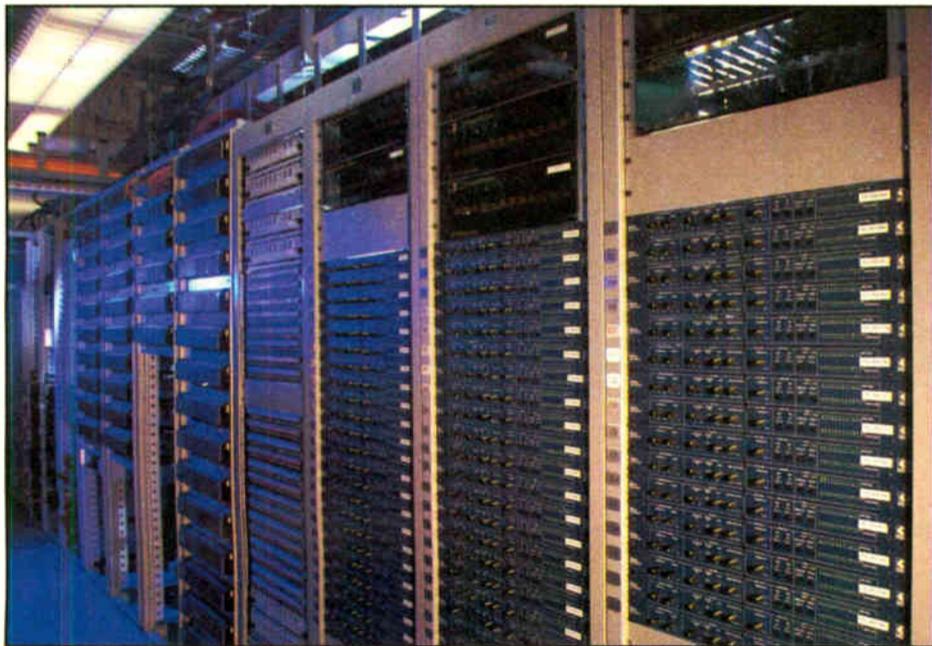
"I have immersed myself in broadcasting, learning from the experts we have hired. We all have to understand the part we don't know in order to make RBN work."

radio, where Real can replace the spots from the terrestrial signal with Internet-only commercials, to the subscription-based Major League Baseball and NBA game feeds, incorporated in Real's Gold Pass subscription service.

Real says it has encountered strong demand from the corporate/enterprise marketplace. Companies have found that streaming their financial announcements



DST prewired and tested most of Real's BOC equipment off-site before installation.



Approximately 120 Symetrix AGC Levelers automate the level control process for incoming audio feeds.

"Within a matter of two weeks, from 'go' to on-air, it only took us four days to integrate the equipment and deploy it within their facility," Wolk said. "We went to the manufacturer, Symetrix, up in Lynnwood (a Seattle suburb), grabbed all the processors and wired that portion on-site."

The rest of the upgrade was built and tested off-site and installed in the Real facility without taking the existing operation offline.

"I think at the end of the day, the efficiencies and quality of product that Real puts out nobody can touch," said Mark Siegel, manager of DST's Seattle office.

The second half of Real Broadcast Network is the network itself. As a one-

price is established.

"The customer doesn't always know everything involved," said Kreyenhagen. "The program manager becomes the customer's champion, his advocate in the process."

It takes all three

Program managers stay attached to a project through its completion and are contacted automatically at any time, day or night, should a problem with the stream occur.

"RBN brought a true 'broadcast' mindset to the IP world," said Real's Pabbisetty. A team of about 60 people was built from specialists in networking,

That's one of the reasons they brought in Warner as director of broadcasting. He spent over two dozen years in television and played a key role in the digital upgrade design for Seattle's KING (TV). He then spent several years at Louth Automation.

Things are humming at RBN today. Projects range from advertiser-supported

simultaneously to interested parties around the world is a good way to satisfy new Securities and Exchange Commission requirements for such disclosures.

Real sees the expertise gained from these various projects as a magnet for more business.

Craig Johnston is an Internet and multimedia producer in Seattle.

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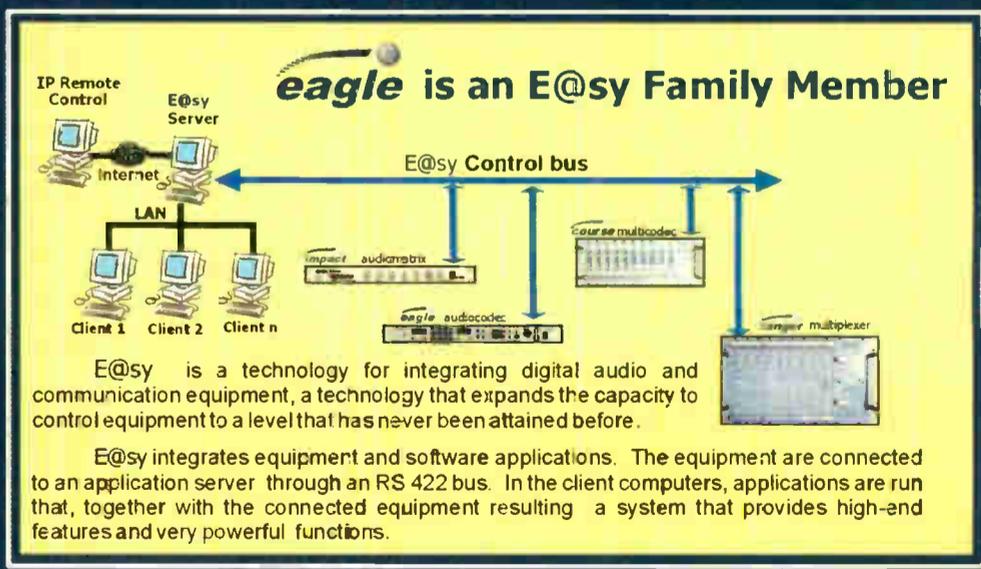
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NET-ONLY STATIONS DOMINATE JULY

Before the April American Federation of Television and Radio Artists move to collect triple rates for commercials streamed on air, Internet-only services had far fewer spots in the monthly ratings.

But in the July MeasureCast ratings, Internet-only Webcasters took 27 of the 50 slots.

The MeasureCast ratings have shown a steady rise in the number of Webcasters since the AFTRA move, lead by MEDIAMazing, (which has been No. 1 since February).

Many industry observers have said that online listening should be monitored carefully, for indications of consumer trends and for the threat that Internet-only radio services could pose to terrestrial broadcasters.

Although Internet-only services dominated the July ratings, overall they streamed almost 4 percent fewer hours than in the previous month.

Forty-five of the stations that appear in the MeasureCast July ratings list also appeared in the June ratings. These stations streamed 9 percent more hours in July than they did in June.

Arbitron's Webcast network ratings for March, released in August, show the world before the AFTRA move.

NetRadio.com, an Internet aggregator that provides original programming for more than 100 channels, was No. 1, while Live365, a service that allows consumers, radio stations and business organizations to create their own Webcast station, was No. 2.

Arbitron stated that NetRadio has led the network ratings since Arbitron began the service in October 2000.

Clear Channel, whose station's Webcasts have been silent since the AFTRA action, still appeared in Arbitron's top-10, taking the No. 10 spot in the March ratings. The radio giant had been No. 7 the month before.

MEDIAMazing moved up three slots in the Arbitron ratings, to the No. 12 position.

MeasureCast, which also tracks overall Internet radio listening, reports that Net radio listening is at its highest level since they began to track it in January.

MeasureCast noted that religious broadcasters enjoyed significant increases in total time spent listening, which measures the total number of hours streamed by the broadcast in the reported period.

"The Word in Praise," a Salem Communications property, moved from 109 to the No. 50 spot in July, and Salem's KFSH(FM) moved from 89 to No. 49.

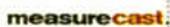
Christian Pirate Radio's station of the same name moved from the 80th spot to No. 48.

— Laura Dely

The MeasureCast Top 50 — July 2001

Stations are rated by TTSL — Total Time Spent Listening — the number of hours streamed by the broadcaster in the reported time period (July, 2001).

June	July	Station/Format	Owner	URL	TTSL
1.	1.	MEDIAMazing/Listener Formatted	MEDIAMazing	www.mediamazing.com	679,946
4.	2.	Virgin Radio/Adult Alternative	Virgin Radio New Media	www.virginradio.co.uk	416,183
6.	3.	ESPN Radio/Sports Talk	Walt Disney Internet Group	www.espradio.com	359,277
2.	4.	Radio Margaritaville/Classic Rock	Radio Margaritaville	www.radiomargaritaville.com	293,075
5.	5.	3WK Undergroundradio/Alternative Rock	3WK	www.3wk.com	216,135
3.	6.	Cablemusic Hot 100/CHR - Top 40	Cablemusic.com	www.Cablemusic.com	214,583
7.	7.	WFXZ-FM/93.7/Classic Rock	Sea-Comm Media	http://www.937thebone.com	138,471
11.	8.	Alice New Media/Miscellaneous	Alice New Media	www.aliceonair.com	127,760
9.	9.	Internet Radio Inc./New Age, Smooth Jazz	Internet Radio Inc.	www.choicerradio.com	124,041
31.	10.	WHUR-FM/96.3/Adult R&B	Howard University	www.whur.com	117,357



Arbitron Webcast Ratings Top-10 Report — March 2001

Webcast networks (either radio group owners that stream their content online or aggregators of online content) are rated by ATH — the sum total of all hours that listeners tune to an Internet station.

Channel	Owner	URL	MARCH ATH
1. NetRadio.com	NetRadio Corp.	www.netradio.com	4,098,600
2. Live365	Nanocosm, Inc.	www.live365.com	3,585,200
3. ABC Radio Networks	ABC Radio Inc.	www.abcradio.com	2,149,800
4. RadioWave	Motorola et al *	www.radiowave.com	1,200,900
5. CableMusic Networks	CableMusic Networks	www.cablemusic.com	791,800
6. Corus Entertainment	Corus Entertainment	www.corusentertainment.com	777,300
7. Launch Media	Launch Media Inc.	www.launch.com	636,800
8. Public Interactive	Public Interactive	**	534,900
9. BigRadio.com, Inc.	DigaCast, Inc.	www.bigradio.tv.com	466,300
10. Clear Channel	Clear Channel	www.clearchannel.com	414,300

* In addition to Motorola, RadioWave investors include Intel, FBR Technologies, Susquehanna Radio and Warburg Pincus.

** Some of the 50 public stations that PI streams are found at www.wcpn.org, www.wnyc.org, www.kera.org and www.wbur.org.



Internet Radio Not Habitual Yet

One out of five Americans is a broadband user or "speedie," according to Arbitron Inc. and Coleman. The companies recently released their second study of broadband use.

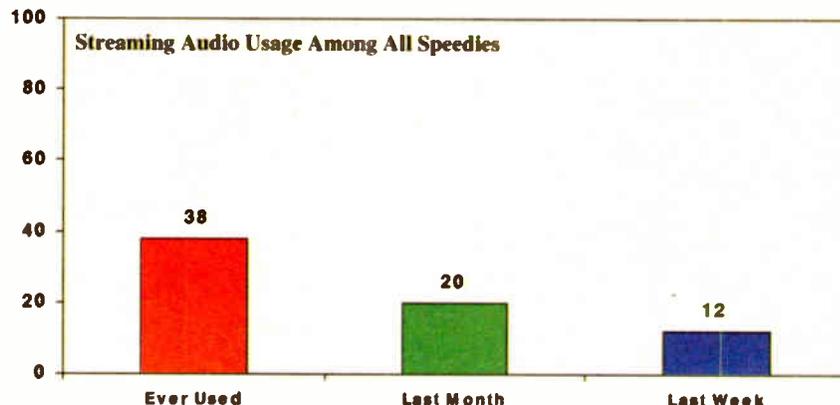
At this early stage of streaming media's development, even those with the fastest connections do not consume streaming media on a habitual basis, the report noted.

It also found that those who listen to streaming audio perceive traditional radio for its nonmusical elements, while speedies perceive Internet radio as a source of "continuous music without interruptions."

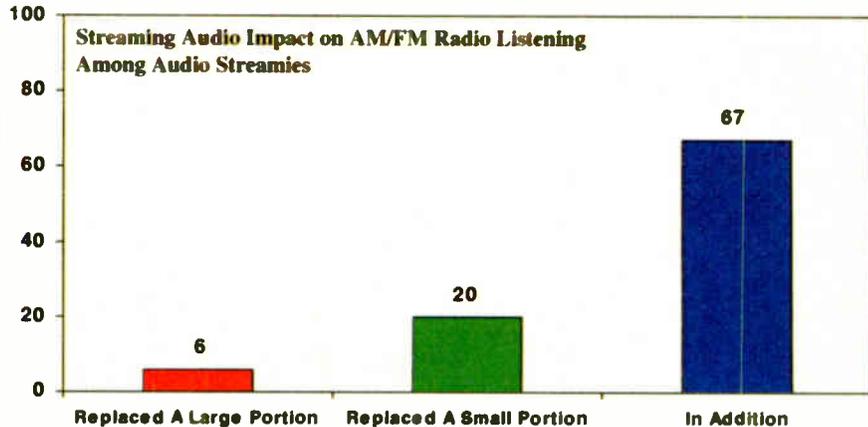
But when asked whether radio or the Internet is better for a number of audio attributes, most Net radio speedies selected radio.

Most of the broadband users surveyed reported that streaming audio complements, not reduces, their radio usage. Only 6 percent said streaming audio replaces a large part of their AM or FM radio listening.

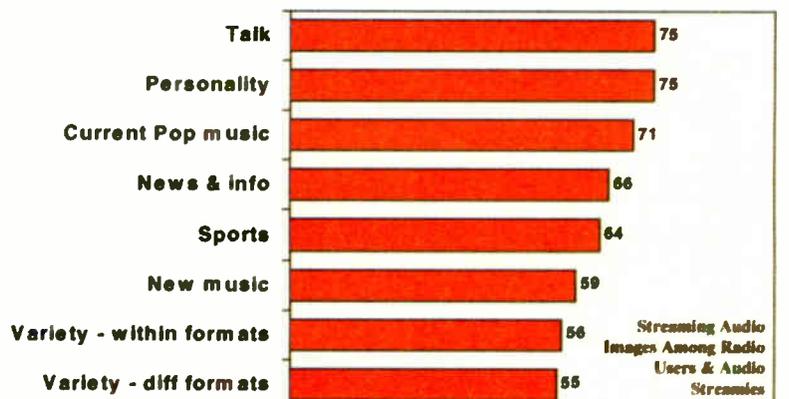
Streaming Audio Not Yet Generating High Habitual Use

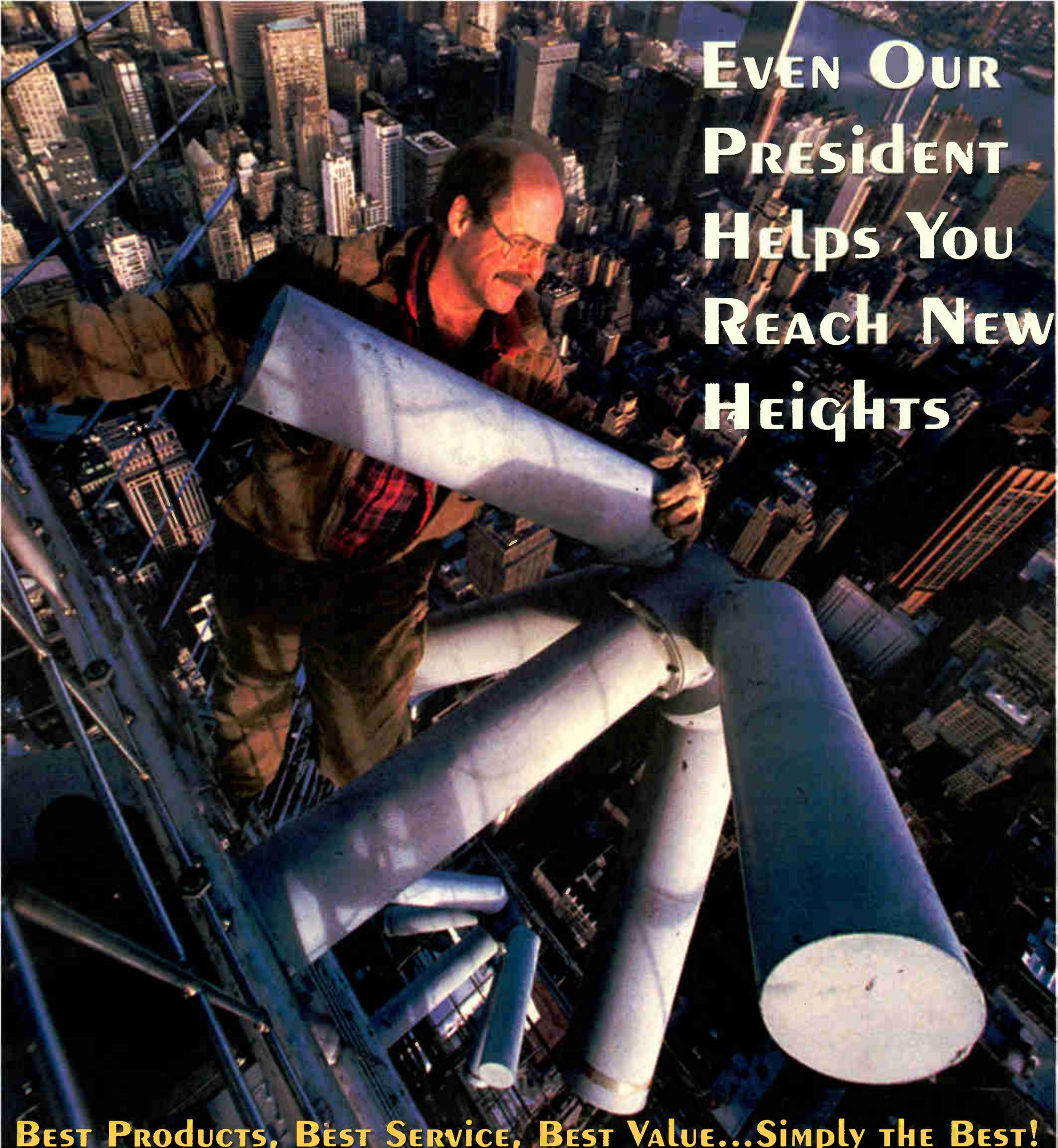


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Radio World

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September 12, 2001

PRODUCT EVALUATION

Nagra USB Recorder: Future Cool

Alan R. Peterson

Digital audio recorders that use solid-state digital media are a boon for professional newsgathering and field audio acquisition.

Recording to a solid block of RAM means no more jammed cassette tapes, no MiniDiscs getting knocked off-track, no DATs to rewind and search through.

A different mold

Denon and Marantz recently leapt out of the gate with offerings styled after each company's over-the-shoulder field recorders. The Denon DN-F20R and the Marantz PMD690 both emulate the under-finger familiarity and appearance of earlier analog models.

It took a collaboration between the engineering minds of Nagra and Digigram to take a different tack.

The result is the Nagra RCX220 (retail price \$2,430).

This digital recorder breaks the mold of what a

field recorder should look like and how it should feel, without affecting what it is supposed to do.

The Nagra RCX220 handheld audio recorder is the cousin to the Nagra ARES-P digital recorder.



The difference lies in some of the editing features and the ability to offload digital audio files rapidly via USB port.

Both recorders share an appearance somewhere between a stainless-steel whiskey flask and a Swiss electric razor; and it flips open like a Zippo lighter to receive batteries and media.

The recorder digitizes audio with Digigram soundcard technology, records to solid-state RAM media and transfers said audio via USB connection to a host computer for editing.

The compact recorder offers versatile recording capabilities, such as capturing mono or stereo audio in MPEG 1 Layer II and downloading it at high speed directly to computer via USB. Once inside the computer, audio is edited via Xtrack LE, the fast and easy-to-use MPEG digital editor offered by Digigram.

You are, by all means, welcome to

skip the USB feature altogether, remove the media and pop it into a PCMCIA card reader attached to the audio workstation computer.

The frosty, steely looking RCX220 is innovative. And the audio quality is every bit what you might expect from a Digigram/Nagra collaboration.

THD is 0.1 percent at 1 kHz, with a dynamic range of 85 dB and frequency response of 30 Hz to 20 kHz at the 48 kHz sampling rate.

Field quality

These may not sound like stunning specs if your life revolves around rack-mount studio gear kept under glass, but are significant figures for a field recorder and are miles ahead of whatever may be in your shoulder bag now.

The center of attention on the brushed aluminum and steel case is the yellow-green LCD display. Here, you may view a volume meter, recording status, the time remaining and big bold graphics that shows what mode the recorder is in.

Below the display is a cluster of rubber
See NAGRA, page 47 ▶

Celebrating an Old Friend

Former Students and Managers Remember Good Times at a 50-Year-Old FM Station in Ohio

Rich Rarey

Last November, I had the pleasure of celebrating the 50th birthday of an old friend. This old friend had introduced me, firsthand, to professional broadcasting, and encouraged me to experiment, to make mistakes, and learn from them.

This old friend also introduced many others to radio and television, some of whom made broadcasting a career. For others, broadcasting became a stepping-stone to other fields and disciplines.

Early jingle

My old friend isn't a person but a 50-year-old radio station, WOUB(FM) in Athens, Ohio.

Licensed to Ohio University, WOUB(FM) — and later (TV) and (AM) — has trained thousands of university students in the crucible of deadline broadcasting. I am happy to raise a microphone in celebration of this FM institution.

Although there was but a single course in radio drama taught during the



1938 school year at Ohio University, there was a rising interest in broadcasting over the next few years fueled by the insistence of a single student, John Metzger.

In an interview in the late 1970s, Metzger told me the campus during WWII was filled with pre-med students and coeds, the former preparing to go to war. Metzger convinced university officials to wire the residence halls together and use a carrier-current transmitter to broadcast at 550 kHz from the balcony of Ewing Hall.

He proudly said that he thought his student colleagues were the first to devise a station jingle, sung live by students to the call letters W-O-U-B, which, Metzger said, stood for "We're

See WOUB, page 42 ▶

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WOUB

► Continued from page 41

Ohio University Broadcasting.” And he thought they had put the jingle on a transcription.

Believe me, when I heard that history in 1978, I walked to Ewing Hall to search out that disc, only to find that Ewing Hall had been torn down two years before. So much for history.

After the war's end, the broadcasting operation moved into a sweltering, stuffy Quonset hut, so close to the B&O rail line that served southern Ohio that the noise of trains and passersby became part of the skits and news presentations.

When I was a student, I had a dim awareness of what that Quonset hut looked like; imagine Gomer Pyle's barracks and you have the idea. Metzger said the hilly ground surrounding the

building turned to mud in the spring, making the trek to the station all the more interesting.

It was in 1948 that the university made the move to file an FM application with the FCC, with the WOUI call letters. (I

Ohio would attract any attention. I looked up the particular 1949 issue of Broadcasting magazine where, in very small type, the WOUB(FM) sign-on was noted, surrounded by a clerk's list of handfuls of new AM stations around the

cramped, control rooms. The transmitter was moved to the top of the building, and in poking around that uppermost floor almost 20 years later (still looking for that precious, if mythical jingle transcription) I found only an old mattress used by 1960s students to, uh, study broadcasting up close and personally.

My old friend isn't a person but a 50-year-old radio station, WOUB(FM) in Athens, Ohio.

can't explain the subsequent call letter change, and have always wondered.)

On Dec. 13, 1949, broadcasts began from the Quonset hut on 91.3 MHz at 10 watts. As a student, I was curious if the sign-on of the first FM college station in

country. So much for being first.

Four years later, Ohio University moved WOUB's studios into the basement of the new Speech and Theater Building, replete with a large studio with gently curved walls and professional, if

The rise of the disc jockey

As the '50s evolved, so did radio. The rise of the disc jockey drove WOUB's popularity to new heights. In searching university archives, I found program guides listing mysterious shows called "Dinner Musicale" and "Yawn Patrol."

Normally, it would be nearly impossible to get a sense of the programming at that level, at that time, but fortunately two individuals, former Director of Broadcasting Archie Greer and current WOUB Producer John Ray, are still around to point out the now-amusing techniques of radio programming.

According to an interview published in a university magazine, Greer's responsibility included putting a "drop of prevention" — fingernail polish — on unapproved music recordings. Instrumental and classical music were approved, other popular music was not. Clearly, one would have to be an above-average jock during those years to keep the audience tuned to WOUB.

In 1957, WOUB(AM) signed on, at 1340 kHz, a local channel, with 250 watts, nondirectional. The AM antenna was sited on the flood plains of the Hocking River — great ground plane — with a transmitter shack elevated 10 feet above ground.

The Hocking normally was well-behaved, until 1963, when the low ground of Athens, Ohio, including parts of the campus, was submerged in a muddy flood. After that, the river was diverted to run around the town and the transmitter shack was no longer in annual peril.

Students continued to make the stations work, day by day. They jocked, wrote news, skits and live musical selections, and made mistakes, bloopers and played pranks on each other. (Note to self: Apologize to Bruce Barkauer for secreting a ringing phone in his combo while he was reading "Job Central.")

It wasn't until 1969, however, when things started to get serious. Ohio University, realizing a number of students were drawn to the university just for the station and the experience, built a multi-million dollar telecommunication building with studios that had plenty of room for AM, FM and TV operations.

More power; more coverage

The 10-watt FM transmitter was upgraded, and the new ERP power, 50 kW, suddenly boomed into most of southern Ohio, western West Virginia and northern Kentucky.

The director of broadcasting at that time, the late N. Joseph Welling, made a logical and wise move for the station — to make it take its role as a regional broadcaster seriously.

In the boom-or-bust Appalachia, jocks reading lists of "jobs available" became a popular staple. When National Public Radio began feeds in 1971, WOUB was a charter member.

In a move that pleased the rural audience of the region, but must have thoroughly annoyed the university faculty, country and western music found its way onto WOUB(FM)'s daytime airwaves. Joe

See WOUB, page 43 ►

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It's Uncle Al's Off-Air Follies

Alan R. Peterson

"Hey, do you guys know you're off the air?"

Short of the PD hotlining you on the studio phone, this is the one call that strikes terror and panic into the heart of every jock I know.

The lifeline to our audience is torn from our fingertips. Without our mighty transmitters, we are exposed as the mere mortals we truly are; powerless as Superman in a Kryptonite-filled Jacuzzi.

Yes, we know

On one hand, it's a stupid call. Of course we know we're off the air! We only work here! We can see the flaming magnesium and PCB-laden oil trailing out of the transmitter chassis! Thanks for the call, you \$%^&*!!!

On the other hand, however, it can be a call that takes us completely by surprise. Maybe we are not listening to the air sig-

nal and do not actually know it.

Perhaps the jock on the AM station is only listening to Program audio and not the off-air signal because the 10-kHz whistle bothers his delicate widdle ears. Maybe the jock on the FM station is also listening to Program audio because of delay caused by some digital doodad in the rack somewhere.

Maybe it's a bigger problem. In the digital age, that would not surprise me at all. Nor should it surprise you.

The solution is so much easier at those edge-of-town stations, where the studio shares real estate with the tower site.

With everything all in one place, the cause of an off-air condition can be diagnosed fairly quickly. No STLs to get knocked out of line, no ISDN connections that drop. Just a piece of copper running a few dozen yards from *hyar* to *thar*.

About 30 miles out of Washington, out in farm country, is one of my favorite AM radio stations, WKCW, Warrenton, Va. I will be doing a piece about this sta-

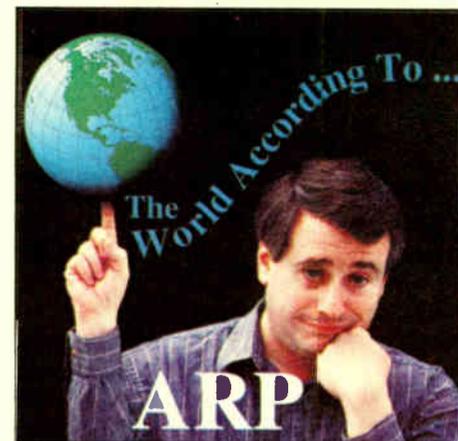
tion soon, because it is such a nostalgic example of what a classic out-of-town 5-kilowatt should be like. But I'll come back to that next time.

Zap

When these guys get knocked off the air, it generally is from a lightning hit. Think about it: A 200-foot-tall metal rod, top of a hill, nothing else around that is as tall, nice wet farmland ... I wonder why the tower doesn't get hit more frequently.

Normally, the employees there just have to "plate up" to get back to business after a lightning tap. But during a recent blast of summer thunderstorms tearing out of the Blue Ridge mountains, a sheet of lightning came down and simultaneously hit the tip of the tower, the phone line and the utility transformer that provided the juice to the station.

Plenty of in-studio components were fried from that hit, as well as the base current meter under the tower. Fortunately, getting back on the air wasn't too much torture for them. They must have it down to a system by now.



crap, that was close!"

Other ways of getting knocked off-air can be a little more insidious.

One of the earliest stations I worked at was a daytimer, maintained by an engineer who was in way over his head and did a lot that was not exactly by-the-book.

Hamming it up

One night after signoff, this doink pulled the lead off the old RCA transmitter and ran a Heathkit ham transceiver into the tower just to see how it would work. I didn't know he did that until I signed on the next morning and couldn't keep the transmitter on. He never reconnected the

WOUB

Continued from page 42

Welling's defense was simple and direct: "You can't produce a service for people if they don't listen to it."

Producer John Ray and reporter Tim Myers took their tape recorders across the region, asking questions and bringing back the answers for local newscasts and features. Although the working staff was composed of students, professional staff members were hired to guide and direct the students' boundless energy into a more focused, but creative air product.

A great place to work

It was still a great place to work. On the first day of my freshman year, I presented myself to the engineering supervisor, an old guy (well, probably pushing 28) named John Humphrey.

"Yep, sure, you can work in the radio engineering department," he said, pausing, "We have plenty of windows to clean here."

I tried the news department too, and came to love the smell of the old typewriters, teletype paper and yellow script paper. It was perhaps the greatest thrill finally to sit, at age 18, behind the microphone and deliver a five-minute newscast on Saturday nights.

'Doing' news was fun, but a fellow freshman named Martin, who started that same Saturday evening with me, seemed to like it much more.

The evening jock running Savage's actualities would leer and play the sound of turkeys — anything to get him to crack. It was all for naught.

The television was on a few years ago, a familiar face appeared, presenting the news of the world with the CNN logo in the corner. With a start, I realized it was that same freshman colleague — Martin Savage.

Evening programming featured jazz and classical and programs that served eclectic tastes. People loved what they created, and loved radio.

In the late '70s a staff member started a modest folk program on Sunday

morning, answering a challenge that he could produce a better, more engaging program than the elevator-music program that was in that time slot.

Keith Newman is still the host of that "modest little program," "Below the Salt," and thanks to the Internet, has a loyal audience around the world.

All of these remembrances came flooding back, just as the Hocking River once did, on a November evening in 2000, as alumni and friends and staffers of WOUB came together on the Athens, Ohio, campus to celebrate WOUB's 50th birthday.

It was a fine and fitting tribute: Archie Greer and John Ray received the John Metzger Leadership award — the first time it has been presented — for their combined century of service to the station and students.

A Metzger award also went to former director Dr. Presley Holmes for his program and for his vision, planning and guidance of the Telecommunications Center as preparations were made to build its new home in the late '60s.

Tributes went to former director Joe Welling for his strong vision of multiple FM stations around the region, bringing momentum that propelled the stations into this millennium.

Perhaps most delicious of all, an actual live radio drama program was acted, produced, engineered and broadcast on WOUB(FM) by OU Drama and R-TV students, all while we "elders" sat in the audience and beamed proudly.

"That's our station!" we murmured, while applauding wildly at the grace and skill of the present-day student broadcasters.

Public Domain would like to remember the contributions of the late Jeffrey Spalding, WOUB radio's operations director. He taught us the value of remaining calm, even when WOUB's building power blacked out and the backup generator froze in place. He will be missed for his good humor and understanding of how to accomplish "the gig" with style and efficiency. Jeff often said "You can't spell trouble without OUB."

Rich Rarey, CEA, CBNT, is a master control supervisor at National Public Radio. Reach him at rrarey@npr.org.



Cartoonist Brian Wilson captures what it is like to be off the air ... or so it seems. Used with permission. Visit the KRUD cartoon archives at www.krud.com.

Lightning also can make for rather entertaining on-air moments.

I won't forget "Mark McKay" (now there's a jock name!) getting startled by a close hit on the old WHMP(FM) in Springfield, Mass.:

"Boy George and Culture Club on 99-point — (BOOM!) — Threeeee! Holy

RCA box to the stick, and the thing kept shutting down for want of a load.

Before you ask: Yes, he still had a job after that.

Speaking of load, my short stint at WSBS(AM), Great Barrington, Mass., in 1989 was punctuated curiously by a winter

See ARP, page 45

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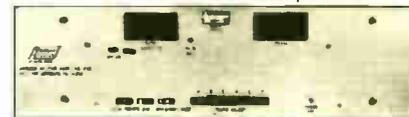
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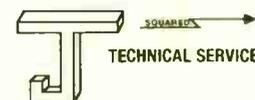
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ARP

► Continued from page 43

power failure that threatened to take us off. But the owners had the foresight to install a generator a couple of years prior — very important, as WSBS was the only station serving the community at the time.

I say “curiously” because the day came when we needed the backup juice, and it fired up perfectly. The office staff turned off lots of nonessential devices and lights in order not to overload the generator. And that’s when the fun started.

The generator began to rev and slow down, rev and slow down in an almost lethargic cycle. Our turntables began to wow, the lights left on were slowly pulsating, and we couldn’t keep our then-new Broadcast Electronics BE-16 automation rig from crashing. Every rise and fall of the generator just made us sound worse. But we stayed on the air.

It turned out we shut off too much gear in the station. The generator actually needed to see more load than we were giving it, so it couldn’t settle out. It kept drifting until we turned on enough lights and devices inside the station to return things to normal.

Go figure.

Progress is good

Which pretty much brings me to the current day. A day that offers us unlimited technological possibilities in getting our voices heard, as well as infinite possibilities in controlling those technologies.

How silly it is when a tree falls and takes out the phone line going uphill to the tower. Thanks to that backup STL, you can still stay on the air, but now you cannot call up that cute little box that gives you transmitter parameters in a speech-synthesized voice.

And if you cannot remotely control your transmitter, the law says its time to drive up the hill in the rain.

How very droll it is when the utility truck parks behind your station at 4 in the morning and the driver keys his radio mic, pumping two dozen watts of RF energy right into your automation rig on the other side of the wall. Let’s explain that one to the boss.

How about a big salute to the forces of nature that abhor a satellite dish? The wasps that built a nest inside the feedhorn; the landlord of the office building who ordered an attractive (but microwave-absorbent) coat of paint be applied to the dish surface and didn’t tell you; and the local hackers who rip off your LNB to build that free satellite TV decoder they found plans for on the Internet?

And let’s hear it for that teenage-wonder intern who actually is more technically adept than most of your jocks. The one who knows enough to switch to the backup transmitter when you lose the main one ... but not enough to hit the Antenna Change Switch *first*, pumping wattage into the cottage but nowhere else.

But most of all, put your hands together for that grizzled veteran who waits until the “new guy” takes a bathroom break, then sneaks in the studio and turns off his monitor and headphones. He then raps loudly on the bathroom door and tells the newbie, “Hey dude, you’re off the air!”

Watching the new guy stumbling down the hall half-dressed and trailing the daily newspaper, then diving head-first through the studio door only to find

all is well, is a sight worth experiencing at least once in the career — as long as you are not the newbie.

Hey, as long as there will be human

hands affecting the chain of events leading to RF leaping off the antenna, there will always be the possibility of going off the air. Sometimes it will be as compli-

Sometimes it will be as simple and ridiculous as a snake getting toasted in a warm ATU cabinet, or a digital file loaded for playback that actually has

nothing in it — the new millennium’s equivalent of a blank cart.

It won’t matter if you have triple-redundant STLs and four transmitters shoring up your site. Nasty old Mr. Murphy and his laws are out to get you and your uptime.

Simple or not, keep the Tums handy. Going off the air is never a pleasant experience, and that phone call from some listener who thinks you don’t know any better is coming.

Of course, you will definitely need a Tums when the engineer leans over your shoulder, flicks an Assign key and says, “Your mic was in Audition. You should be okay now.”

Where’s a lightning hit when you really need one?

Got a Tums moment to tell us about? Write to radioworld@imaspub.com.

One engineer pulled the lead off the old RCA transmitter and ran a Heathkit ham transceiver into the tower, just to see how it would work.

hands affecting the chain of events leading to RF leaping off the antenna, there will always be the possibility of going off the air. Sometimes it will be as compli-

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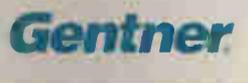


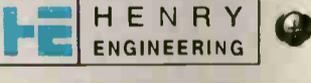



























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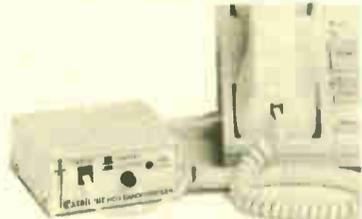
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You can find many uses for the HC-1 around your station: on-air studio, production room, newsroom, sales office, field news kits, sports remotes, etc.

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Nagra

► Continued from page 41

membrane buttons that handle all menu functions. Search the cut list and write titles to each audio file contained in the RCX220; activate Tools for date, time, formatting and repair; and vary Settings, including the built-in limiter, digital compression scheme and settings, and whether or not you want the display backlight turned on.

The button quartet

A Home button is centered between four up/down/right/left cursor keys that navigate the entire menu structure. A pair of + and - keys select the ALC threshold level, input and output levels.

There is a quartet of Rewind, Stop, Play and Fast Forward buttons. A single Record button with a raised dot on the surface helps you find the correct button, even in the dark.



Digigram Xtrack Editor

Simpler yet, there is a hard-start Record button drilled into the right side of the case for index-fingertip operation. Hit it and you are rolling.

Where do the memory cards and batteries go? Surprise: A flush-mounted latch on the right side of the unit unlocks the upper part of the recorder, tipping it open sideways like a Zippo cigarette lighter.

A PCMCIA card socket is fitted in the top portion and a battery compartment in the lower half. The hinge is solid metal and looks as if it can handle extensive flipping and flopping.

A multipin microphone socket tops off the RCX220, and accommodates a Nagra mono cardioid electret mic element or a fairly elaborate M-S capsule. A blank plug is also included for you to wire your own microphone.

The Nagra microphones sound open and spacious, but look amusingly like kitchen faucet aerators and give the unit its liquor-flask silhouette.

In use

The entire RCX220 package consists of the recorder and the Windows-based software (sorry, Mac users).

The RCX220 offers 17 different bit rates and sample frequencies, from G722 and MPEG mono 64/16, all the way up to 192/48 stereo. In a quiet room, the limiter cranks everything up, so you may wish to reset it to a higher threshold so your

headphones don't drive you crazy with compressor "breathing."

Recording time is governed by several factors: the capacity of the RAM card, the sample rate and the compression scheme. Go linear stereo at 48 kHz and expect a quick session, as 11.5 MB will be eaten every minute. On a 48 MB card, that is not much time at all.

Recording in mono, reducing the sample rate and going the MPEG route proportionally increases recording time. By experimenting with the settings, you will find a combination appropriate for your audio acquisition needs and card capacity.

Conspicuously absent from recordings made on the RCX220 — besides tape hiss — is the mechanical motor noise and commutator whine typical of recordings made on a cassette deck. If you have grown so used to this noise that it goes unnoticed, a clean recording minus the drone will surprise you.

In a tabletop situation, the recorder performs as advertised. In motion, how-

PC skills and your current machine.

The disc includes Xtrack and the necessary drivers for the Digigram audio interface. Note that the system runs on Windows 98 SE (Second Edition). Do an installation on Win95 or the original Win98 and the drivers will not load.

Irresistible

You may still use the RCX220 without Xtrack by plugging into the headphone jack and offloading good old analog audio into your console or DAW, or stick the RAM card into a reader. But you lose the speed of the USB transfer.

Minimum requirements are a PII-300 with 64 MB RAM and a standard USB port to operate properly. For best performance, do not use an office hand-me-down. Get a dedicated audio computer.

The Nagra RCX220 is a remarkable digital recorder. The Xtrack MPEG editing software and USB compatibility make an irresistible combination. And there is that cool, metallic matte-finish Star Wars look. But that look may be one of its liabilities.

Grasping that squared-off case for long periods is uncomfortable and could lead to muscular cramping in the hand. Unless the hand strap is attached to the recorder, you don't dare release or relax your grip.

Never mind a better mousetrap; the world will beat a path to the door of the first person who invents a form-fitting, clamp-on rubber grip for the unit to properly fit the hand.

Wish-list tweaks

The RCX220 has no moving parts to break or jam, but a fall or an impact against a hard surface could seriously damage or even snap off the front-mounted microphone element. I hope Nagra engineers will address the mechanical noise aspect as well as the potential for damage.

Similarly, RCX drivers for Win 98 First Edition or even Windows 95 would be desirable. Some thriftier broadcast managers out there would need a real good reason to spend several grand on a single RCX200 to begin with. To be told afterward that he or she needs to purchase new versions of Windows for each PC intended to connect to the RCX220 will not go over well.

PRODUCT GUIDE

Spark FXmachine SE Exclusive Web Release

The TC Works Spark FX machine SE, available on the Web from TC Works' Web site, makes Spark's signal routing power available as a separate product.

Spark FXmachine SE provides an easy interface to complex effects processing. Its 4 x 5 routing matrix provides a fast and intuitive way to create effects, using available VST FX plug-ins.

Users can combine simple freeware plug-ins in a multi-effects chain to create unique results, or choose from the plug-ins available for the VST platform.

Many types of effects can be created using Spark FXmachine SE, such as four-band mastering dynamics processing, frequency-specific noise-reduction and uncommon multiple-effects.

The FXmachine plug-in can be used without restriction like other VST plug-ins in VST-compatible applications, such as Emagic's Logic, Steinberg's Cubase or Bias' Peak.

FXmachine is available as a VST-to-MAS adapter for MOTU's Digital Performer.

System requirements: MacOS 8.6 or later (9.1 recommended); G3 or G4 (128 MB RAM minimum), VST-application. The download includes Installer with Spark FXmachine SE and a PDF manual (Acrobat Reader required) in English.

Price: \$29.95.

For more information contact TC Works in California at (805) 373-1828 or visit the Web site at www.tcworks.de.

Product Capsule: Nagra RCX220 Digital Solid-State Recorder

Thumbs Up

- ✓ Small, well-engineered design
- ✓ Various compression settings
- ✓ High-speed USB file transfer
- ✓ Digigram Xtrack editor thrown in free

Thumbs Down

- ✓ Sensitive mic picks up mechanical noise
- ✓ Drivers and software require minimum Win98SE
- ✓ Despite classy design, case actually is uncomfortable to handle for long periods

For information contact Nagra USA in Nashville at (800) 813-1563, (615) 726-5191 or visit the Web site at www.nagra.com/nagraaudio.

On the other hand, transferring files via USB is fast, once the computer is fine-tuned and the proper drivers are in place.

Editing in Xtrack is as easy as any other editor out there. In some ways it is even better because it edits MPEG files directly without having to decompress and then re-render them.

The best reasons to get a Nagra RCX220: It is fast and stylish, it records clean compressed audio and lets you title and index your tracks while riding back to the station. It is considerably smaller than an over-the-shoulder solid-state IC media recorder and will fit in a jacket or vest pocket.

The second-best reason: Other reporters stuck using their old, beat-up cassette decks will see you at the press conference with your shiny new RCX200 and will be absolutely envious of you.

Alan Peterson is a technical adviser for RW. He counts WABS(AM)/WAVA(FM) Arlington, Va., the Connecticut School of Broadcasting and the syndicated "Greaseband Show" among his current active pursuits.

Contact him at alanpeterson@earthlink.net.

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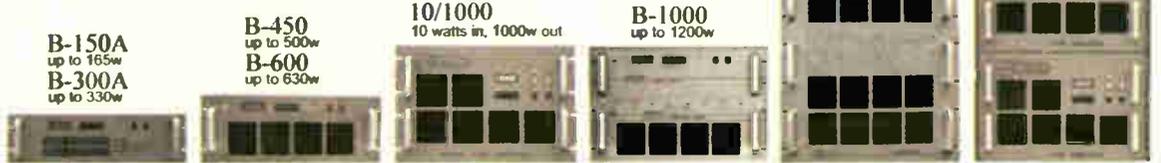
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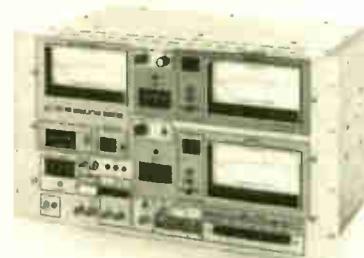
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◆ PRODUCT GUIDE ◆

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Panduit Catalog Covers Heat Shrink Line

A new catalog from Panduit Corp. provides detailed information on its heat shrink and abrasion protection products.

The 60-page color catalog includes a section on each product category: Dry-Shrink, which is heat shrink tubing for general purpose applications; Damp-Shrink heat shrink tubing with an adhesive inner wall for damp locations; and Wet-Shrink, which is thick-wall heat shrink tubing for wet locations.

Information on each product includes photos, selection tables with tubing part numbers, available colors, package quantities and dimensional data.

The catalog has a technical data section that provides specs, test methods and application information. Nonshrink PVC tubing and such abrasion protection products as spiral wrapping, grommet edging and corrugated loom tubing are included as well.

For a free copy of the Panduit catalog #SA101N48F-AIS, contact the company in Illinois at (866) 405-6662, fax (866) 449-1700 or visit the Web site at www.panduit.com.

Velocity Offers Library Flexibility

FirstCom, a provider of music production libraries, offers approximately 28,000 compositions in a variety of libraries.

Its most recent release, the 10-volume Velocity library (with 10 discs more to come) is in the contemporary music genre.

The libraries released so far include AltRock, described as guitar-based, radio-friendly alternative pop/rock; NuSkool Funk, greasy and gritty backdrops for urban tales; Pop Package, polished chart toppers from kid bands and Latin pop; DramaTronica, heavily dramatic sounds with an electronic influence; GlobalGroove, globally influenced electronica; Metal/RapCore, a potpourri of electronic stylings; and Surf, touted as dramatic, wet and wild, with too much spring reverb on the guitar.

The libraries are available on CD or as downloads from www.firstcom.com.

For more information contact FirstCom Music Inc. in Dallas at (800) 858-8880 or visit the Web site at www.firstcom.com.

Incredibly Shrinking Westlake Monitors

Westlake Audio's new two-way Lc4.75 monitor speaker system is the smallest created by the 30-year-old company.

The Lc4.75 was designed for tracking and mixing studios, audio/video post-production facilities and mobile units. The reference monitors provide a solution for users working in compact environments who want quality monitors with high resolution. The Lc4.75 is 5.5 by 12 by 7.25 inches and weighs in at 12 pounds.



The midget monitor offers extensive electro-mechanical-acoustical dampening and a 4-inch woofer with a .75-inch soft dome tweeter with a rated frequency response of 65 Hz to 20 kHz. The monitor sports a hand-built crossover and point-to-point wiring. Price: \$899/pair.

For more information contact Westlake Audio in California at (805) 499-3686, fax (805) 498-2571 or visit the Web at www.westlakeaudio.com.

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BE 55/50A Series used for light recording, can email photo. BO. Michael Raley, Bible Broadcasting Network, Charlotte NC. 704-523-5555.

Harris Executive, 10 channel stereo, \$750. Tom Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

LPB Signature III, 10 channel board in good condition, picture available via email. Michael Raley, Bible Broadcasting Network, Charlotte NC. 704-523-5555.

Radio Systems RS-18 with power supply in A+ condition, very little use, extra engraved buttons, lamp & connectors, \$4000. Casey, Iron Dog Productions, 620-727-1177

Russco 5055 audio board, needs work, \$250. Eric or James, Adelman Communications, 731 N Balsam St., Ridgecrest CA 93555. 760-371-1700.

Shure M-267, 4 input mike/line mixer with rackmount accessory, \$225. David Meyer, D. Meyer Production, 1123 Del Mar, Santa Barbara CA 93109. 805-962-8273.

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Panasonic 3900 DAT recorder with controller, \$1000. Joe James, Santa Fe Voice Studio, POB 1044, Santa Fe NM 87504. 505-982-4404.

Tascam 112 cassette recorder, \$300. Joe James, Santa Fe Voice Studio, POB 1044, Santa Fe NM 87504. 505-982-4404.

Marantz PMD-360 for parts, \$50. Peter Russell, Bowdoin College, Sills Hall, Brunswick ME 04011. 207-725-3066.

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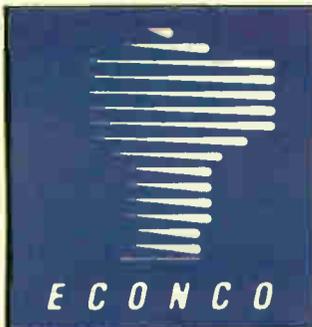
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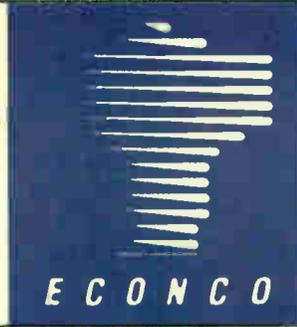


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Radio World

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PHONE: 703-998-7600 ▪ FAX: 703-671-7409

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Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World?
 Yes No

Signature _____ Date _____

Contact Name _____

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Address _____

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Make: _____ Model: _____

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*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by lister.

Broadcast Equipment Exchange

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◆ READER'S FORUM ◆

Tieline

We here at TieLine thank you for including the new TieLine i-Mix on page 53 in the Sept. 1 Buyer's Guide. However, I'd like to correct your contact information.



TieLine iMix

While Darren Levy is indeed the person to contact in Australia, anyone in the United States and Canada should contact me, Kevin Webb, at (888) 211-6989 or (317) 259-8000. The fax number is (317) 259-8040 and our mailing address is TieLine America, 5555 N. Tacoma Ave., Suite #101, Indianapolis, IN 46220. Our Web site is www.tieline.com, e-mail sales@buytieline.com.

We look forward to answering anyone's questions on the full TieLine product line.

Kevin Webb
General Manager
Tieline America
Indianapolis

Mangled lyrics

In a recent article by Al Peterson (July 18, "Fish Are Gonna What in Your Bed?") you left out a misunderstood lyric that actually saw the song banned after listeners' complaints in some instances.

Write to Us

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radioworld@imaspub.com

Petula Clark's "Don't Sleep in the Subway" contains the line "Take off your coat my love and close the door." Thousands of people misunderstood the line to be the more racy "Take off your clothes my love and close the door."

As a big Pet Clark fan, I remember full well the discussions in print and on radio about the R-rated version of the song. (Remember, it was the '60s after all.)

Roger Harris
General Manager
KADA-AM/FM
Ada, Okla.

BBC in the USA

Although BBC frequencies to North America have been dropped (and Radio Netherlands took the opportunity to immediately jump in on those frequencies), BBC can still be heard on a few frequencies beamed to the "Americas" in English (RW, July 18, "BBC Fans Suffer SW Withdrawal").

During the day, 17840 MHz (from Antigua) is still working for me from 1400 through 1700 GMT sign-off. Afternoons, I use BBC service to Africa from Ascension Island, 21470 MHz from 1700-1900 GMT, then 17830 MHz from 1900-2100.

At night, 5975 MHz (from Antigua) ranges from fair to good from 2100 through 0500 GMT, or try 12095 MHz (from Ascension Island) from 2100 through morning (at 0300 GMT it switches to the European stream from Cyprus, then the U.K.), and lastly try 9915 MHz (from the U.K.) from 0000 through 0300 GMT. The last two sound weaker in the Midwest.

To me it is inconsiderate for Americans to complain of service cuts to the United States. If the BBC has to cut service, I would rather they do it in our direction rather than cutting service to the people in Africa and Asia who may have no other means for true world news other than the BBC via shortwave.

If you haven't listened to BBC, try it. It's interesting to hear world news without the U.S. slant, especially their views on U.S. news stories, like our president backing out of the Kyoto agreement, and "violating the (Anti Ballistic Missile) ban treaty" with his recent missile defense tests.

It really showcases our government's defiant arrogance and disregard for world opinion. You come to understand why Americans are sometimes not held in the

SBE,
Always
Faithful

"Once a Marine, always a Marine."

Troy Pennington gets a chance to prove the adage as he assumes the role of president of the Society of Broadcast Engineers.

The long-time engineer and Vietnam War veteran was elected to the post this summer; he will be inducted this week during the SBE's national meeting in Verona, N.Y., held in conjunction with the Central New York SBE Regional Convention.

We're tempted here to paint mental pictures of Pennington the Marine taking up the leadership banner, charging up the engineering hill, leading his troops forward in the face of fire from futuristic technical challenges and cold-hearted group owners.

But in truth, the handover of the post from Andy Butler is more like a change of command on a sunlit parade ground.

Pennington, a Certified Senior Radio Engineer and Senior Member of the SBE, takes the presidency at an intriguing time in its evolution. The organization recently has enjoyed membership growth. It has found higher visibility, launched a successful new computer certification program, operated in the black and avoided fee increases.

Thanks to consolidation, its members often can now be found making important technical decisions at the suit-and-tie level of billion-dollar public companies.

Not bad for a bunch of engineers — you know, those techies that everyone assumes are just getting gray and dwindling away into retirement.

The SBE does face challenges. As Butler himself wrote in Radio World last month, many radio groups no longer pay for professional activities such as SBE board service. That alone is an obstacle to developing future leaders.

More broadly, engineers continue to be underpaid and underappreciated. The demands on their time are excessive. Their role in the new media age is unclear. And yes, we still worry where the next generation of engineers will come from.

But Troy Pennington is an exemplary spokesman for broadcast engineers — *semper fi*, always faithful to his industry and colleagues.

He is a long-time member of Chapter 68 in Birmingham, Ala.; co-chair of the state's emergency communications committee; and a member of the President's National Advisory Council on EAS and the SBE Certification Committee. He has been an SBE board member, director, treasurer and vice president, and we're pleased to note that his byline has appeared in the pages of Radio World as well.

Like any good Marine, he is always on the job. Oh, yes — by day, he is chief engineer for Cox stations WZZK(FM), WODL(FM) and WRLR(FM).

Also elected were Raymond Benedict as vice president; Keith Kintner as secretary; and John Batson as treasurer, along with six new board members: Ralph Beaver, William Denne, Donald Driskell, Clay Freinwald, R.J. Russell and Conrad Trautmann III. Seven other board members continue their service.

The society is in good hands. Congratulations to Pennington and his colleagues.

— RW

highest regard in other parts of the world.

For those interested, there is an excellent monthly publication called Monitoring Times that covers monitoring. It has an extensive shortwave station guide. For information, go to www.grove-ent.com.

Gary Timm
Broadcast Engineer
WTMJ(AM)/WKTI(FM)
Milwaukee

Antique lamps and tubes

I thought your readers might like to know about a Web site dedicated to antique lamps and tubes.

This link goes right to the radio tube

page. They're generally pre-1930:

www.bulbcollector.com/radio_tubes.html

Also check out the Web site index page for radio tubes and the other resources on that site.

The president pro tem of the Tube Collectors Association (go to www.tubecollectors.org) is a point of contact for readers to unload some of their spares that would otherwise get tossed.

Contact Al Jones (W1ITX) at (707) 464-6470, via e-mail to alk6dia@gte.net, or via snail mail to Tube Collectors Association Inc., P.O. Box 1181, Medford, OR 97501.

Phil Wells, MCSE
Giant Step Enterprises
San Diego

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AUDIOARTS DIGITAL D-70



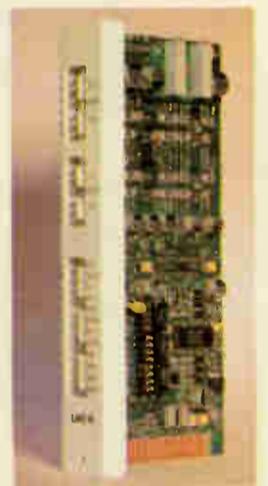
The D-70 digital console from AUDIOARTS not only utilizes the latest in digital technology and chip sets, it can be ordered with a serial interface that lets it integrate with most popular automation systems and station routers; it even has WHEATSTONE's exclusive VDIP™ software system.

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