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Radio World®
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'Cash' Stokes Advertiser Concerns

by Randy J. Stine

Manufacturer Says That, When Used Correctly, Device Is Good Business and Sound Technology

SAN JOSE, Calif. An audio time-reduction device that uses a delay to create additional advertising time is meeting with disapproval from the advertising community, as its use by radio stations across the United States becomes more widely known.

On-air clutter?

The American Association for Advertising Agencies has voiced its displeasure with the Cash device, manufactured by Prime Image in San Jose, Calif. The AAAA cites concerns over commercial length and on-air clutter

Prime Image says it has sold approximately 60 of the Cash units in the United States since introducing it in

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ROOTS OF RADIO

Wagon Trail to RF Site

California's Mt. Wilson Serves Radio and TV Stations as Well as Hikers and Astronomers

by Marvin Collins

Known to astronomy buffs as a major source of what we know about the universe, Mt. Wilson in California also is the home of most of the FM and virtually all the VHF and UHF TV transmitters serving Los Angeles.

But those transmitters wouldn't have ended up there if it had not been for a wagon trail that led to the development of Mt. Wilson.

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Sunset warms the towers on Mt. Wilson.

NEWSWATCH

Antitrust Review To Be Simplified?

WASHINGTON Later this year, the Department of Justice may gain sole antitrust oversight authority over radio mergers.

Under a Bush administration plan, the Justice Department and the Federal Trade Commission would review announced mergers for several industries, with Justice overseeing all media deals that warrant antitrust review.

"The cooperative effort between (Justice) and the FTC would provide greater certainty and efficiency than the current process," said a Justice Department spokeswoman. "We are meeting with congressional staff and look forward to resolving any questions they may have so that we may implement the proposed agreement as soon as possible."

Watchdog group The Center for Digital Democracy has asked the FTC and Justice for documents relating to the Bush administration plan; and Commerce Committee Chairman Sen. Fritz Hollings, D-S.C., objected to agency plans to tell the press about the changes before he was informed. Meetings with all involved parties continued at press time.

The radio industry was abruptly introduced to what can be an expensive and lengthy antitrust review process soon after passage of the Telecom Act, when large numbers of radio mergers involved enough money to warrant antitrust scrutiny.

Currently, the Justice Department, the commission and sometimes the FTC review radio mergers. Critics say the process has led to duplication of efforts and lengthy waits for merger approval, sometimes long enough to tank a deal.

LPFM Study May Begin In Spring

WASHINGTON The FCC has enlisted Mitre Corp. to solicit bids for the LPFM study, and the commission hopes to choose the winning engineering firm in April to conduct the tests. The congressionally mandated tests will determine if low-power FM stations must continue to provide third-adjacent channel protection.

Roy Stewart made the announcement at the commission meeting in January, his last as Mass Media bureau chief now that the bureau has been merged into the new Media Bureau. He said that once the study is completed the results will be presented to Congress and released for public comment, so it may be a while before the issue is finally resolved.

In the meantime, the commission said three LPFM's are on the air. KCJM(LP), Alexandria, La., has a license, while KEFC(LP), Turlock, Calif., and KPFZ(LP), Lucerne, Calif., have construction permits.

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NEWS MAKER

New SBE President Means Business

Troy Pennington's "day job" is that of chief engineer at WZZK(FM), WODL(FM) and WRLR(FM), three of seven stations in the Birmingham, Ala., Cox Radio cluster.

Radio World's Ken R. asked Pennington to share his thoughts on the challenges and opportunities facing the Society of Broadcast Engineers.

***RW:** What is the biggest change you have seen in engineering recently?*
Pennington: Because of consolidation there are more and more demands being made on technicians, directors of engineering and chief engineers. More is coming under our umbrellas in terms of responsibilities.

Ten years ago, most of us only had one or two stations to worry about. Now we're doing studio and transmitter work for several stations and often the information systems within the stations. Engineers also have to coordinate their activities with the sales, news, promotion and programming departments.

***RW:** Is this a good climate for engineers?*
Pennington: Yes, but a stressful one, too. It's a great opportunity to show what we have to offer. Our engineers are a good resource to our station managers and can serve as a valued resource in decision-making.

***RW:** What about attracting more young people to engineering?*
Pennington: SBE has a mentoring program to attract the ones who grew up playing Nintendos and Playstations and are now the age where they can consider careers. We have the computers to interest them, but we have the RF environment as well.

We try to keep get young people interested through education, career days and just getting out there and talking with the people.

There are certainly computer opportunities in offices but I can't think of anything more exciting than the radio and TV business now. Some of us have been engineers for 30 years or more and we need good people to take our places. We should start contacting them as early as grammar school and middle school.

***RW:** How do you think engineers fit into the scheme of the modern radio station?*
Pennington: You just have to be computer-literate today. It seems to me that when it comes to anything technical, station people come to us. I get paged on a daily basis because someone's printer is down.

Our computer skills have given us a good opportunity to show management how valuable we are. The way I see it, the station manager is the leader of the platoon and we're squad members that have to support that leader. We're very important to the running of the station.

***RW:** What are your thoughts on IBOC digital radio?*
Pennington: I like it! I'm always open to new technology and I think IBOC will be widely accepted in time. It's good for the audience; the people we serve. There has been a lot of thought and good engineering going into it, although there are still some things to work out. It's the next wave of technology.

***RW:** What do you see as the biggest challenge engineers face?*
Pennington: Keeping our stations financially viable and successful in the face of Internet and satellite stations. We need to keep our own terrestrial stations competitive and in the black.

***RW:** How about satellite radio?*
Pennington: I have mixed feelings. There's only so much frequency pie that we have available.

I'm concerned about terrestrial interference issues with some of the anticipated translators and I would look closely at how that's being handled.

I see where satellite radio through competition could serve as a means for present radio outlets to improve services to the listener. Right now, I stand neutral on the issue and continue to monitor the arguments.

***RW:** How do you see radio interacting with the Internet?*
Pennington: I get letters from people who listen to us on the Internet, so our stations are looking at it as a means to increase revenue and serve the public. Some stations have hired Internet sales directors to go out there and solicit business. It is just another way for stations to reach people.

***RW:** What is your background?*
Pennington: I've been a bench guy, I've cleaned floors in a tech center and now I'm part of management. Over the last 30 years I've done it all including helping to stack tower sections, laying ground radials and now I'm behind a desk.

I think you'll find a majority of the engineers and directors of engineering today have come up this way. I believe I have a lot to offer SBE and we're going to have some fun and get a lot done. I'll to do my best to continue on the path that has been set before me by leaders like Ed Miller and Andy Butler and so many others.

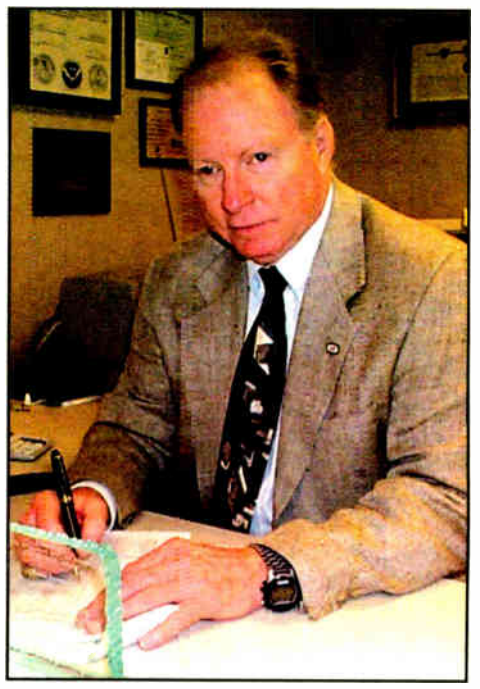
***RW:** Do you still get your hands on some equipment once in a while?*
Pennington: Sure! I was up at 2 a.m. recently working on a transmitter and that's the fun of it.

It makes me feel like a hero when someone has a problem and I can go in and put that person's mind at ease, especially if it's an "off-air" situation. It makes me feel good that I can help.

I see the critical nature of engineering applying to computers as well. If you have a server down, you don't wait for the backup to go down. You take care of it immediately. Young people need to understand that. They have to be devoted to their job; it's a 24/7 thing. They shouldn't complain when the phone rings in the middle of the night.

***RW:** Any other thoughts?*
Pennington: I want to thank those who supported me in my bid for SBE national president. SBE is dear to my heart. I've met a lot of great people and it's been a resource to me as an engineer. I made no promises to any certain groups; the only promise was to work hard for SBE and that's what I'm going to do.

We have a lot of great things like our certification program; and our frequency coordination guys have done a great job, too. It's an exciting time in our industry and a challenging time as well. This is the time for all broadcast engineers to pull together and take pride in this industry and show our group owners that we are there for them and ready to help carry the ball.



Troy Pennington

◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2

KNDD Faces $14,000 Fine

WASHINGTON The FCC fined Entercom's KNDD(FM), Seattle $14,000 for apparently violating its indecency rules.

The FCC followed up on a complaint about comedy bits in the station's morning show that ran in May and June. The bits involved discussions of whether men could pull objects of various weights from their penis. Entercom submitted transcripts and acknowledged the material broadcast contained references to sexual organs, but it said the material was not offensive. The FCC disagreed and said the anatomical features of a penis were discussed in explicit terms and that the material "appears to pander, or is used to titillate or shock."

The FCC also disagreed with Entercom's argument that discussion of male genitalia is common on radio and TV today, both in erectile dysfunction advertising and in the aftermath of the sex scandal involving former President Bill Clinton and Monica Lewinsky.

Entercom had 30 days to respond or pay the fine.

FROM THE EDITOR

Vote Now for Your Favorites

by Paul J. McLane

We want your vote for your favorite gear. The Radio World Readers' Choice Awards will be handed out next month. We extended the deadline to allow more readers to take part. Please take a moment to vote at *www.rwonline.com* by clicking on the Readers' Choice Award Sweepstakes button.

You'll also be signed up auto-magically for this year's new sweepstakes, in which we're giving away a ton of super prizes. A quick visit to our Web site could be lucrative indeed.

★ ★ ★

Reader Clyde Butter writes to share a clipping that appeared in The Illustrated Press in 1951.

Clyde Butter and Friends, New Orleans, 1951

The caption reads: "Students Visit 'Club 990' — Clyde Butter, emcee of 'Club 990,' heard each weekday from 4:30 to 5:30 p.m. over WJMR/WRCM, is shown with a group of Dominican High School students who visited him on the show in the Jung Hotel studio. The young ladies are only a few of the many listeners who are interested in how to win the records from Mallory's and guest tickets to Loews State, which are given away every day for the two most unusual requests to 'Club 990.'"

The photo was taken in New Orleans, where "Club 990" aired on WJMR(AM). Mr. Butter now lives in Odessa, Texas, where he recently sold radio station KRIL and is a freelance writer.

I wonder where those high-schoolers are and whether they remember posing with the dapper Butter.

★ ★ ★

One of my favorite recent articles is Paul Courson's "Chrome and Glass Shine Again," which can still be read on our Web site under the *Special Report* tab.

Courson told the story of AM transmitters rescued by hams and modified for the 160- and 80-meter bands, including the enormous, 2,300-pound Raytheon RA-1000.

Partly in response to our story, Kent Randles wrote the following in SBE Chapter 124's Water Cooled Newsletter.

"On Nov. 20, 2001, my wife, Patti, and I rescued a 1947 Raytheon RA-1000 while we were in northern California for Thanksgiving. Enormous in this case means 4 feet wide, 3 feet deep and 7 feet tall, with two-tone brown paint and art deco chrome strips (and yes, 2,300 pounds).

"After removing all the transformers from the bottom of the cabinet, and every 'hanging' chassis that had any sizeable iron core inductors on it, the cabinet alone still weighed as much as other complete 1 kW AM transmitters.

"I first saw this transmitter in 1968 when I visited 1470 KXOA Sacramento at their original studio/transmitter site. In 1969 it got moved to their new site on the *other* side of the levee, in the flood plain of the American River.

"In 1978 I started working for KXOA(AM-FM) as assistant chief engineer and helped Chief Engineer Hank Schwartz repair it after an irate, about-to-be-fired disc jockey opened the back and broke every tube. We cleaned it up and added plate voltage/current sampling and remote control. It was the backup for a Gates MW-5."

Kent's story jumps ahead to last year, when ABC/Disney bought the station from Infinity and installed a new 5 kW Nautel. Infinity Engineers Mike Flud and Matt Greer, who had removed the PCB caps from it, knew Kent wanted the Raytheon and told ABC/Disney.

Kent continues: "Patti and I disconnected it and took the iron out, and an ABC engineer helped us tip it over onto its side on a piano dolly and roll it over to the transmitter building's trap door. Because the 1470 site is in a flood plain, the building is about 12 feet above ground on steel I-beam stilts. With the hoisting sling that had been used with a chain hoist to lift the Nautel, we used our tow strap and lowered the Raytheon, still on its side, into our trailer.

"All the removed parts went into our GMC Safari van. We covered up the trailer and towed it to Patti's sister's garage."

Their next task was to move the transmitter back to Portland via I-5 over a snowy, 4,200-foot pass in the Siskiyous. This involved putting chains on the back of the four-wheel-drive van.

"The Raytheon languished in the trailer under the new carport at the Sylvan transmitter site for almost six weeks while we tried to figure out how to unload it at the uncovered end of the building and Portland splashed through 34 days of rain. …

"On Dec. 30, Gary Hilliard, Mike Brown and Joel Determan helped Patti and I unload it at the 750 KXL Portland transmitter site. We backed the trailer as far as it would go into the double doors of the room, where the site's first 50 kW rig used to be. We slid the Raytheon out until the top cleared the door and stood it up onto a piece of plywood with enough 'ball transfers' under it to hold 2,500 pounds. One person can move it easily now.

"Rose City Radio's Director of Engineering Larry Wilson had already used this space to modify 1 kW Gates and RCA transmitters for ham use."

As the story of Kent's Raytheon unfolds, you can see pictures and links to other sites on the Internet at *www.sbe124.org/old_xmtr_rescue.*

2002 Radio World READERS' CHOICE Sweepstakes

Remember that you must sign up for our 2002 Readers' Choice Sweepstakes giveaway even if you signed up for our Silver Sweepstakes a year ago. It only takes a moment, at *www.rwonline.com.*

Our prize winner in this issue is Rick Ross of the engineering department at Radio Dubuque in Iowa. He wins a spanking-new Comrex BlueBox codec from the super folks at Broadcasters General Store.

The BlueBox delivers 15 kHz on a POTS line — the audio quality of a Matrix or Vector for the entry-level price of $2,800. In addition to providing full-duplex audio over a phone line, it improves audio over GSM wireless service. A cellular interface is available for sending and receiving through the hands-free port of most mobile phones.

Broadcasters General Store represents 400 manufacturers of audio and video broadcast equipment and has served the industry for more than 20 years.

More Satellite Radios Hit Stores

Manufacturers Begin to Beef Up Satellite Radio Production for Store and Self-Install

by Leslie Stimson

XM Satellite Radio and Sirius Satellite Radio expect the bulk of their radios to be sold this year as aftermarket rather than OEM product.

As a result, receiver manufacturers started producing satellite-ready radios last year and are increasing their offerings this year.

At the recent CES convention, receiver manufacturing partners of XM and Sirius had several new products to show retailers that consumers should see this spring.

Sirius launch

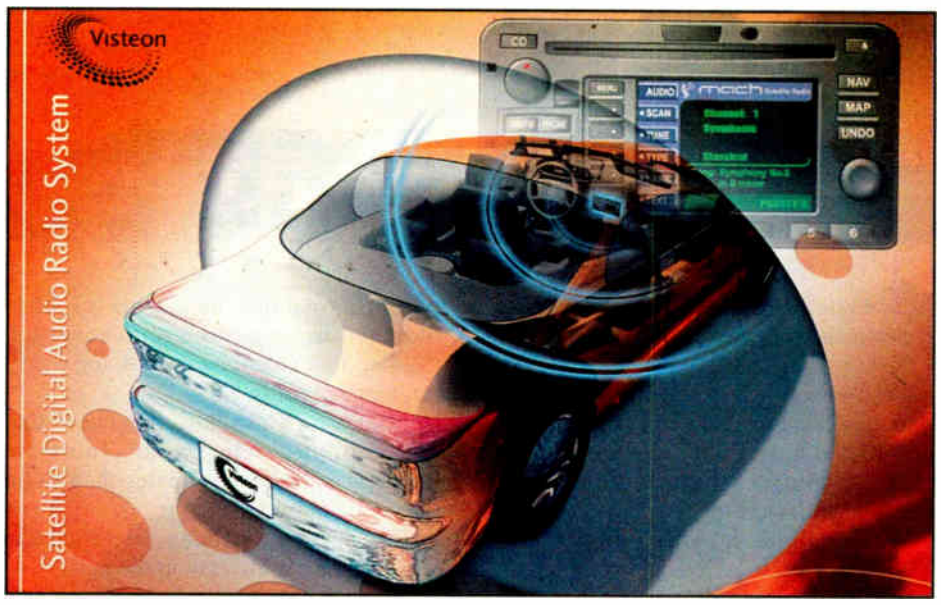
Kenwood U.S.A. Corp. has several Sirius radio, intended to coincide with Sirius' February introduction in Phoenix, Houston, Denver and Jackson, Miss.

At CES, Kenwood introduced six Sirius-ready versions of its Excelon in-dash CD receivers that read CD, CD-R and CD-R/W discs. Three models play MP3 files; the most expensive model, the KDC-X959, is the first Kenwood receiver to support the new Microsoft Windows Media Audio format as well as MP3s.

WMA compresses audio to half the size of MP3 files, stated Kenwood, giving the user about 22 hours of music on one CD.

Peak power in all models is 50 W per channel, and all models are equipped with a removable faceplate, remote control, CD changer control and a new mechanism for fast CD loading and ejection. Kenwood planned to ship most of the Excelon KDC products to retailers in February. List price ranges from $300 to $600. The KDC-X959 is expected to ship in April and list for $700.

Kenwood plans to produce Sirius receivers and FM modulators for customers who don't want to change their car radios. Head units with an auxiliary input may be connected to several Sirius receivers, bypassing FM analog modulation.



Visteon is developing OEM radios for both Sirius and XM.

At-home listening

Kenwood said its first home-based satellite radio, the Kenwood Sovereign Entré Entertainment Hub, would be available soon after the Sirius launch.

Sirius' 60 commercial-free music channels will be available via the Internet for free to owners of the radio through an agreement with Kenwood, Sirius and entertainment services company OpenGlobe. The unit stores and streams compressed music files, Internet radio and Sirius' music channels and can distribute them to other rooms in the house.

The product is an audio component with a 20-gigabyte, high-capacity music storage system with built-in CD recorder. The unit also controls components in a Kenwood home-entertainment system. List price is $1,800.

Another receiver partner, Recoton Mobile Electronics, planned to ship several Jensen Sirius-ready products to retailers in time for the initial rollout.

The Jensen SSR2000 Sirius Satellite Radio System consists of the DLP2000 receiver, the DCU2000 display and controller and a wiring harness; it lists for $249. The receiver interfaces with any head unit via auxiliary jacks or FM modulator, with display and control functions managed by either the DCU2000 Sirius Display & Controller or Jensen's SR4510 head unit.

The hand-held display and controller presents Sirius' information in a four-line LCD scrolling text display with up to 20 available presets. It has a three-foot cord and a holding cradle.

At CES, Jensen displayed a plug-and-play radio that should be available in stores in September. The SRP2002 Sirius Satellite Radio Plug-N-Play System will feature the DCU2000 controller and DLP2000 receiver. The SRP2002 will interface with any head unit via auxiliary connections, as well as through a cassette adapter included in the package.

Jensen, Alpine

The package also features a MA/COM magnetic mount external satellite antenna and a cigarette lighter plug for power supply. Sirius quoted a package price of $259.

In the third quarter Jensen plans to release a wireless version of the hand-held controller, with a Sirius portable boom box to follow. The SRB2003 boom box will incorporate the Sirius chipset and antenna, along with an AM/FM tuner and a CD section that will play MP3 files, CD-Rs and CDs.

XM's receiver partners plan to enlarge their product lines.

Alpine plans four XM-ready "Bass Engine Plus" CD head units. The radios offer controlled bass customization and prices that range from $300 for the CDA-7892 receiver/changer controller to $550 for the CDA-7995 CD/MP3 tuner/changer controller. New models are to be shipped by April.

Prices start at $350 for model CDA-7873 that features the hybrid amplifier and dual-color display to the CVA-1003 that features incorporates a flip-up 6.5-

See RADIOS, page 7 ▶

Jensen's SSR2000 Sirius Satellite Radio System has a receiver, hand-held display/controller and wiring harness and lists for $249.

In 2001, Kenwood began offering three KDC models, which range from $450 to $550 list price. The KDC-X717, KDC-9017 and KDC-X817 all play CDs and include removable faceplates. The 9017 features a CD changer, AM/FM/Sirius tuner and a remote control. The X817 adds an AM/FM/Sirius tuner with RDS.

The Kenwood Z727 plays CDs, recordable CDs and five pre-set EQ curves for sound control at a list price of $550. The KDC-X917 features sound control, 4.5V preouts, a revolving or detachable faceplate and a motion display for $600. The Z828 CD/MP3

Cash

▶ Continued from page 1

1999. Cash offers radio stations a chance to maximize profits by manufacturing additional time in their broadcast day. According to Prime Image promotional literature, the machine works using "intelligent microediting." Data compression is not used in the process; rather, the device looks for material that is less detectable to the human ear and removes it.

Cash uses an audio delay memory to create up to six minutes of additional commercial insertion time per hour during live programming.

Audio chain

The unit is inserted into the station's audio chain ahead of the processors. When started, it begins storing program material in the audio delay memory. Output will not begin until after the programming preset delay time has elapsed. Additional commercial time is created during this delay and the additional spot material is inserted into the transmitted signal.

The Cash unit can be programmed to perform various insertion times. For instance, stations could program a 30-second insertion over a 10-minute segment or 60 seconds over a 40-minute segment.

Although some radio stations like Cash for its ability to increase commercial inventory, many are reluctant to say they use it for a variety of reasons, including the perception that Cash might affect audio quality.

The Silicon Valley company made headlines last fall when a Pittsburgh television station used its delay gadget, called the Time Machine, to insert an additional 30-second commercial during a Pittsburgh Steelers football game.

A media critic noticed the time delay between the TV broadcast and radio broadcast and reported it. Some advertisers have since criticized the television industry for its use of the Time Machine.

Prime Image officials say more than 120 Time Machine units are used at U.S. television stations.

Ad executives express two immediate concerns about the Cash device for radio. They say Cash devalues commercial material by "shoehorning in" additional units. The other concern is commercial length.

"We expect our clients to receive what they pay for. The job of the agency is to look out for the best interest of the client and to make sure they get the full amount of time delivered," said O. Burtch Drake, president of the AAAA.

Drake said the last thing radio needs is more clutter by creating additional commercial units.

"You can shoehorn more commercials in, but it hurts both the station and the advertiser. That's why we are taking a very strong stand against this kind of technology when used to compress material in any way."

Bill Hendershot, president of Prime Image, said Cash cuts tiny indistinguishable audio segments resulting in no pitch change or other anomalies.

"Mathematically, the way this thing works, it does not change the pitch. Cash throws away small audio packets of 5 or 6 milliseconds over the course of an hour to gain the extra time needed for a 30- or a 60-second commercial. You cannot detect that anything has happened," Hendershot said.

The unit has a buffer in which it temporarily stores the live audio signal. Once the programmed delay time has passed and after the added material is inserted, the unit begins to turn out audio.

Delay slowly reduced

Over the course of the program's length, the delay slowly is reduced until, at the end of the program, there is no longer a delay and the program finishes on time.

Prime Image recommends a reduction rate of no more than an 8 to 10 percent per hour. That translates into a gain of five to six minutes of commercial insertion time, Hendershot said.

Cash has a list price of $12,000.

"The average radio station could pay for the product in three to four months. And that's not by overdoing it either. Using it three or four times a day is probably realistic.

"I don't consider that being clutter. We realize if our customers overuse it they could start driving advertisers away."

Hendershot said a hold function in Cash can be used when commercials are aired, either manually or automatically, therefore not shortening commercial material. He said, "It is up to the individual stations to use the function."

Major- and medium-market radio stations with various formats — from news/talk to CHR — are using Cash, Hendershot said, but he declined to identify any users.

Hendershot said many of the Cash units are being used along with Prophet Systems Innovations studio control systems.

Several industry observers, who wished to remain anonymous, said demand for Cash likely has decreased as the result of lighter commercial loads and sagging advertising dollars in the recession. They said the introduction of Cash during the economic feast of several years ago came at a time of heavy demand upon commercial inventory, forcing radio stations to look for ways to maximize profits.

"Sales for Cash have remained steady since Sept. 11 last year. Television demand has slowed greater than radio," Hendershot said.

The fact that stations have used Cash has caused controversy in the past.

Rush Limbaugh voiced displeasure with Cash two years ago when several radio stations used the technology to squeeze additional ad time out of his four-hour show. In particular, Limbaugh pointed out the former WWDB(FM) in Philadelphia as the chief offender.

"I think (Cash) is the potential doom for the radio industry," Limbaugh said at the time. Limbaugh claimed the device shortened the dramatic pauses he used for effect. Hendershot said Cash did not interfere with Limbaugh's "artistic pauses" as the radio host had proclaimed.

The Philadelphia station, owned by Beasely Broadcast Group, has since changed call letters to WPTP and adopted an '80s oldies format. It no longer carries Limbaugh's show.

Chris Sarris, former chief engineer at WWDB, said the station experimented with Cash to gain five minutes of commercial time per hour during Limbaugh's show, but settled on a maximum of four.

Complaints

"The difference was definitely noticeable at that rate. However, we used Cash only after we had learned the station was losing Rush's show. Management was trying to maximize revenue in a short time. That's why we used it," Sarris said. He said the station regularly received several complaint calls a day.

Sarris, chief engineer at WBEB(FM) in Philadelphia, said Cash was "undetectable" when set for a gain of two minutes or less per hour.

"I think it's a good tool for use in a smaller market where a couple of extra commercials per hour would be the difference if a station could afford a national show or not," Sarris said.

Don Melnyk, chief at WPTP, said the station no longer uses Cash.

Another station involved in the Limbaugh controversy was WABC(AM) in New York, owned by ABC Radio Inc., which suspended the use of its unit temporarily. Program Director Phil Boyce said the station still has the box but seldom uses it.

We only use it at times when we are in a sold-out situation. That has not happened very often with the economy where it is now.

— Phil Boyce

"We only use it at times when we are in a sold-out situation. That has not happened very often with the economy where it is now," Boyce said. "We never use it to generate any more than an extra minute per hour anyway."

Boyce said the Rush complaints arose when the Philadelphia radio station tried to "bastardize" the Cash machine and squeeze more time out of the show than was recommended, which compromised the on-air sound.

See CASH, page 7 ▶

Radios

▶ Continued from page 5

inch LCD monitor. This model lists for $1,100. To receive XM's signal, these models need an Alpine XM tuner module that lists for $280.

Pioneer has several XM-ready head units, ranging in price from $225 for the KEH-P601 and KEH-P6010, both cassette head units, to the $1,280 DEX-P9, a single-CD tuner.

The GEX-P900XM Add-on Tuner lists for $199. This will work with any Pioneer head unit with a P-bus connection.

The GEX-FM903XM Universal FM Modulated Tuner works with any FM car radio and lists for $249.

A Pioneer XM head unit/tuner package includes a single-CD player for $399.

A consumder will need an additional antenna on his or her auto to receive the satellite signal. Several roof-mount and glass-mount XM auto antennas are available for $80 to $120.

Sony

Sony has produced several "plug-and-play" units that can be removed from a docking sleeve in the car and plugged into a home or office stereo system.

The Sony DRN-XM01C lets drivers receive XM service on any car radio with a cassette slot. The package, which includes an antenna, lists for about $300. With an accessory kit, drivers can use the DRN-XM01C car in the house. The kit includes a home cradle, remote, antenna, audio cord and AC power adapter. The kit lists for about $150.

The home unit package, DRN-XM01H, lists for about $300.

Sony's line of Xplod UniLink in-dash car stereo receivers are XM-ready and will be forward-compatible with the Sony Mobile XM Tuner, set for release this spring.

BlitzSafe adapter cables on display at CES allow consumers to plug into the CD jack of the head unit and have the audio bypass the analog FM antenna to receive XM service.

Alpine's XM radio CDA-7995 CD/MP3 tuner/changer controller ships in April.

Cash

▶ Continued from page 6

"The technology can be a big benefit to a radio station if used within reason. That means not being so greedy that you overuse the device," Boyce said.

Six major broadcast groups contacted for this story said they do not use Cash at any of their radio stations.

They include Hispanic Broadcasting Corp., Emmis Communications, Citadel Communications, Greater Media, Infinity Broadcasting and Cumulus Broadcasting.

A spokesman for Clear Channel Communications, could not confirm if any of that group's stations use Cash and declined further comment.

David Stewart, director of engineering for Hispanic Broadcasting Corp., said, "We looked at Cash when it first became available. It was tempting to some managers, but we passed on it. We have a firm policy within the group that limits the number of spots stations are allowed to play per hour."

Hispanic Broadcasting programmers and consultants were particularly concerned about driving listeners away by "jamming in too many ads" with additional commercial time, Stewart said.

Emmis Communications spokeswoman Kate Healy said the broadcaster feels there are more effective tools than Cash to increase revenue.

"We believe getting great ratings and selling our inventory at an effective price is better than digitally wedging another unit into an hour," Healy said.

New Owners Revamp Dataworld

by Naina N. Chernoff

BETHESDA, Md. In this information-rich age, when just about anyone can tap into an FCC database or other online resource, what role will traditional vendors of information play in the broadcast industry?

That's the practical question facing the new owners of Dataworld. Since they purchased the provider of data and map services last fall, Dave and Patty Doherty have tried to give its product line a facelift.

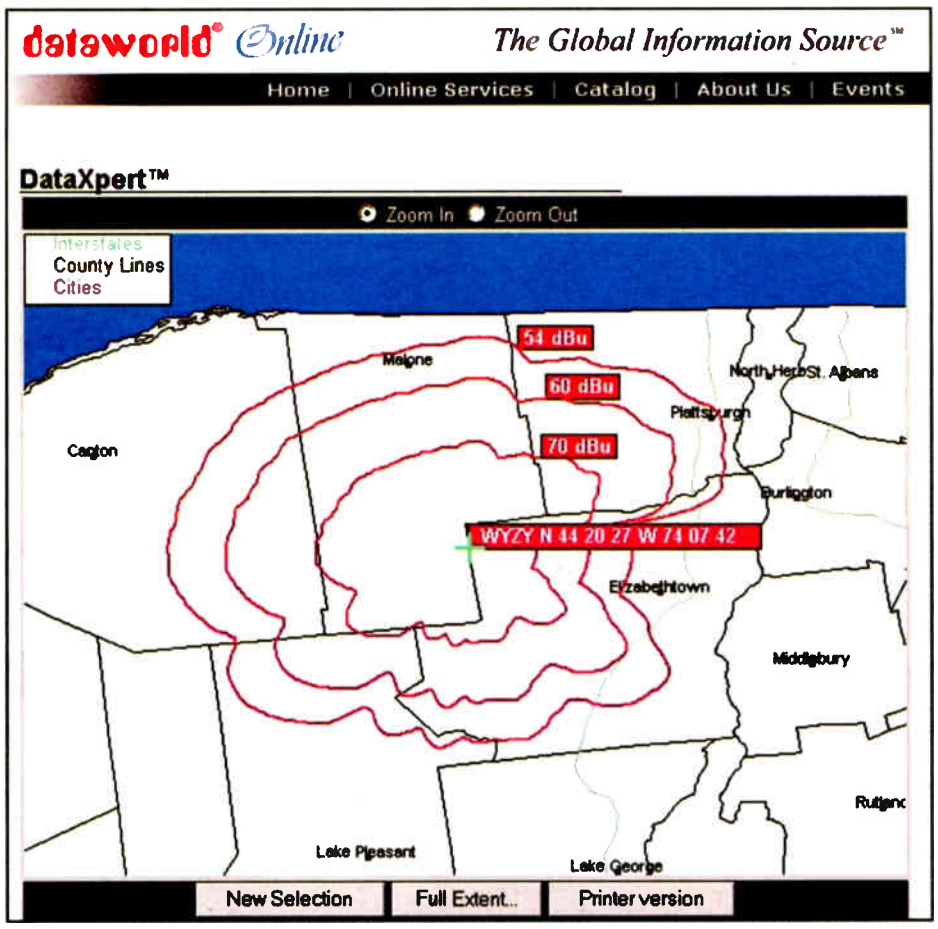
The Neffs

The Dohertys bought Dataworld from long-time owners Jack and Mabel Neff in October for an undisclosed sum.

Dave Doherty says he saw the potential to develop new products for broadcasters. He is familiar with the industry, having worked for Sony as a broadcast sales engineer, then operating and selling three radio stations. The Dohertys also own a Web applications business.

The structure of the company has remained unchanged, according to Doherty. It has the same staff of nine employees. Jack Neff, now retired, serves as a part-time consultant.

When they took over, the Dohertys moved their offices to those of Dataworld in Bethesda, Md., not far from Washington, D.C. They moved their other company, Skywaves Inc., from Allendale, N.J., as well.



Dataworld Online Contour Map for WYZY(FM), Saranac Lake, N.Y.

Skywaves specializes in interactive Web applications, Web site design, e-commerce applications and hosting services.

One product change is to a subscription-based service, DataXpert.

Previously available as a CD-ROM mailed to subscribers each month, DataXpert is online, allowing users to create maps showing coverage areas of radio and television stations as well as Instructional Television Fixed Service and Multichannel Multipoint Distribution Service facilities.

Doherty said the yearly $2,500 subscription service gives users a secondary source of information for engineering studies in addition to the FCC's Consolidated Database System.

"(It) goes beyond CDBS because it provides contact information and coverage maps, and because it is online, real time, every day. You don't need to download files from the FCC and convert them to get something useful."

Doherty said the company has maintained this database for 30 years and updates the system using FCC public notices as well as surveys of radio stations four times a year.

The company was formed in 1971 by A.D. Ring and Associates, then based in Washington and now located in Sarasota, Fla.

In 1983, the Neffs purchased it and moved it to Bethesda, Md.

Jack Neff had a long history in the broadcast engineering business. In 1959, he formed Broadcast Electronics and was known for introducing Spotmaster tape cartridge equipment. After expanding the company worldwide, Neff sold BE to Filmways/Orion Pictures in 1975. It has since been resold.

When he and his wife purchased Dataworld, Neff said, Dataworld was not widely known by the broadcast market. But after introducing the company's products at the NAB show, he said, the company made a name for itself.

"With the advent of personal computers and making our studies available to all the broadcast engineering consulting firms, we found a ready market," he said. "We saw the need for mapping station coverage areas and these maps made Dataworld."

Mapmaker, make me a map

Doherty said Dataworld continues to make maps and expand its database products. "No one else can provide the breadth and depth of offerings that we bring to the market."

For users looking to compare the records of individual stations between DataXpert and CDBS, Dataworld has launched an audit service that points out areas of discrepancy between a station's Dataworld and CDBS records. Users then can follow up to clarify differences.

Dataworld plans to expand the service to generate and e-mail a report for a collection of call signs or facility IDs so that a broadcaster, consultant or attorney can access the same type of comparison on a large-scale basis.

The supplier has developed another subscription-based offering, the Flag service, which alerts users via the Internet to proposed station changes in a specific market.

"Nothing will take you by surprise," Doherty said. The product is targeted at attorneys and group owners.

The company still offers to conduct local marketing agreement/duopoly studies and create custom maps and predicted contour maps.

One good map can replace thousands of words of explanation.

— Dave Doherty

"One good map can replace thousands of words of explanation." Doherty said.

Maps can be created to show coverage, distribution of age groups or other demographics within a coverage area, coverage expected from a power increase or a transmitter move and other data.

Yet to come is a product called FM Explorer, what Doherty calls "a highly interactive way of digging your way through CDBS."

Users can search the federal database for stations using call letters, city of license or owner. Dataworld plans to introduce similar sites for AM radio and television stations, he said.

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DIGITAL NEWS

XM Radio's Loss Widens

WASHINGTON XM Satellite Radio said its net loss widened to $149.8 million in the fourth quarter of 2001, from $19.8 million for the same period the year before with no reported revenues for 2000. It posted a full-year net loss of $284.4 million, compared with $51.9 million in 2000.

Revenues were $532,000 for 2001. Operating costs for 2001 were about $67.6 million with $40 million occurring in Q4 including one-time costs for terrestrial repeater installation. Costs increased in the quarter for content and programming, customer service and billing, network, sales and marketing.

XM President/CEO Hugh Panero said he expects sales would begin slowly this quarter, and gradually spike by the holiday selling season later in 2002.

XM projects revenues of between $20 million to $24 million this year. It expects to have 70,000 customers by the end of March and 350,000 by the end of the year. Its receiver partners hope to have a combined capacity to produce 50,000 units a month by April.

Only 5 percent of XM's customers are choosing monthly billing; most elect to pay quarterly in advance, Panero said. If this trend continues, XM hopes to enhance its cash position and write off bad debt faster than expected.

Panero said XM is trying to reduce the number of components in its chipset platform to integrate them into a smaller space. The smaller size would also make it easier to integrate XM radios into cars and to develop portable radios.

XM expects aftermarket radios to make up the bulk of sales for the first three quarters of this year, with OEM units becoming a greater part of the mix in Q4.

Approximately 50 percent of the XM radios were sold at Circuit City and Best Buy in Q4. As more retail locations are added, that spread should disperse although those two retailers will likely continue to be dominant, said Panero.

XM expects aftermarket radios to make up the bulk of sales for the first three quarters of this year.

Photo permission of WorldSpace

WorldSpace is donating 1,000 Sanyo receivers to American armed forces personnel.

WorldSpace Woes?

WASHINGTON Satellite broadcaster WorldSpace is facing revenue woes and may delay the launch of its third satellite, AmeriStar, beyond 2002, according to Satellite News/PBI Media.

WorldSpace offers satellite digital radio service to Africa, Asia and parts of the Middle East. It differs from U.S.-based XM Satellite Radio and Sirius Satellite Radio in that it focuses on home and portable satellite digital radio receivers, not mobile as XM and Sirius are.

Satellite News reports WorldSpace is seeking new financial backing and that receiver uptake is slow, pegged at about 150,000 units.

WorldSpace Donates 1,000 Radios

WASHINGTON WorldSpace Corp. donated 1,000 compact, portable satellite receivers to bring news and entertainment to American men and women serving with Operation Enduring Freedom. Sanyo Electric Co. made the receivers.

The units are in Kuwait and will be distributed to U.S. forces serving from Saudi Arabia to Afghanistan.

Military personnel serving outside the United States typically have few choices in radio, in many instances only one or two local stations broadcasting in languages other than English.

For thousands of American troops beyond the reach of AM or FM transmitters, the only alternative, until now, has been shortwave, which often has poor sound quality, according to WorldSpace.

WorldSpace offers several choices of information and entertainment, including news broadcasts from CNN-International and the BBC, plus 10 music channels.

WorldSpace planned to carry the live broadcast of the Super Bowl using encryption capabilities to restrict the broadcast to receivers operated by U.S. service personnel.

Comments Sought On Digital Standard

NEW YORK The Audio Engineering Society Standards Committee wants comments on a draft standard specifying the use of Asynchronous Transfer Mode to provide digital audio transmission across digital networks with high performance with regard to bandwidth, latency and other relevant factors.

ATM offers the capacity to carry uncompressed audio across local- and wide-area networks with a small and constant latency and with a guaranteed quality of service.

It uses point-to-point topology to avoid the time delays inherent in other forms of packet routing.

Circuit setup, routing and switching are managed in a similar way to ISDN, but calls are not restricted in bandwidth.

To access the proposed standard, visit *www.aes.org/standards/* and click on the link "Drafts out for public comment." The AES will review and consider comments submitted by April 18.

— by Leslie Stimson

NEWS WATCH

Berman Presses For Probe of Clear Channel

WASHINGTON Rep. Howard Berman, D-Calif., ranking member of a House subcommittee, wants the Justice Department and the FCC to investigate Clear Channel for possible antitrust violations in its concert promotions division, allegedly denying air play to artists who don't use CC concert venues. Berman, who serves on the Subcommittee on Courts, the Internet and Intellectual Property, also has asked the agencies to investigate allegations that Clear Channel is "warehousing" radio stations by using third-party shell corporations to make purchases in markets where Clear Channel would exceed local ownership limits.

Clear Channel said it competes within the law.

Sight and Sound

by
Ron Bersani
Talking Information Center

Marshfield, MA: As a radio reading service for people who are blind or visually impaired, The Talking Information Center Network has some very specific equipment needs. First of all, as a non-profit service dependent on government and foundation grants, corporate and private contributions and fund raising events we don't have a lot of money to spend on equipment. We have to be absolutely sure that whatever equipment we do purchase is reliable, reasonably priced and durable. When you have to justify every dollar you spend to people who donate those dollars in good faith, it helps to be absolutely confident you've made a good choice!

A second factor that always weighs heavily on any decision we make regarding studio design and equipment purchase is the volunteer factor. We have volunteers, lots of them!

Over 500 people volunteer their services as readers at our six affiliates scattered throughout Massachusetts. Over twenty thousand people with disabilities depend on us to bring them everything from the daily newspaper to the supermarket ads every day throughout New England.

Very few of these volunteers have any professional experience when they come to us. Because our staff is so small both at the network center and in all of the affiliates, our studio equipment HAS to be user friendly. That's where Radio Systems comes in.

The RS-12 series and the RS-12a Millenium Audio Consoles are the only consoles we buy. They fit every criterion important to us. They're affordable without sacrificing quality and durability. They are full-featured. They are easy to use. As a matter of fact even the least technical of our volunteers can learn how to operate the console in one easy training session. On top of that, the straightforward, tactile nature of the console makes it a favorite with our blind operators.

The consoles aren't the only great things at Radio Systems. All of our distribution amplifiers are Radio Systems models. We have several of every model they make. In some of our applications, the DA-8 is perfect for a mono application. The DA-16 gives us flexibility in stereo applications and the DA 2X4 and DA 4X4's have the ultimate flexibility. The prices are much better than you'll find for comparably featured models from other manufacturers.

Another great product from Radio Systems is their telephone hybrid. We just took advantage of a great sale to replace all of our older hybrids. We had some 1X6 hybrids that seemed like a great idea at the time. The problem was no one could figure out how to use them. They were cumbersome, and on top of that, conferenced callers could hear each other and the host without adding another hybrid. The Radio Systems DI-2000 completely solved our problems and made it so easy to answer calls, place the caller in cue and then to air that all of our operators can make it work smoothly.

Radio Systems clock and timing systems can fit any need. Each of our affiliate locations needs to be able to join and leave network feed at various times during the day. With the use of Radio Systems clocks and master drivers we can be sure everyone is on the same page at the same time.

Perhaps the best part of dealing with Radio Systems is the close personal connections I've been able to establish over the years. It's nice to call somewhere where people remember your name, are friendly AND knowledgeable whether it's Dan Braverman who happens to be the owner, Jo-Ann Dunn in sales or any member of their technical support team. Radio Systems has definitely proven to me that they're a company that cares.

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Antenna Tests and OEM Practices

Consultants Also Comment on Mobile Field-Strength Plots as a Measure of Performance

by Richard J. Fry

How can you get the most out of your FM antenna system? To provide some insight into this subject, three prominent broadcast consulting firms were asked to respond to 15 topics about FM antenna performance. Their earlier responses can be seen in previous issues of Radio World and online at *www.rwonline.com* under the tab "Better FM Coverage."

The participants are Ben Dawson of Hatfield & Dawson; Bob Culver of Lohnes & Culver; and Don Markley of D.L. Markley & Associates.

Note that any consultant would need specific site and application information to provide an accurate recommendation for a given situation.

Topic: Comment on the validity of using one- or two-bay tests to extrapolate the final azimuth patterns of a complete array containing more bays.

Dawson: Such measurements are precise only when each element has the same mounting conditions and tower geometry within a wavelength or so. On small cross-section towers, the extrapolation of the data is, in the world of decibels, as accurate as needed for most situations.

Culver: If you have looked at the horizontal (azimuth) pattern variation vs. the mounting position along a support structure, and there is no significant variation of maxima or null position or depth, then the composite vertical array horizontal pattern will be the same.

A good way of estimating the final pattern would be to make several azimuth pattern measurements with the elements slid along the mounting support in several small steps (1/3 spacing, for example). The final pattern for a large array will be the average of all these horizontal patterns.

Markley: We have no problem using one or two bays to determine an antenna pattern. One bay is satisfactory if the pattern of a single bay is symmetrical about its axis. Many antennas are not quite symmetrical. For this purpose two bays can be used with one reversed and the phase controlled either by bay spacing or inter-bay circuitry.

Topic: Comment on antenna OEM standard practice, and results to the user/listener, of measuring only H and V fields on a CP antenna, omitting all other polarization planes.

Dawson: Ideally the phase relationship should be determined, but it's a price market.

Culver: The H and V field values are at their maxima, rather they deliver the maximum energy for a like polarized receiver antenna. There is very little possibility of de-polarization of the signal over the distance and propagation normal to FM radio. Of course the vertical polarized component is reversed in polarity (180 degree phase shift) upon reflection from an object.

The circular polarization field is generated by the 90 degree offset between the H and V polarized fields, which generate a rotating field orientation along the direction of propagation. It is "circular" only if the relative fields are equal. There is never a circular field, just a constantly changing linear field with position.

Measuring these two fields independently, H and V, is fine. Measuring the relation between the two with a constantly changing (rotating) linear receiving antenna vs. azimuth pattern angle will yield some additional information.

They have done this for C-pol TV antennas and call it the axial ratio, this is the ratio between the H and V polarization as the azimuth pattern is swept. By the nature of the display of such measurements, a sinusoidal wavy line around the azimuth, it is illustrating the independent H and V values, only reaching a maximum when the rotating receiving antenna is aligned with the transmitted field polarization.

I have done similar measurements but by quickly switching between the cross-polarized receiving antennas.

Markley: It might be desirable to take more than just horizontal and vertical fields. However, there would seem to be less and less to be gained as the number of such measurements is increased.

In any case, the polarization is going to become more and more random as the signal is filtered through trees and buildings.

Topic: Comment on the value of ground- and air-based mobile field-strength plots as a measure of the pattern performance of an installed antenna.

Dawson: Measurement data is really only valid as relative data, and it's not always easy to wash out the ground reflection problems from aerial measurements. Both types can be useful for problem solving.

Culver: GI-GO: Garbage in, garbage out.

See CONSULTANTS, page 14 ▶

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WIRED FOR SOUND

Are You a Data Commander?

by Steve Lampen

Today's headline recalls Commander Data, the android on the TV series "Star Trek: The Next Generation."

I recently toured Paramount Studios and saw workers building the sets for the coming Star Trek movie "Nemesis." I also had a chance to see some of the sets for the "Enterprise" TV series.

Why was lowly Lampen invited? Because almost every scene on the ship has video monitors in the background. In the past, where they could have maybe one or two active monitors and the rest were back-lit transparencies, now viewers want to see things moving on all the screens.

Some sets have more than 30 live screens. This means there's more than a few feet of cable running everything. They wanted some opinions from this cable guy on the best way to do all this. And this got me to thinking about the world *you* live in.

Data details

I've discussed Category 5 data cables, especially when used to run audio or other non-data signals. I've only talked in passing about using them as data cables, which is what they're designed to do. After all, this column is *Wired for Sound*, not *Wired for Data*.

But the difference between those two titles is getting pretty fuzzy. A lot of sound is running as data. Some is running as AES digital audio, which is more "digital" that it is "audio." Other audio systems are using data formats, such as Ethernet, a trademark of Xerox Corp., to run multichannel audio, such as Peak Audio's Cobranet. Or they're running digital on fiber optic cable, such as Klotz's new Vadis system.

I would bet it's pretty hard to walk into any broadcast facility, including many small radio stations, without seeing a bunch of computer monitors piled on top of that old audio console. Hard-drive, server-based systems, especially those replacing music and spots, are getting cheaper and cheaper. Of course, these are computers that just happen to run audio.

So more than a few of your installations look surprisingly like those Star Trek sets, with a pile of computers, monitors, hard drivers, servers, keyboards and lots of other control devices. The difference, of course, is that the Star Trek stuff is a set, designed to fool you into believing it's actually working. Yours, on the other hand, had *better* work. Your station depends on it.

So it's about time we talked in detail about data. If you are the data commander for your station, you probably have installed Cat-5 or 5e, or maybe even the new Category 6. In this and future columns, we'll look at these and the data applications that run on them.

Of course, there was life before Category 5. There was a 4 and a 3. Even a 2, 1 and a 0.

Category 3 is still around, and for good reason. Last July, an FCC law went into effect. All telephone wiring, even into homes, must now be a minimum of Category 3. The reason is obvious: what's running down these cables often is a whole lot more than telephone calls.

Basic Internet access, 56K, ISDN, DSL, XDSL, even T1 now are common on these cables. These can run into the megahertz in bandwidth, a lot more than the 3500 Hz of a phone call. So the emission of signals off of old phone cables can be substantial.

Mr. Data!
Where did all these Cats come from?

Category 3 was the first attempt to build a data cable out of a telephone cable. Once Cat-3 was in use, earlier cable designs were specified as Category 2, 1 or 0, also called POTS ("plain old telephone service") lines.

Don't go looking for Cat-2 or lower standards. Most are no longer even recognized, at least as "data" carriers. Category 3 has a bandwidth of 16 MHz.

Then came Cat-4 and, soon after, Cat-5. Category 4 has a bandwidth of 20 MHz. Cat-5 is 100 MHz.

So it should be no surprise that TIA/EIA, which sets the standards for data cables, has eliminated Category 4. And the price differential between Cat-3 and Cat-5 is getting slim enough that many installs are now using Cat-5 for running not only computers but phone lines as well.

Crazy? Like a fox! Putting in an all-Cat 5 install means it doesn't matter which line is the phone and which the computer.

Want to change your office to a different view? If it's all Category 5, no problem. If you put in Category 3 for the phone, that's pretty much all it will ever be.

Putting in all Cat-5 means that you can upgrade your external data delivery with little or no problems. Unless you want to put in something better, like Cat-5e.

Here's a little riddle that only data "experts" would understand: When is Enhanced Category 5 not enhanced?

A little recent history will explain. Back in the distant past, when Cat-5 was first ratified, some manufacturers thought they could do better. They started to bring out cables that were tested to way more than 100 MHz, some to 350 MHz.

Other manufacturers decided they were going to get on the bandwagon. They also brought out 350 MHz cables, or even 400 MHz — at least, they said their cables worked to these high frequencies. The serious ones actually gave data on attenuation, crosstalk and other parameters out to these frequencies. These cables commonly were called Enhanced Category 5 cables.

Cat-5e

When the TIA/EIA agreed on the standard for an enhanced cable, it was ratified as Category 5e. That means the Enhanced cables, and you will note I use a capital E, may or may not be Category 5e, because they predated the specification. The earlier Enhanced cables simply meant "better than Category 5."

So if you want Category 5e, you'd better ask for Category 5e.

What exactly is Category 5e, and how is it different from Cat-5 and the coming Cat-6? We'll get to that next time, Data Commanders!

Steve Lampen's latest book, "The Audio-Video Cable Installers Pocket Guide," is published by McGraw-Hill. Reach him via e-mail to shlampen@aol.com.

Consultants

▶ Continued from page 12

Now to explain this. You can measure the full-scale antenna to perhaps +/- 0.5 dB on a good range. For scale measurements the accuracy may be +/- 0.8 dB or so. Others may argue that the results are much better or worse, but how much, another 0.2 dB? My reason for saying this is the following.

You can measure the *differential* field from two antennas in the field with ground-based measurements to perhaps +/- 2 dB. That assumes you return to precisely the same measurement path under similar environmental conditions, and work to minimize all controllable variations and the only error is in making the measurement run and calculating the average field.

We place no value on ground-based measurements to determine pattern performance.
— Don Markley

By differential I mean that two transmitting systems, nearly co-located can be measured to find the difference between them. You can make absolute measurements of one such source to less precision, the reason being that you may not be aware of time, environmental or other variations that would be disclosed in the differential measurements.

You can extrapolate these measurements back to the antenna performance by working the field-strength estimation process in reverse. Why do they call them F(50,50) curves? Because they are statistical averages and they *cannot* tell you what the exact field may be at any particular time or location.

If you can use other estimation processes, you can get a different answer. Better? Perhaps; but what error will be built in? At least 5 dB, most likely 8 to 10 dB, especially over moderately long paths. (If you are close you have the vertical pattern to deal with.)

The same thing applies to airborne measurements but with some added problems. First, how do you know exactly where you are? OK, GPS is accurate to a few meters but how fast does it update?

For that matter how fast does your meter and computer record the values and how far have you moved between the GPS record and the field record? We ran into this problem in doing some digital audio field tests and eventually came up with a system that made and recorded the field measurements in a few milliseconds so the measuring vehicle moved only a few centimeters at highway speed.

We made sequential but virtually simultaneous H and V pol measurements on the fly (so to speak). What are you actually measuring, what does your measurement antenna see, ground reflections?

OK, you fly at an altitude equal to the antenna (500 feet minimum rural altitude, and worse in urban and controlled air space) and a distance calculated to keep the antenna null(s) at the reflection angle.

There is a way around all this so that you might be able to just fly anywhere around the antenna and automatically make measurements and *reject* ground reflections and know precisely where you are in three-dimensional space so as to pattern the antenna on its mounting system. But it requires using a special test signal and active components on both the tower and in the aircraft. They do something similar in audio. No one has done it at RF yet (haven't checked the DOD or NSA projects).

Measurements at ground level, 6 to 8 feet not 30 feet, can be done very fast and takes into account all of the local propagation effects that are part of the reception environment. This was done for some of the digital audio field tests.

Markley: We place no value at all on ground-based measurements to determine pattern performance. The effects of the terrain on the signal strengths are so significant as to eliminate any value of the measurements.

Carefully performed air measurements can provide good information regarding the pattern. To show the pattern itself, these measurements need to be done close to the antenna. We prefer a distance of two or three miles and to do the measurements with a helicopter.

Measurements at a greater distance are more affected by terrain and serve more to show the areas serviced than to actually determine the antenna pattern.

Richard Fry is a retired FM applications engineer with almost 35 years of service with major U.S. broadcast transmitter and antenna manufacturers. Reach him via e-mail to rfry@adams.net.

"It's rock solid."

Ron Crider of Radio Colorado Network has some pretty cool things to say about BSI's digital automation...

August 21, 2001

Broadcast Software International
1925 Bailey Hill Road, Suite A
Eugene, Oregon

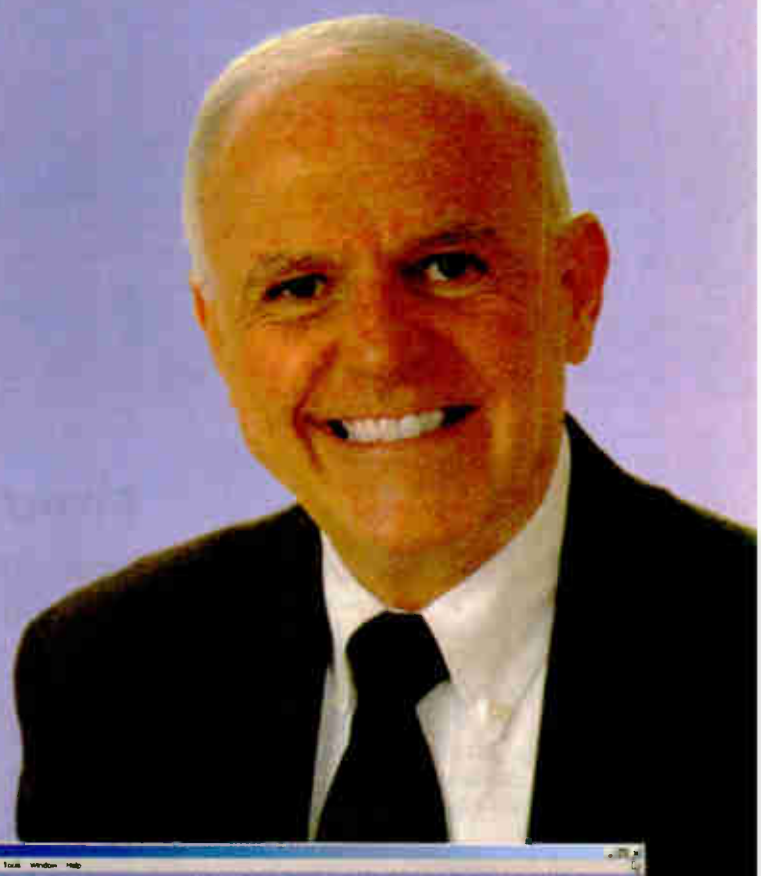
Seldom do I take the time to write a letter to a manufacturer praising a product. In the case of BSI, this note is long overdue. January of this year, I installed BSI's digital automation to operate AM 1060 KLMO Denver/Longmont. The reliability using Windows 2000, "well it's rock solid". The multi-tasking is the best. We have numerous delayed programs, as well as live joins to 14 different satellite receivers every day.

BSI has done a job above and beyond our expectations. The WebConnect permits our Indianapolis News Department to e-mail our weather reports as well as our local news directly into BSI's digital automation program without an operator here in Colorado. The temperature is frequent and always correct. Our imagination seems to be our only limitation to what we can do with BSI's digital automation. Since KLMO coming on line, we have installed another BSI automation program on KWYD Colorado Springs for its Christian format and are now installing BSI's digital automation to operate the entire Radio Colorado Network.

I have been in broadcasting for 40 years. The BSI systems are cutting edge, easy to operate, and reasonably priced.

Thank You BSI.

Ron Crider
President
Radio Colorado Network



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Will the Same Formula for Failure That Befell Past Attempts at FM Improvement Apply to IBOC as Well?

by Skip Pizzi

As IBOC works it way toward seeming deployment, there are many questions for broadcasters to ponder.

The first involves the process by which this format made its way to consideration as the potential future delivery means for U.S. radio broadcasting. Importantly, it did not follow the path of open standard development, which most of the world's other digital media formats have taken.

From its beginnings in Project Acorn, through the fits and starts of USADR, to the joint venture of iBiquity, this system has been a closed development, created for and by commercial U.S. radio broadcasters.

While controlling one's own destiny is a laudable goal and a cherished premise of American enterprise, the push for IBOC has run roughshod over another important American principle: consensus. It thereby violates one of the basic rules of the road in today's technology development.

It hearkens back to an earlier, less-enlightened time, when corporate power and oligarchic hegemony could unilaterally control the path and market development of an industry. As a result, IBOC now runs the risk of failure in the marketplace.

Given the pivotal context of the moment, this decision could drag down the fortunes of a still-vibrant industry with it.

Ignoring history

From the beginning, IBOC has been fundamentally a blocking policy, primarily intended to retain the status quo for incumbent broadcasters. From an engineering standpoint, it's been a transition plan in search of a technology, with its primary requirements oriented toward damage control rather than growth.

The flavor of IBOC that has emerged is particularly strident in its prohibition of any quantitative expansion for the industry. Along the way, all the iterations of IBOC formats developed by USADR, and now by Ibiquity, have been reverse-engineered to prevent the opportunity for emergence of any new services that might further fragment the listening market.

Rather than competing on the basis of attracting listeners with a quality product, the systems have been designed to preserve scarcity as a means of securing success. The motto has been, "Let digital come, but let it do nothing to displace or dilute the existing marketplace."

While this makes good business sense from a broadcast owner's perspective, experience has shown that such purely qualitative improvements are rarely successful. Rather, it generally takes *quantitative* change, i.e., new services, to attract audience.

Many readers will remember that when FM stations were just higher-quality simulcasts of AM services, the new band was a dismal failure. Only when the FCC mandated separate programming on every broadcaster's AM and FM stations did the new service succeed, eventually overtaking the senior service via its improved quality *and* quantity of signals. (One could argue that the qualitative difference between AM and FM was greater than analog FM and FM-IBOC, as well.)

From the beginning, IBOC has been fundamentally a blocking policy, primarily intended to retain the status quo for incumbent broadcasters.

The same can be said for cable television. Over-the-air TV was by far the dominant delivery method when all cable did was retransmit broadcast signals. Then HBO, Ted Turner and others came along to provide new content that could only be received on cable, and it didn't take long before the new service dominated.

Today, satellite radio offers such service expansion, with some 150 or more new channels coming on line. Trying to counter this quantitative onslaught with a qualitative improvement such as IBOC is like fighting a stealth bomber with rocks and sticks.

This is not to say that IBOC won't make terrestrial radio sound a little better, but that feature alone won't do much to stem the tide of new offerings by satellite services (which, by the way, will probably sound as good, or slightly better than FM-IBOC).

Another indication of just how much IBOC comes "through the back door" from an engineering analysis is the extremely long buffering time required for successful capture and retention of the digital signal.

To eliminate acquisition latency when a user is tuning around, IBOC receivers will default to the analog channels whenever a station is changed. Only after settling on a station for several seconds will the receiver switch over to the IBOC signal. To do this smoothly, both the analog and digital audio signals will have to be delayed by similar amounts — probably somewhere around seven seconds.

Cumbersome

Portable digital audio players have used this approach to counteract skipping from physical shocks during playback, but it is unusual for broadcast services. In recent years, broadcasters have become familiar with digital processing and transmission throughput delays of several hundred milliseconds at worst, and we're all used to dealing with the approximately 1/4-second satellite-hop, but IBOC's latency will be more than an order of magnitude greater. It will effectively eliminate off-air monitoring in live production.

From a technical standpoint, this provides a significant measure of robustness, but from a user's perspective it may seem cumbersome, particularly for young listeners who enjoy scanning the dial. In many cases, they'll be off to the next station before the IBOC signal kicks in.

It also calls into question the process of eventual migration away from the analog signal entirely, which has long been touted as an advantage of the IBOC approach. The "hybrid" phase of analog-digital channel sharing, which is considered a transitional period, may therefore be perpetuated — again keeping the door closed to inauguration of any future additional services.

So what's the compelling reason for broadcasters to convert to IBOC? No new commerce will flow as a result, and it's not even a very good defense against new competition. In fact, some stations may lose revenue on the deal if they have 92 kHz subcarrier services that must be shut down. Even if these are converted to auxiliary IBOC data, someone will have to pay for new receivers.

The only advantages are multipath reduction for FM and audio bandwidth/noise improvements for AM — but of course, these only really happen if receiver penetration is significant.

Therefore, the more important question asks what's the compelling reason for mainstream consumers to purchase an IBOC radio? Beyond the audiophile fringe, there's not much to offer. Even for that market segment, the long acquisition time may spoil the experience.

The most likely scenario for IBOC success is that broadcasters will feel compelled to convert out of competitive necessity (because other *terrestrial* stations are doing it), and that manufacturers of satellite radio receivers and other digital audio equipment will throw in IBOC features as a value-add.

Although there are some (rosy) scenarios in which the format could slowly succeed under such conditions, these seem like pretty lukewarm prospects at best.

You can't fault the design of IBOC for these shortcomings. In fact, the engineers involved have been masterful in their creation of a system that fulfilled extremely challenging mandates.

You can't fault existing broadcasters for coming up with such a mandate, either. When technology challenges your existing business, you have to react. Changing your business is one approach, but constraining the technology so your business doesn't have to change is substantially preferable.

FCC arbiters

Both of these results are testimony to the smarts of today's radio professionals. But they also show the value of an open standards process, which would not allow enfranchised private interests to unilaterally control the destiny of the public airwaves.

In fact, it is largely agreed that IBOC is a less-than-optimal migration path, yet it persists. This indicates how important the business aspects of radio broadcasting are in the United States, and how reduced the public service value of the medium has become.

The final arbiter remains the FCC, which has two pivotal issues before it.

First, will it rubber-stamp an essentially proprietary technology, thus eschewing the open standards process for terrestrial digital radio in the United States? Second, will it mandate broadcasters' conversion to the technology?

If the answer to the former is affirmative, as seems likely, a sad but important precedent of recent times will be established.

So the major question that remains is the latter. Because an IBOC conversion provides no spectrum recovery (unlike the U.S. DTV transition), there is no federal revenue argument involved. Because there is also no real added service component possible, the tradition of past qualitative improvements may be followed (FM stereo, color TV, stereo TV), in which the broadcaster is encouraged (largely by market forces), but not compelled by regulation to make the upgrade.

This would probably be the correct call from a regulatory view, but if taken, the transition's final outcome will be placed in even further doubt. And if IBOC fails, will U.S. radio have another chance at digital conversion?

These final steps of the process will likely be taken in the next few months, and with them much of U.S. terrestrial radio's fate will be sealed.

Skip Pizzi is contributing editor of Radio World. RW welcomes other points of view.

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

–115dB RFI rejection 0.1 MHz to 5 MHz
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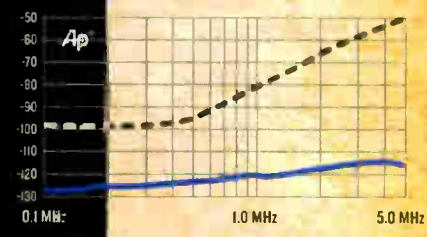

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1604-VLZ® PRO
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1402-VLZ® PRO
14 total channels • 6 XDR™ premium mic preamps • 6 mono line level channels • 4 stereo line level channels • Extra ALT 3-4 stereo bus • 3-band equalization • 75Hz low cut filters on mono chs. • 2 aux sends per channel • 2 master stereo aux returns with EFX to Monitor • Control Room/ Phones source matrix • 60mm log-taper faders • Switchable AFL/PFL

1202-VLZ® PRO
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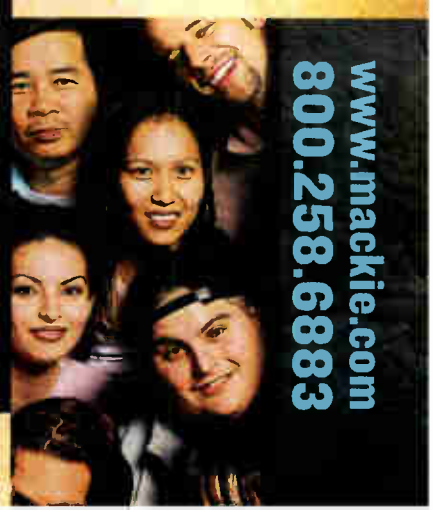
MACKIE.



FIRST PERSON

Remembering Major Armstrong

by David L. Hollyer

When I read Frank Beacham's excellent story "Radio Legacy Saves N.Y. TV" in the Oct. 24, 2001, issue of Radio World, I was reminded of the first time I met Major Edwin Armstrong in October 1939.

He had completed the installation of his FM station in Alpine, N.J., and was acting as a consultant to the Yankee Network, which was building a 50-kW FM station on top of Mt. Asnebumskit in Paxton, Mass. He was joined in this task by Dr. Paul DeMar, director of engineering for the Yankee Network.

At the time, I was a fledgling feature writer preparing a story for the Worcester, Mass., Sunday Telegram, which was itself starting the construction of its own FM radio station and welcomed any promotion for this revolutionary method of broadcasting.

Featured speaker

A few weeks earlier, I had attended the monthly meeting of the Institute of Radio Engineers held at Northeastern University in Boston. The featured speaker was Major Armstrong, his subject, naturally, being Frequency Modulation.

After a slide show and a description of Armstrong's experimental FM station in Alpine, a demonstration of FM reception was promised. To say that the engineer audience waited for it on the edge of their seats would not be an exaggeration.

The demo was arranged to receive a program of music from an FM station located across town. The music had been selected carefully to show off not only the high fidelity, noise-free reception, but also the wide dynamic range the system was capable of reproducing.

In the program, a Spanish tango was played with castanets and tambourines. The sound was so lifelike that one could hear "oohs" and "ahs" from the crowd of engineers, which numbered few music lovers among them.

Then, to further show the versatility of the medium, some hard-to-reproduce sounds were broadcast, such as ripping paper, water being poured and chimes striking. A rippling piano selection sounded as lifelike as if it was being played in the room.

If this wasn't convincing enough, the program continued to demonstrate its other technical feature "dynamic range" a spectacular facet of FM reproduction. Symphony orchestras or a pipe organ often produce sounds whose volume range covers 60 decibels. That represents a difference of a million times. Ampliture modulation must rein in these enormous volume variations and keep within far lower limits.

The selection broadcast in this demonstration featured woodwinds playing at almost a whisper level, then rising through middle volume crescendos to a thundering "fortissimo" finale with a clashing of cymbals and a thundering of kettle drums.

As the demonstration ended, the audience leaped to its feet with wild applause. Who ever heard of an audience of engineers applauding a radio broadcast?

I had hoped to talk to Major Armstrong, but he was surrounded by well-wishers and engineers wanting to congratulate him, so I held back, knowing that I would see him again soon.

And I did, a few weeks later in Paxton, atop Mt. Asnebumskit, on a cool autumn day. When I arrived at the construction site, I looked around for the inventor.

"He's up on the mast," a worker told me, "working on the antenna." And so he was, high in the air atop a 400-foot mast adjusting the phasing sections of the turnstile antenna.

'Pull up a chair,' Armstrong invited, gesturing at an upturned crate. 'What do you know about FM?'

"Oh, he'll be coming down for lunch," the worker assured me. "Stick around!" I stuck around and he did come down, in a bosun's chair — fast.

I was reluctant to interrupt his brown-bag lunch, but I wanted desperately to talk to him.

"Pull up a chair," he invited, gesturing at an upturned crate. "What do you know about FM?"

"Not a lot," I admitted, having grown up with AM radio.

So he proceeded to outline FM principles with the help of a pencil and the back of an old envelope. He drew diagrams of limiters and frequency discriminators in an FM receiver system. He patiently answered all my questions then, almost reluctantly, started his climb up the mast again.

"Back to work," he laughed as he moved steadily up the mast.

And that was the only time I ever talked to him. I never saw him again, but I was left with the impression of a kindly, patient man who was never too busy to talk to someone who was seriously interested in frequency modulation.

In the succeeding years, FM came into its own. Recognizing its importance as the listener's new medium of choice, the Federal Communications Commission moved FM out of the 40 MHz band and into the range from 88 to 108 MHz and ended its experimental status.

Broadcasters stumbled over each other filing license applications for broadcast stations using the new medium. Home and automobile radios started to become available. World War II created a demand for FM by the military.

One might have thought that Edwin Armstrong was into some great financial success. Not hardly. Armstrong's erstwhile friend, David Sarnoff, refused to let his firm, Radio Corporation of America, pay royalties to Armstrong for the use of his patents.

Legal woes

Lawsuits ensued. RCA was bigger and had more bucks and lawyers. Soon the inventor found himself embroiled in unwinnable legal tangles that were draining his finances and sapping his energy.

Finally, in February 1954, overwhelmed by a mountain of legal debts and seeing no way out, he took his own life. Thus ended the career of one of the great inventors of the century. RCA attempted to offset the notoriety and the guilt by settling the suits with an award to Edwin Armstrong's widow.

Although I've read about his final years, I cannot, in my own mind, compare the tragic, desperate figure of that period with the kindly gentleman I recall in my meeting on that chilly October day in Paxton, Mass., when he took time out from his lunch to patiently explain his invention to a young inexperienced feature writer.

I'll always remember him that way.

German Broadcaster Gets 'Smart'

From Germany comes this news item that caught our eye.

A regional broadcaster there has unveiled an unusual, very small remote vehicle. Saarländischer Rundfunk, a public service station in the southwest of Germany, took delivery of its first satellite newsgathering Smart car, equipped for live radio coverage.

It carries an Inmarsat GAN satellite terminal enabling 15-kHz live audio transmission via the motorized Inmarsat antenna on its roof.

Two-seater

The Smart is a two-seat Mercedes-Benz A-Class compact car. Audio and satellite components fit into a 19-inch rack in the small trunk.

The rack contains a Sennheiser wireless system, an AETA Scoop Reporter II codec, the modem unit of the Inmarsat GAN terminal and the control unit, developed by TransTel. A small mixer is available as an option.

The system is operated from a console between the two seats that provides a user interface for operating the system.

The interface has buttons to raise and point the antenna and connect and disconnect the 15-kHz link.

It is possible to make Inmarsat connections without prior booking and to send audio to a newsroom via ISDN. The manufacturer says this is an advantage because there is no need for a downlink, which is provided by the Inmarsat system. Call destination selection is via a two-digit selector on the console.

A remote control unit makes it possible to set up or terminate the link remotely. This allows the reporter to operate the Smart as an unmanned relay station within a distance of 200 to 700 feet. This is useful for live interviews and helps save on charges for the Inmarsat link.

The Smart system was developed according to specifications defined by Westdeutscher Rundfunk of Cologne, Germany, which received its first Smart in 2000.

Curious? Send e-mail to *gerald_list@tranxtel.com*. (The Web site, *www.tranxtel.com*, is in German.)

Workbench

Radio World, March 1, 2002

Past columns are archived at *www.rwonline.com/reference-room*

Let's Play 'Spot the Problems'

by John Bisset

O. K., let's start with a quiz. Refer to Figure 1, and see how many problems you can find.

We'll provide a list later in the column.

★ ★ ★

Fig. 1: How many problems can you spot here?

★ ★ ★

Damian Centgraf is with WSHB Shortwave of the Herald Broadcasting Syndicate Inc. He needed to install some ground rods for their new antenna system. Rather than look for a ground-rod bit, he had great results by removing the bit and slipping the electric jackhammer over the top of the ground rod and pulling the trigger.

In addition to the rods installed for the antenna system, Damian and his crew sunk a rod at each fence post around the perimeter.

The job took only a couple of days with the electric jackhammer, vs. a couple of months with a sledgehammer.

★ ★ ★

Looking for a good intermediate step toward digital?

WWWJ(FM)'s John Mullins and Ray Bass retired their ITC triple deck, seen in Figure 2.

A pair of Sony MiniDisc machines now handle the spot load for theradio station in Galax, Va.

Afternoon personality Joel Bonn is seen using the machines in Figure 3 on page 20. Storage and organization of the disks was easy using an inexpensive computer floppy-disk carrier.

★ ★ ★

A few months back, there was a thread on Dave Biondi's *radio-tech@broadcast.net* list server discussing the most ingenious repairs.

Scott Johnson with Klotz Digital wrote about his contracting years. Specifically, he was at a client's station doing some maintenance on a 5-kW transmitter. When they turned the transmitter back on, it wouldn't come up.

The starter capacitor for the transmitter blower motor had failed. The air pressure interlock prevented the rig from coming back up because the motor was not spinning.

There were no spares and no stores open. No one that Scott called had any spare caps, and Monday-morning drive was fast approaching. Faced with the prospect that the station would be dead until the parts houses opened at 9 a.m., Scott searched for a solution.

The answer came in the form of 10 feet or so of nylon cord. Scott opened the back door and wrapped the cord around the blower motor shaft. The GM stood in front of the transmitter, with his finger on the "ON" switch.

Scott yanked the cord hard, spinning the motor. He then slammed the transmitter door, and yelled, "Now!" to the GM, who hit the switch.

It took two tries, but the second time, Scott yanked hard enough that the motor spun fast enough to start when the power was applied.

The transmitter came up, and wasn't turned off until the replacement capacitor was located.

★ ★ ★

Joey Helleny of Southern Illinois University Broadcasting Service sends in his favorite source for pre-made RF cables. Contact Cable X-perts at *www.cableexperts.com*.

The guys assemble low-loss coax cable assemblies for RPU use, and stock a variety of RF connectors and adapters.

See WORKBENCH, page 20 ▶

Fig. 2: John Mullins and Ray Bass say goodbye to an old friend.

Workbench

▶ Continued from page 19

★ ★ ★

Well, how did you do inspecting that AM tower picture?

Fig. 3: Afternoon personality Joel Bonn uses MD machines at WWWJ(FM) in Galax, Va.

Most obvious are the painted ball arc gaps. Ball gaps should be sanded smooth, polished, with no paint, so a static charge can easily jump the gap to ground.

The exposed radials will raise the eyebrow of an FCC inspector, and unless this station used scissors, I don't know how they trimmed the grass without the risk of chewing up the radials.

A better idea would be to lay down some landscape fabric over a sand base, and cover the fabric with crushed stone. This will eliminate vegetation and provide some protection to the radial wires and the point they are soldered to the ring around the tower base.

Did you catch the paint on the base insulator? Paint can hide cracks and compromise the insulating characteristics of the porcelain. Just above the insulator, there is evidence of rusting under the painted surface of the base of the tower.

Keep weep holes clean, if used, and use a stiff wire brush to remove flaking paint. Flaking or bubbled paint can trap water, which will only destroy your tower.

If you want to get picky, a larger-width copper ground strap probably should be used. The strap in the picture was a little wider than 1 inch. That the arc gap balls are so black on the inside is indicative that they have worked bleeding some charge off the tower.

However, the extensive amount of burning may be that the gap is set too close. A static charge may start the arc, but high modulation may sustain it, with the burn over the large surface area the result. Always check the arc gap with heavy modulation, and at night, to watch for any flashover.

E-mail any other flaws you might have noticed to the address below.

Fig. 4: This MiniDisc storage approach is nice and neat.

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. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com.

MARKET PLACE

Burk Offers AutoPilot 2 Software

Stations can now order AutoPilot 2 from Burk Technology Inc. The supplier of facility control systems announced the availability of its control, logging and automation software.

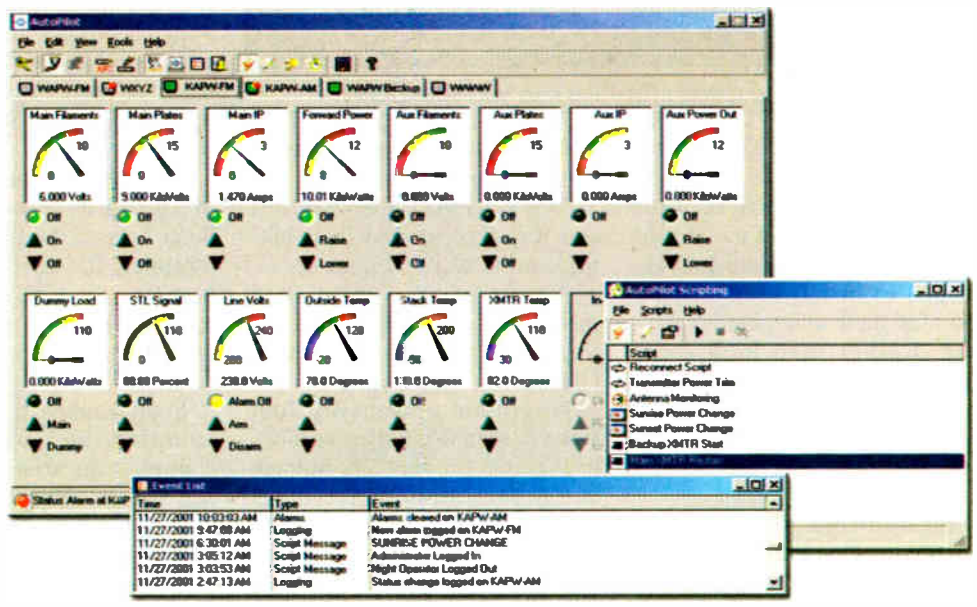
The system lets broadcasters monitor, control, log and automate many transmitters using an intuitive Windows-based interface.

AutoPilot 2 allows engineers to monitor and control multiple Burk ARC-16s remote control systems. The company says it did a substantial redesign of its AutoPilot for Windows.

Key features include control of hundreds of sites from a single location and PC, with logs to record activity; intuitive interface and easy navigation, including a meter view for all 16 channels; and wizard-based setup and scripting for automation and unattended control.

A wizard enables creation of routine scripts which can be customized or created from scratch using Visual BASIC Script editing.

For more information, call the company in Massachusetts at (800) 255-8090 or visit www.burk.com.



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HARRIS

RÚV Beams Signal Over Atlantic

by Bernd Trutenau

A longwave transmitter described as an "Icelandic powerhouse" drives the signal of broadcaster Ríkisútvarpið (RÚV) out across the fierce waters of the North Atlantic.

RÚV installed its first longwave transmitter, a 16 kW system, at Vatnsendi on the outskirts of Reykjavík in 1930. In 1965, a new 100 kW Aesa Brown Boveri transmitter went into operation at that site and, at the same time, a medium-wave transmitter at Eiðar in eastern Iceland was retuned to longwave.

RÚV Director General Markús Örn Antonsson waits a split second in anticipation after pushing the 'on' button at the formal opening of the Eidar transmitter.

The Base Insulator of the Mast at Eidar

Pausing at the facility are, from left, John Härtzell of Harris, RÚV engineer Þórður Bogason and Kristján Benediktsson, head of the RÚV Transmission Network Department.

Fishing fleet

RÚV started to develop its FM network in the 1960s, but longwave has remained an important waveband for the broadcaster. The Icelandic Atlantic fishing fleet depends quite heavily on the longwave signal while at sea.

On Feb. 3, 1991, a blizzard hit the Reykjavík region, causing the collapse of one of the 492-foot masts of the T-shaped antenna at Vatnsendi.

Soon after the accident, two new 246-foot masts were erected, but this emergency array did not compensate for the loss of the old antenna.

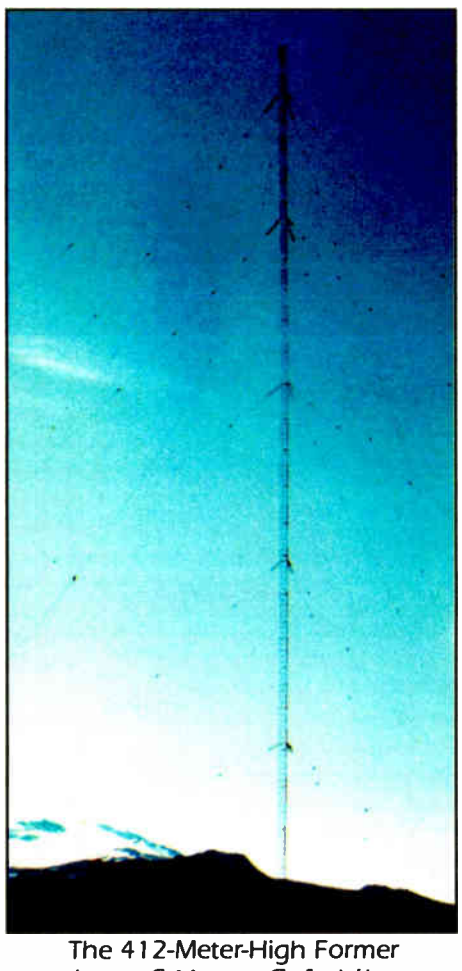
Some months later, the ministry of science, culture and education initiated a working group to study the future of longwave broadcasts in the country. It concluded that a new longwave station was vital to national security and the needs of the fishing fleet. It would serve as a backup and gap filler for the RÚV FM network.

The Geneva longwave/medium-wave plan of 1975 allocated spectrum for a 500 kW longwave station on 182 kHz at Raufarhöfn in northeastern Iceland, as well as synchronized stations on 209 kHz at Flóinn (500 kW), southwest of Reykjavík, and Eiðar (50 kW).

The Flóinn site, however, turned out to be a poor option due to the potential for earthquakes in the area.

Another factor for the RÚV to consider in planning the replacement system was the December 1994 decision by the U.S. Coast Guard to cease operation of the Loran-C radio navigation system in Europe and the North Atlantic.

This meant closing a Loran station at Gufuskálar/Sandur on a peninsula in the west of Iceland. The territory was handed over to the Icelandic authorities and the 1,350-foot mast was scheduled to be dismantled.



The 412-Meter-High Former Loran-C Mast at Gufuskálar

Potential

RÚV realized the potential of this site and purchased the mast.

At the same time, the board of directors of RÚV announced a plan for a complete modernization of its longwave stations, including the construction of a new longwave transmitter at the Gufuskálar site and a comprehensive renewal of the Eiðar site.

These stations would start to operate on 189 kHz and 207 kHz; the previous co-channel operation on 207 kHz had resulted in reception problems in the middle of the country. The old Reykjavík transmitter on 207 kHz was to shut down after the installation.

Work began at Gufuskálar in early 1997.

The transmitter selected was a 300 kW Harris DX-300LW. The operation was inaugurated in September of that year.

RÚV expressed satisfaction with the transmitter. "We are running this transmitter at an amazing efficiency of around 90 percent," said Kristján Benediktsson, chief engineer for the transmission network at RÚV. "We have had only one RF module failure in nearly four years."

Benediktsson participated in the project from the start, and implemented a successful adaptation of the mast for use at 207 kHz, because it was originally designed for the Loran-C frequency of 100 kHz.

He calls the adaptation the "Viking Ship" or "parallel two vertical loop" principle: his invention proved more economical than other proposals.

As a result of the modification, the antenna now provides a perfectly adjusted beam in the form of a bidirectional oval with +2 dB maxima close to 75 degrees/255 degrees.

The coverage of the waters of the North Atlantic is exceptional. RÚV has received reception reports of this Icelandic powerhouse from as far away as Nashville, Tenn.

The exposed coastal location of the Gufuskálar mast means the challenge of extraordinary weather. Salt and icing are frequent problems, but have not hampered operation of the transmitter seriously.

Only in extreme winter circumstances has RÚV had to reduce power to 100 kW in order to prevent arcing.

RÚV also has taken measures for a "worst case" scenario, installing the transmitter equipment in a building some 600 yards from the mast. Thus, in the unlikely event of a mast collapse, the transmitter system is unlikely to become a casualty.

Installation of the new Eiðar transmitter started in autumn 1997, as soon as the work at Gufuskálar was complete. This transmitter, a 100 kW DX-100LW, also came from Harris.

Canadian contractors built the mast. RÚV planned to use a 787-foot mast, but the region hosts an international reserve airport and the civil aviation authority restricted the mast height to 721 feet.

Despite this, RÚV successfully managed to offset this limitation and the Eiðar transmitter now provides coverage to eastern Iceland and across the northeastern Atlantic to the shores of Norway and Britain and as far as the Barents Sea.

Both longwave stations are on the air around the clock and carry a mixture of national programs. During the summer, RÚV also broadcasts daily news in English.

The successful operation of the two new longwave transmitters enabled RÚV to close down its network of medium-wave transmitters, the last of which went off the air in spring of 2000.

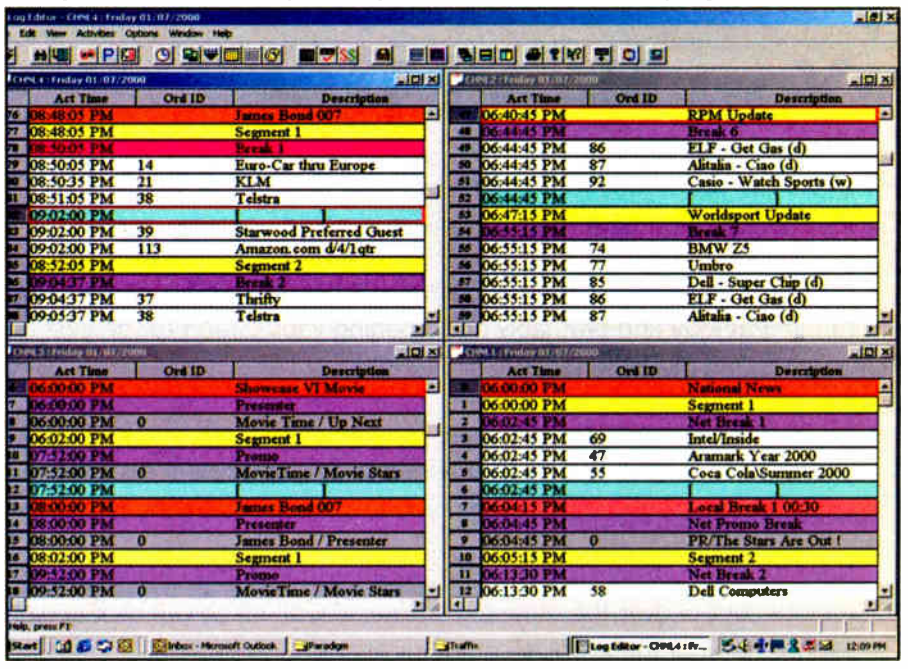
Bernd Trutenau is based in Lithuania. Contact him via e-mail at btrutenau@delfi.lt.

MARKET PLACE

Encoda Expands Lineup

Encoda Systems has several new products aimed at the business side of broadcast operations. Encoda MART is a data mining and business analysis tool for groups and networks. It offers browser-based access to centralized databases containing detailed spot information. Groups can access revenue analysis tools such as trending, pacing, forecasting and business retention reports, based on advertiser, agency and brand categories. Data can be consolidated from traffic systems including BMS, BIAS, Columbine and JDS, and mapped to meet corporate reporting standards.

An updated product is Paradigm 5.0, which adds enhanced multichannel and digital capabilities to the management system for mid-sized and large operations.



Paradigm 5.0

It includes a browser-based work-order tool that automates the routing of program preparation tasks through a facility. The company has made enhancements to the Traffix, Material Manager, Proposer and Digital Manager modules.

The company announced new or improved features for its DAL Channel Manager D-Series automation system, TRANS/Act order entry tool for BMS, ENS sales proposal system and Broadcast Master. And it says its Spotdata electronic invoicing has been "wildly successful" with broadcasters, ad agencies and media buying companies. New features include batch printing of invoices.

For information contact the company in Colorado at (303) 390-8278 or visit www.encodasystems.com.

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Mt. Wilson

▶ Continued from page 1

Benjamin D. Wilson, born in 1811 in Tennessee, was a fur trapper. He arrived in California in 1841, intending to continue to China.

During the Mexican War he joined up with the Gringos, was captured and spent the remainder of the war as a prisoner. After the conflict he went into business in Los Angeles and eventually was elected mayor in 1851. Three years later, he bought a 128-acre ranch where San Marino now stands and lived there until his death in 1878.

According to writer John W. Robinson, "Don Benito," as Wilson was known to his many Spanish-speaking friends, needed lumber for his fences and wine barrels. The 5,600-foot mountain peak that loomed above Wilson's ranch held plentiful forests of sugar pine and cedar, so he had been told.

To get that timber, Wilson was to build the first modern trail up the peak that now bears his name. In the spring of 1864, Don Benito put his Mexican and Indian help to work improving an old Indian path up Little Santa Anita Canyon. Upon arriving at the top, Wilson found two cabin ruins, possibly built by horse thieves of an earlier time.

The timber on "Wilson's peak," as the mountain became known after Don Benito built his trail, apparently didn't suit Benjamin Wilson. A few weeks later he abandoned the venture. But his trail remained, and for many years was the only pathway to the mountaintop.

Wagon road

Many people know Mt. Wilson for its great contributions to the science of astronomy.

Mt. Wilson was chosen as the site for the proposed Spence Observatory, primarily because Pasadena civic leaders promised to build a wagon road to the summit. It would be many years before the wagon road became a reality.

E. F. Spence, former mayor of Los Angeles, announced a grant of $50,000 to build an astronomical observatory in 1887. Spence died in 1892, neglecting to leave any provision in his will for financing a 40-inch Spence telescope to be operated by the University of Southern California.

Instead, in 1889, Mt. Wilson was chosen by Dr. Pickering, director of the Harvard University Observatory, as the site of a 13-inch telescope.

In February 1889, the telescope arrived by train and was transported to the foot of the Mt. Wilson trail in Sierra Madre. Judge Benjamin Eaton, selected to transport the instrument to the mountaintop, went to work without delay.

The trail was improved and a small "dolly" was made to help carry the telescope parts to the top of the mountain. A small observatory building of wood and canvas was constructed on the southwest edge of the mountaintop, a spot known afterward as Harvard Observatory Point. In May 1889, the Harvard astronomers began their observation work.

Peter Steil, a Pasadena restaurant entrepreneur, started a tent camp in the saddle between Mt. Wilson and Mt. Harvard. This location was within easy walking distance of the observatory. For $3 a night, a tourist was provided with round-trip transportation by burro, overnight lodging and meals.

A. G. Strain, who in 1888 had homesteaded several acres on the north side of Mt. Wilson, believed others were infringing on his rights. He erected a fence across the trail, blocking public access to the mountaintop. Steil ripped down the fence and the bloodless "Mt. Wilson War" was started. All concerned landed in court. The judge decided that the trail, open to the public since 1864, could not legally be closed. Thus ended the "war."

In 1891, Steil sold out to Clarence Martin. The latter built a frame dining room and added sufficient cottages and tents to accommodate 40 persons. Strain then expanded his facilities to handle close to 60.

Both camps typically were filled to capacity on weekends during the 1890s. They remained popular until the building of the first Mt. Wilson Hotel in 1905.

Tollhouse on Mt. Wilson in 1914

Today a hiker can walk down the old trail to the location of Martin's Camp, starting at a gate opposite the Channel 4, KNBC building. The walk passes a Southern California Edison substation. The switch gear near the gate is labeled "Martin's Camp." An overhead high-voltage, three-phase power line goes underground at the former Martin's Camp location and continues underground to the SCE substation.

New trail

The Harvard 13-inch telescope was to remain on Mt. Wilson for only 18 months. A misunderstanding between Harvard and USC appears to have been the cause of its removal. It was transported down the steep trail on oak skids by Steil in September of 1890. The instrument was shipped to Arequipa, Peru.

Until after the turn of the century, Mt. Wilson was left to hikers and summer campers.

The installation of the Harvard telescope, along with the problems encountered in transporting the instrument up the old trail, caused a renewal of interest in a Mt. Wilson road.

In June 1889, Judge Benjamin Eaton called a meeting of prominent Pasadena businessmen to consider building a wagon road to Mt. Wilson. Eighteen of the businessmen agreed to contribute capital, and on July 12, 1889, the Pasadena and Mt. Wilson Toll Road Co. was incorporated. Nothing substantial was accomplished before the company floundered.

Five of the original investors reorganized and refinanced the project. They decided it would be feasible to build a four-foot trail starting at Eaton Canyon rather than the 12-foot roadway originally proposed now that the Harvard telescope had been removed and public interest in Mt. Wilson had dwindled.

In February of 1891, work commenced. By June, the 10-mile pathway was in usable shape. In July the new trail was opened to the public and the toll fixed by the Board of Supervisors at 25 cents for hikers and 50 cents for riders.

Mt. Wilson Trail

This new, well-graded pathway became known as the New Mt. Wilson Trail and soon became more popular than the old trail from Sierra Madre. Foot and pack animal traffic became so heavy that in June of 1893, managers decided to widen the trail to six feet. This made two-way travel easier.

Gradually the Mt. Wilson Toll Road Co. acquired control of the mountain. In 1896 it acquired both Strain's and Martin's camps. In 1901 it paid the U.S. Land Office $800 for clear title to 640 acres on the mountaintop. Soon it enlarged its holdings to 1,050 acres and became "king of the mountain."

In 1905 it entered into a 99-year lease with the Carnegie Institution granting 40 acres of the mountaintop for the location of the Carnegie observatory, which was given free use of the toll trail and half the water rights on the mountain. In return, the Carnegie Institution agreed that the public would always have access to the observatory.

The Carnegie Observatory renewed interest in Mt. Wilson and brought many visitors to the mountaintop. To accommodate them, the toll road company in 1905 constructed a one-story hotel. Many cottages were constructed around the main building for the use of overnight guests.

Fire destroyed this first hotel in 1913. Two years later, a larger hotel was completed on the same site. It even included a spacious swimming pool. This second hotel was managed for years by A. C. Childs, the son-in-law of one of the investors in the toll road company.

As new, larger telescopes were designed for the Carnegie Observatory, an auto road to the summit of Mt. Wilson became an absolute necessity. In 1907, to transport the larger and heavier parts of the 60-inch reflector telescope, the trail finally was widened into a 10-foot roadway.

The work was done mostly by Japanese manual laborers, using mule-drawn scrapers and plows to move the dirt and rock. In 1917, the road was widened to its final width of 12 feet to accommodate the moving of the giant 100-inch telescope to the summit.

If you are in the area, take a hike down the old toll road that starts in front of the KNBC transmitter building to appreciate what a feat it was to bring all the observatory materials and equipment up the face of the mountain.

The 100-inch Hooker Reflector, in more than 55 years of operation, arguably has added more to man's knowledge of the universe than any other single tool of science. It is 250,000 times more sensitive than the human eye and has penetrated outer space to a distance of a half-billion light years.

According to writer John W. Robinson, the public was discouraged from using the road for several years. Several intrepid drivers did attempt it, first telephoning the mountaintop to make sure no observatory freight trucks were on their way down. Probably the first automobile to make the trip was a 1907 Franklin automobile driven by L. L. Whitman of Pasadena on May 28, 1907.

Sheer drop

Whitman said after the trip, "Not for $500 would I make the trip again. There were at least 15 turns in the road where we had to back and swing over in order to get around them. While doing this we sometimes looked down a sheer 1,000 feet." For those not wishing to drive, there was the popular Mt. Wilson Stage Line.

The most amazing episode in the road's 29-year history was the Altadena-Mt. Wilson automobile race. The record for the 10-mile, 4,500-foot elevation gain event was 22 minutes, set by Frank Benedict of Pasadena in 1922, driving a Paige 6-66 automobile.

By the early 1930s, the days of the old toll road were numbered. A new high-speed highway was rapidly weaving its way upward from La Canada via the Arroyo Seco. Begun in 1929 after a decade of planning, the Angeles Crest Highway made it to Red Box in 1934. A year later, in 1935, the road from Red Box to Mt. Wilson was paved and ready for use.

Now Mt. Wilson was an hour rather than two or three hours away. The end for the historic toll road came in March of 1936, when it was closed to public travel and turned over to the Forest Service. The Mt. Wilson Toll Road Co. became the Mt. Wilson Hotel Co.

Television in Los Angeles started in the early 1930s with Harry Lubke, physicist and engineer for Don Lee, working on a project that in 1938 turned into a television station at Seventh and Bixel in downtown Los Angeles.

This experimental station, W6XAO on Channel 2, was moved to Mt. Lee above Hollywood in 1940. This same year saw what was likely the first Los Angeles FM station, K45LA on 45.5 MHz, on the air from Mt. Lee.

Klaus Landsberg put KTLA on the air from the Paramount lot on Melrose Ave. in 1939. World War II brought further TV activity to a halt in Los Angeles. After the war, better transmitter locations were needed and attention was turned to Mt. Wilson. KTLA Channel 5 moved there in 1947, becoming the first television station to broadcast from Mt. Wilson.

Don Lee, a Cadillac automobile distributor, continued with his experimental W6XAO Channel 2 on Mt. Lee. Earl C. Anthony, a Packard motor car distributor

See MT. WILSON, page 25 ▶

Mt. Wilson

▶ Continued from page 24

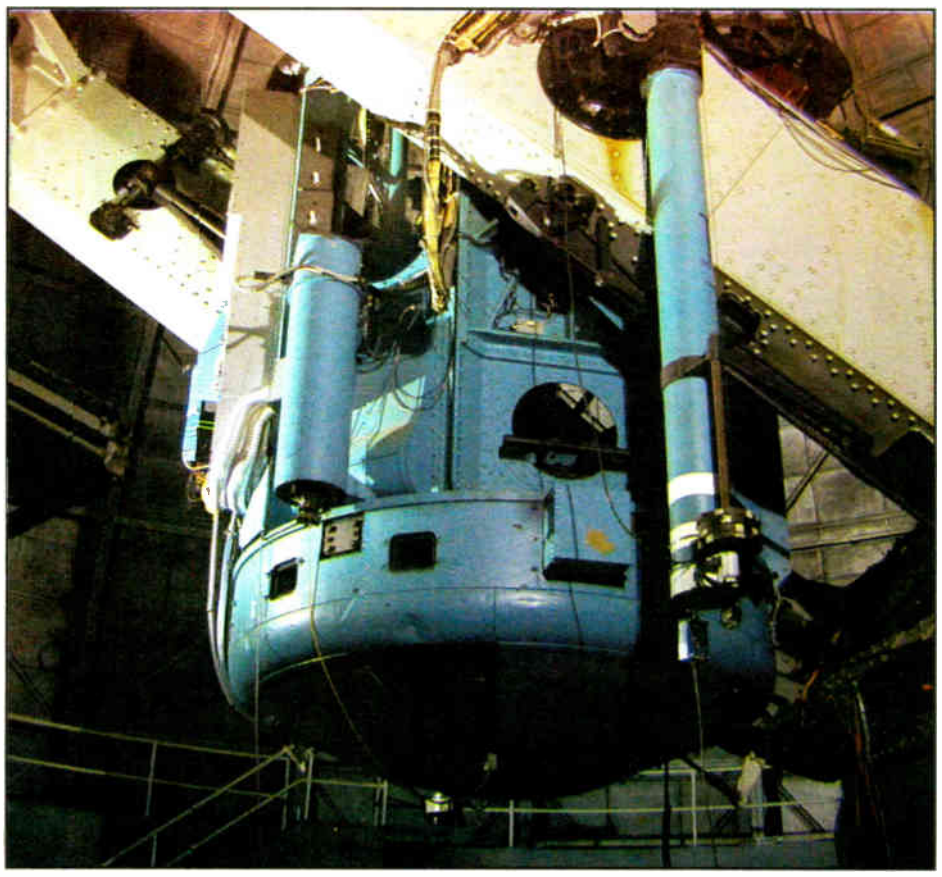
and owner of KFI, built KFI(TV) after some field testing from Mt. Wilson and signed on from there on Aug. 25, 1948, with regular programming using an RCA TT5A transmitter on Channel 9.

The transmitter log shows that earlier on June 23, 1948, a test pattern aired from 9:51 p.m. to 11:35 p.m. Earl C. Anthony was a friend of Mr. Childs of the Mount Wilson Hotel Co. This facilitated the purchase of the land necessary for KFI(TV).

Broadcast history

KFI(AM) was an NBC affiliate, so it was only natural that KFI(TV) ran the NBC kinescope film network shows. The cross-country microwave network feeds had not yet reached the west coast. The Program Log Book shows equipment in the TV truck was used to pick up programs from Aug. 25 to Oct. 6, 1948. On that date, the KFI(TV) studio at 141 South Vermont was first used.

From the same Mt. Wilson location, KFI(FM) operated with a General Electric 3 kW Phasotron transmitter operating into a two-bay antenna for an ERP of 10 kW on 95.5 MHz. KFI(FM) was the first FM station on Mt. Wilson, having signed on the air on July 15, 1946, with program test.



The Hooker Reflector has added to humanity's knowledge of the heavens.

Mt. Wilson soars above a background of clouds.

Late in 1948, NBC signed on as KNBH on Channel 4 from Mt. Wilson on land purchased from Mr. Childs of the Mount Wilson Hotel Co. Years later, KNBH became KNBC, as we know it today. The same year saw CBS join with the Los Angeles Times in a joint venture to put KTTV Channel 11 on the air.

Meanwhile, back on Mt. Lee, W6XAO had become KTSL, named for Thomas S. Lee, son of Don Lee. KTSL was still on Channel 2. Don Lee saw the handwriting on the wall that television was going to be transmitted from Mt. Wilson.

Don Lee, the Cadillac distributor, probably did not want to be outdone by Earle C. Anthony, the Packard distributor. Don Lee acquired land west of Mt. Wilson in what was called the Deer Park area and built a television plant complete with an RCA TT5A transmitter like Earle C. Anthony had for his Channel 9. Before Don Lee could move his KTSL to the Mt. Wilson Deer Park area, he passed away.

Shortly after his death, CBS and the Los Angeles Times decided to part company at KTTV Channel 11. Earle C. Anthony was having union problems at his KFI(TV) Channel 9 and had not made money with the station. The changes were now rapid. Earle C. Anthony sold KFI(TV) to the Don Lee company and it became KHJ(TV) on Sept. 6, 1951.

End of the 'road'

KFI(FM) was turned off April 5, 1951, and the license was returned to the commission for cancellation. The old K45LA FM station in downtown Los Angeles became KHJ(FM) on 101.1 MHz. This call sign later was changed to its present KRTH(FM).

KTSL Channel 2 on Mt. Lee was sold to the Columbia Broadcasting System when Don Lee bought KFI(TV) Channel 9. CBS changed the KTSL call sign of Channel 2 on Mt. Lee to KNXT. In 1950 CBS bought the intended KTSL Deer Park property on Mt. Wilson and moved KNXT Channel 2 to that location, where Channel 2 still operates. CBS changed the KNXT call to KCBS many years later.

Early in 1949, ABC signed on KECA(TV) Channel 7. This call sign was later changed to KABC. At the same time, KLAC Channel 13 signed on from Mt. Wilson. They were in a hurry to begin broadcasting and at first they had a tent over their building, which was still under construction when they signed on.

At first Channel 13 did not have commercial power. It generated its own power with an emergency generator for a short period until Southern California Edison could reach them. KLAC TV Channel 13 later was sold to Copley and the call sign was changed to KCOP.

It is interesting to note that until early 1949, the Southern California Edison Co. supplied 50 Hz power to Mt. Wilson. In its early days, KFI(TV) had a rotary converter to convert the 50 Hz power to 60 Hz. Frank Grill, who started at Channel 9 as a KFI(TV) employee and recently retired from KHJ(TV), now KCAL(TV), remembers having to maintain the rotary power converter.

In 1963, Metromedia Inc. purchased station KTTV. The station owned its transmitter and tower on Mt. Wilson but not the land on which they stood.

Metromedia wanted to buy the land, about three acres. The answer was a qualified no. They could not buy just this parcel. They had to buy the whole 720 acres. In 1964 Metromedia purchased all of the remaining available Mt. Wilson property from Mrs. Albert Childs, daughter of A. C. Childs, who died in 1951.

The long saga of the Mt. Wilson Toll Road (later Hotel) Co. came to an end.

Brief amusements

Where might television have located had Mt. Wilson not been developed by the early mountain pioneers?

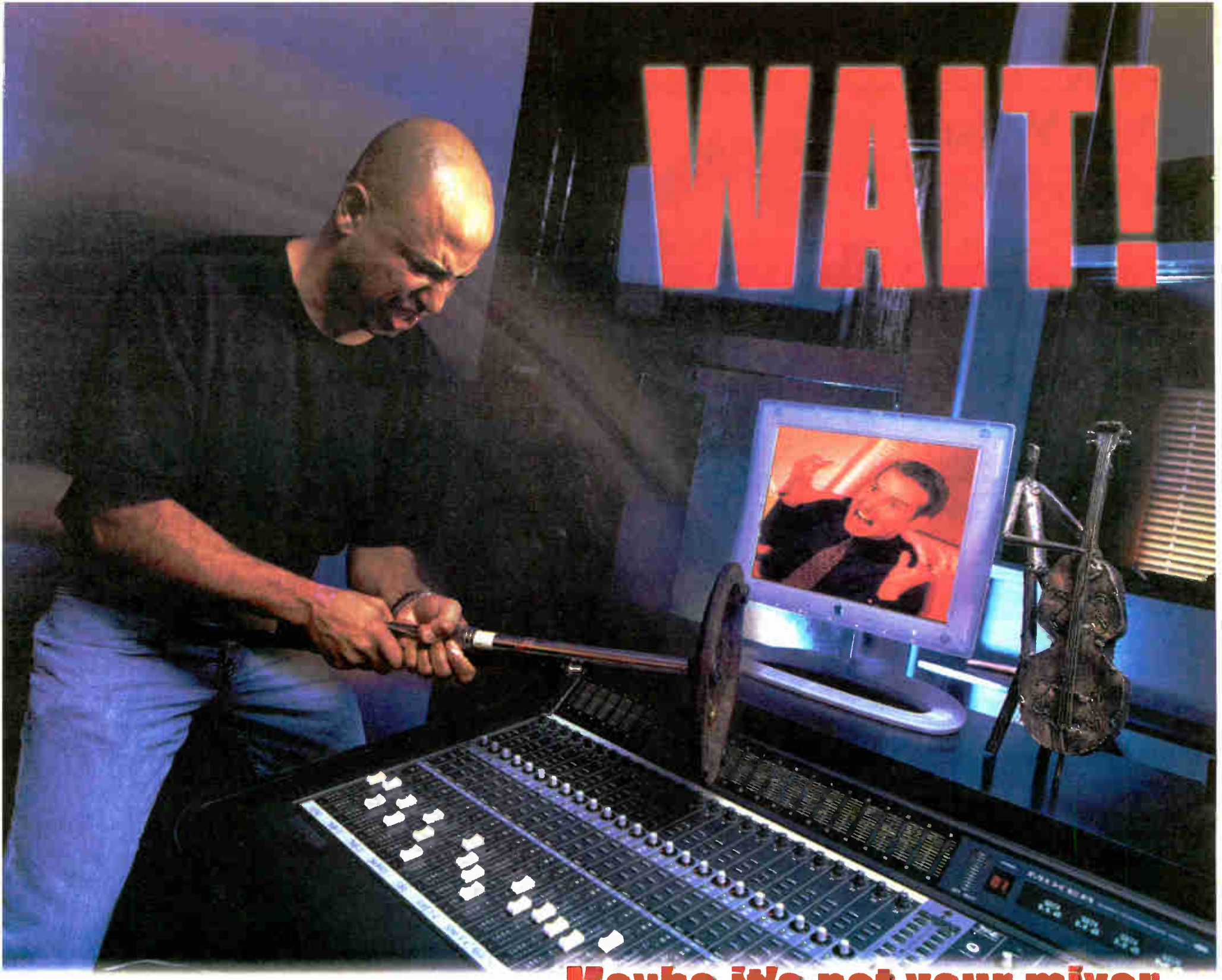
The Mt. Wilson Hotel, so long a landmark on the mountaintop, is gone. Under forest regulations, the old buildings couldn't be burned or heaved over the side, so Metromedia had them dismantled and carried away piece by piece.

Metromedia replaced them with Skyline Park, complete with a pavilion, a children's zoo and landscaped walks. Skyline Park opened to the public on June 6, 1967. Only the observatory domes and towers remain unchanged.

Most of the early endeavors on Mt. Wilson were not financially successful. The Mt. Wilson Toll Road was more a labor of love than a money-making enterprise.

Skyline Park proved to be no exception. It was closed on Jan. 1, 1976, after Metromedia decided to cut their eight-and-a-half years of losses. It was turned over to the Forest Service by Metromedia, except for the three acres it originally wanted to buy. Now the area again is open to the public on weekends only.

The author, now retired, is former chief engineer of KFI(AM) and KOST(FM).



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Penn State University has retained **A. F. Associates** to consult as it plans to integrate its media facilities, including WPSU, the school's radio station; WPSX(TV), its public broadcasting station; and World Campus, its distance learning program, into one infrastructure. ...

At the Olympic Winter Games, **Poll Sound**, an A/V rental provider, supplied **Listen Technologies Corp.** wireless audio products for guests needing auditory assistance at the 10 Winter Olympic venues.

Russell Gentner, president of Listen Technologies, said there would be about 400 people utilizing the receivers and headsets. The receivers were also to be used during the Paralympic Winter Games ...

Sporting News Radio chose **Netia** to install a digital audio system in its facilities in Chicago. The Chicago studios will use the Radio-Assist 7 production-to-broadcast digital audio system.

Netia said this sale would bolster its position in the U.S. market. It has experience with systems of up to 650 workstations for organizations including the Australian Broadcasting Corp., the BBC, Digital Skynet in Korea and Radio Vatican. ...

Omnia said French radio giant **Skyrock** standardized on the Omnia-6 audio processor. The supplier also said **Cox Broadcasting** has chosen Omnia processing for the Tampa, Fla., market. ...

On the programming side, Infinity's **KFKF(FM)** in Kansas City added the **Jones Radio Networks** country show "Lia," hosted by Lia Knight. ... "The Lionel Show," syndicated by **Rex Broadcasting**, is now on 16 stations. Lionel has been added **to KMYL(AM)** in Phoenix and **WEEU(AM)** in Reading, Pa. ... **Premiere Radio Networks'** "Leeza Gibbons' Hollywood Confidential" added two stations. It has begun airing on San Francisco's Star 101.3 FM and New York's WPLJ(FM) in February. Premiere is a subsidiary of Clear Channel Communications. ...

AP Radio wound down the last three months of last year with the addition of 60 audio affiliates, then began 2002 with six more agreements with stations owned by **Clear Channel, Dame Broadcasting** and **Journal Broadcasting**.

Adding AP Network News were Clear Channel's news/talkers WKCI(AM) and WKCY(AM) in Harrisonburg, Va.; Clear Channel's KFLD(AM) Richland, Wash.; and Dame Broadcasting's adult/contemporary music station WGLU(FM) in Johnstown, Pa.

New affiliates of AP's All News Radio are Journal Broadcast's news/talk KTTS(AM) in Springfield, Mo. and WWAR(AM) in Roanoke, Va.

Radio Unica Communications chose the AP Radio Network as its primary news content supplier, providing services in English and Spanish to the 38-station network. ...

Overseas, **Klotz Digital** completed the commissioning of a major audio mixing, routing and control system for the **GWR** group in the United Kingdom.

The system includes 10 DCII digital mixing consoles and central technical area audio switching, linked by a fiber-optic audio network throughout the new GWR transmission headquarters in Bristol, England.

The VADIS control software includes applications for transmission control switching and dynamic allocation of codecs to studios. The system networks 18 studios and five technical areas.

The system was supplied through Klotz dealer **Clyde Broadcast** to the **Oxford Sound Co.**, which supplied the turnkey system. ...

Two more **Radio France** stations have gone on-air with newsroom computing systems from **Dalet a.n.n.**

As part of an effort to restructure and digitize the 38 regional studios of Radio France, studios in Lille and Bordeaux implemented NewsWireOpenMedia. Following the acquisition of A.N.N Systems GmbH by Dalet Digital Media Systems, the companies have both adopted the name Dalet a.n.n. ...

With recent equipment deliveries to the United Kingdom, Spain and Taiwan, **Harris Corp.** said it has supplied more than 1,000 ITIS DAB modulators and 700 ITIS DAB encoders since 1997.

The Rennes, France-based ITIS has been part of Harris since 1996. ...

Audemat said it won a contract for the renewal of the FM monitoring network of **Télé Diffusion de France**, a total of 300 GoldenEagle FM monitoring systems.

TDF needed equipment capable of monitoring the quality of the FM broadcast programs via TCP/IP. TDF is a subsidiary company of France Telecom. ...

Finnish software house **Jutel, IBM Korea** and **Korea Digital Audio Broadcasting** completed a digital radio system scheduled for broadcasting through the SkyLife radio channels of **Korea Digital Satellite Broadcasting**.

Jutel provided a RadioMan content management system, comprising hardware from IBM and services from both companies. KDAB (channel name Satio) uses RadioMan to produce content to 30 radio channels.

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GM Journal

Radio World — Resource for Business, Programming & Sales — March 1, 2002

Liddy's Welcome
See Page 34

Who Are Your Employees, Really?

by Ken R.

The applicant sits across the desk from you; the résumé looks good, the candidate seems personable and qualified. But what secrets could this potential employee hide that could leave your company vulnerable to lawsuits or even put your stations at physical risk?

Dennis Wharton

Cary Pall

Donna Halper

NAB weighs in

Dennis Wharton, senior vice president of communications for the National Association of Broadcasters, said the need for a secure work environment has never loomed larger.

"Businesses across the country are busy either developing or rethinking corporate security," Wharton said.

NAB2002 will feature a session called "Station Security: Precautions, Practices and Procedures." The session will offer an opportunity to hear from security professionals and to share ideas on security matters, such as staff selection.

While many radio stations prefer to handle checks internally, some hire outside firms such as Background Check International LLC of Temecula, Calif. BLC offers pre-employment screening for large companies.

Foreign intrigue

Applicants from other countries present challenges when checking into backgrounds.

"We do a great job tagging garden-variety *domestic* criminals, lowlifes and that sort of thing, but when it comes to competent information from other countries it's very difficult, because the governments just don't cooperate very well," said Kit Fremin, BCI's president and owner. He said he is able to get information from European countries sometimes, but claims, "It's a crapshoot in the undeveloped nations, so don't even waste your money."

Some of the services companies like

See BACKGROUND, page 34 ▶

Don't Ask, Don't Tell: Stay Legal

In these politically sensitive times, there are questions you cannot ask in a job interview without potential legal jeopardy.

On its Web site, *www.nolo.com* provides basic legal information and books, forms and software for non-lawyers. The company also offers suggestions for correct and legal interview question phrasing.

Below are examples Nolo.com provided to RW.

Don't ask: "How old are you?"
OK to ask: "Are you 18 years of age or older?"
Don't ask: "Are you married?"
OK to ask: "Is your spouse employed by this employer?"
Don't ask: "Are you a native-born citizen of the U.S.?" or "Where do you come from?"
OK to ask: "Are you legally authorized to work in the United States on a full-time basis?"
Don't ask: "Do you have any physical disabilities that would prevent you from doing this job?"
OK to ask: "These (provide list) are the essential functions of this job. How would you perform them?"
Don't ask: "Have you ever been addicted to illegal drugs?"
OK to ask: "Do you currently use illegal drugs?"

The company says interviewers shouldn't panic if an applicant raises a delicate subject such as disability or national origin. The employer can't raise these subjects, but the applicant can, according to Nolo. Danger-zone questions involving sex lives, abortions, personal finances or political affiliations are off-limits.

If you're wondering if you can refuse to hire someone just because you don't like him or her. the answer is "yes," according to Nolo.com. Just be sure prejudice is not at the root of your feelings.

COLE'S LAW

FCC Rewrites EEO Rules, Once Again

by Harry F. Cole

If at first, or second, you don't succeed, try, try — er, try, try, *try* again.

And so it is that the FCC, having failed twice before to convince the courts that its equal employment opportunity programs are constitutional, is venturing once again into the thorny EEO area.

In December 2001 it issued a Second Notice of Proposed Rule Making in which it described its current proposed approach to EEO.

While that new approach, not surprisingly, closely resembles the FCC's old approach, the way the commission is packaging its supposedly new and improved EEO regulations is, to say the least, interesting.

History

It is beyond dispute that discrimination on the basis of race, ethnicity or gender is unlawful — a principle of overriding importance to the fabric of our society and culture, established in the 20th century's civil rights movement.

Nowhere is the principle of non-discrimination more important than in the context of governmental conduct. Indeed, the principle of equal protection is so fundamental that it is set out in the Fifth and Fourteenth Amend-ments to the Constitution, where it stands as a clear prohibition against governmental discrimination.

As articulated by Thurgood Marshall in his successful brief in Brown vs.

See COLE'S LAW, page 32 ▶

Cole's Law

▶ Continued from page 31

Board of Education, as far as the government is concerned, a racial criterion must be a "constitutional irrelevance."

For that reason, whenever the government involves itself in decision-making that is based on race or ethnicity, the courts must be careful to scrutinize the government's action. This court inspection is to assure that the government is not violating its constitutional responsibility to provide equal protection.

Most interesting about the new proposal is that the new approach appears to avoid just about any reference to race or ethnicity.

But, you say, what the heck does that have to do with rules designed to prevent private parties — say, broadcast licensees — from discriminating? If we all agree that discrimination is illegal, why can't the government — say, the FCC — step in and enforce *that* prohibition?

Well, obviously, if somebody is caught engaged in unlawful discrimination, the government can and should land on that somebody with both feet. But for the most part, that's not what the FCC's EEO rules are all about. Therein lies the FCC's problem.

Discrimination

The EEO rules historically have included two separate and distinct components. First and most obvious, the rules prohibit discrimination.

Second, the rules have imposed on broadcasters a wide range of reporting and outreach obligations designed to increase minority employment or, at least, to discourage discrimination by making discriminatory trends more readily identifiable.

As to the first component, the rules prohibiting unlawful discrimination have been on the books for decades, giving interested parties the opportunity to raise and prove allegations of discrimination.

Individuals and groups have advanced various allegations against various licensees over the years. But after investigating those allegations, the commission has found actual discrimination only in a miniscule handful of extreme and unusual cases.

In other words, actual, demonstrable discrimination does not appear to have been a problem, at least as far as the FCC's records show.

Questioning discrimination

Because the rules were designed to permit such discrimination to be brought to the commission's attention — through licensee reports, licensee record-keeping and complaints from aggrieved persons or groups — there is at least some reason to question whether there is any significant, industry-wide, problem of racial or ethnic discrimination in broadcast employment.

Now let's look at the second, outreach component of the EEO rules. There the government has imposed various employment-recruitment and record-keeping obligations ostensibly designed to permit the detection of possible discrimination.

Additionally, the commission has defended those outreach obligations as useful in increasing diversity of programming, presumably by promoting a diverse universe of employees contributing to the content of that programming.

The problem is that the commission-imposed outreach obligations have invariably and unmistakably imposed governmental pressure on broadcasters to hire based on race and/or ethnicity.

After all, if you are dependent on a governmental agency for your all-important license and if the agency makes clear through its EEO outreach rules that it attaches regulatory weight to employment practices based on race or ethnicity, then as a matter of common sense and self-preservation you are likely to engage in employment based on race and/or ethnicity.

But making employment decisions based on race or ethnicity is precisely what you're *not* supposed to do. Even more important, it's precisely what the *government* is not supposed to require you to do.So the outreach component of the EEO rules, presumably designed to achieve the benign goal of increasing minority employment, thrusts the government into the constitutionally suspect, if not flatly prohibited, business of race-based decision-making.

In 1998 a federal appeals court held that the FCC's EEO rules did not comply with the Constitution. In response, the FCC tried to dress up its rules in a different package; but late last year the court also rejected that package.

The December 2001 Notice of Proposed Rule Making marks the commission's effort to breathe the breath of life into its EEO rules.

The notice did not include any specific draft rules, just a description of what the FCC intends to do. Most interesting about the new proposal is that the new approach appears to avoid just about any reference to race or ethnicity.

For the most part, the commission proposes to require that broadcasters with five or more full-time employees undertake certain recruitment activities and maintain records concerning those activities.

The particular activities generally do not include reference to any racial or ethnic groups and do not in and of themselves compel the inclusion of such groups in the recruitment efforts.

Instead, the commission's stated goal is to assure the dissemination of job availability information to all segments of the community.

Expand outreach

According to the commission, its goal is to assure broad outreach in broadcast hiring in order to prevent "homogenous workforces" from being replicated by "insular" recruitment and hiring processes.

What seems to be going on here is that the commission, aware that rules specifically invoking race and ethnicity will trigger intense judicial scrutiny, is trying another tack, one that does not specifically reference race and ethnicity.

Presumably the FCC hopes that, by eliminating such references, it will shield its EEO rules from the same criticisms that got those rules tossed out twice before.

An obvious question is raised by this new tack. If the new rules are not designed to correct (or even discourage) unlawful discrimination, then why should the FCC adopt such rules in the first place?

While there may be reasons to question the commercial wisdom of a "homogenous workforce," where is it written that the purpose of the commission, or any part of the government, is to prevent such a workforce, as long as that homogeneity is not the result of unlawful discrimination?

Hasn't the goal of the past 20 years of deregulation been to remove the FCC from unnecessary involvement in the conduct of private business?

Of course, if the homogeneity were caused by such unlawful discrimination, the government could act aggressively to enforce the anti-discrimination laws.

But absent any such causal connection, the government appears to be imposing additional regulation for no apparent purpose, particularly given the fact, noted above, that the record compiled by the commission over the past three decades falls far short of establishing that employment discrimination is a significant problem in the broadcast industry.

So the commission is in something of a conundrum. It has no historical basis from which to conclude that EEO rules are really necessary, and it has two court decisions declaring those rules unlawful.

But from a political perspective, the commission appears to view EEO rules as somehow obligatory, possibly because a contrary view might suggest that the agency is anti-civil rights — a conclusion that would, obviously, be completely unjustified, but the threat of which is nonetheless enough to scare any government official.

New rules

Hence the newly proposed EEO rules, an oddly constructed approach designed not to run afoul of the courts but still to achieve the suspect purposes previously criticized by the courts.

The commission's dilemma is illustrated toward the end of the Notice of Proposed Rule Making, where it mentions the revivification of the Annual Employment Report (FCC Form 395-B).

The commission is trying another tack, one that does not specifically reference race and ethnicity.

Broadcast veterans will remember that report as an integral component of the FCC's EEO rules, a report filed annually to list in detail the racial/ethnic/gender composition of each station's roster of full- and part-time employees.

The Annual Employment Report has been discontinued for several years since the court first ruled the EEO program to be unlawful. According to the commission, that report is *not* a part of the EEO program; rather, it is just a data collection mechanism to permit analysis of industry trends and reporting to Congress.

So the commission is going to require, again, detailed annual reporting about racial and ethnic hiring and it announces that re-imposition simultaneously with the announcement of new EEO rules.

But, the commission assures us, the reporting requirement really has nothing to do with the EEO rules.

Such are the ways of Washington.

The commission has invited comments on its newly proposed rules. The deadline to file comments is March 15. If you would like to submit comments, you should first consult with your communications counsel.

Harry Cole is a member of the law firm of Fletcher, Heald & Hildreth, P.L.C. Contact him in Virginia at (703) 812-0483 or via e-mail to cole@fhhlaw.com.

RW welcomes other points of view.

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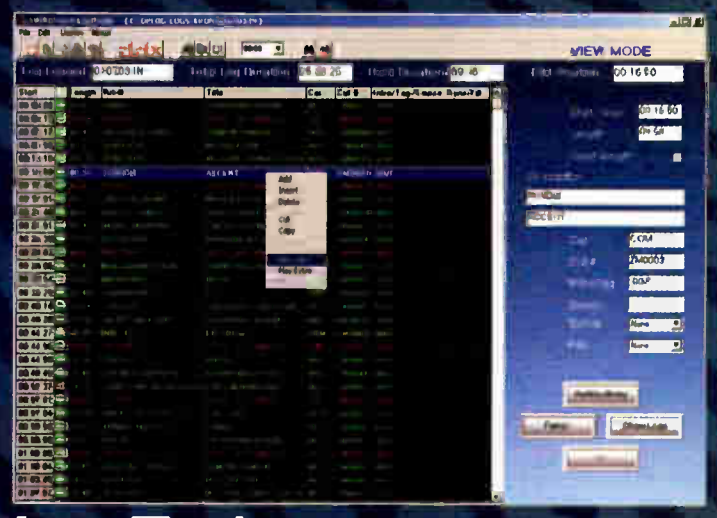
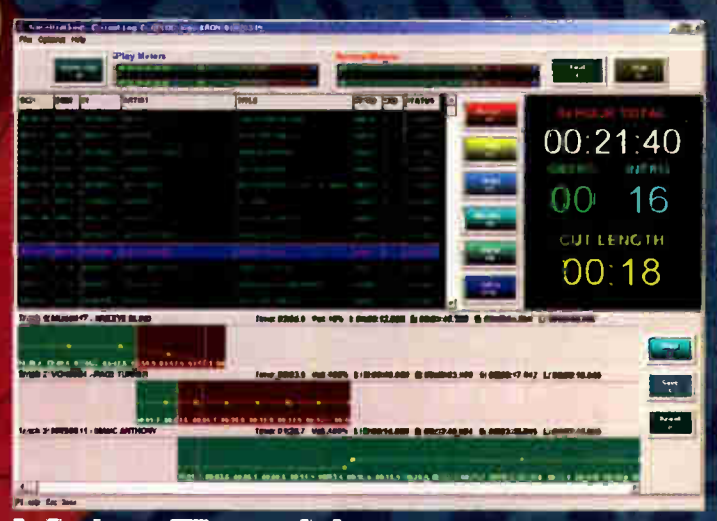


Log Tools

Production



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Background

▶ Continued from page 31

BCI provide include education and personal reference verification, a check of federal court records, civil and criminal history, motor vehicle reports, credit and drug screening histories. These companies also can verify any professional licenses and degrees.

Businesses are busy either developing or rethinking corporate security.

— Dennis Wharton

Security is on the minds of managers around the country, although not everyone is affected the same way.

Bob Holladay is president of family-owned Holladay Broadcasting, based in Monroe, La. It owns 10 stations in Florida, Louisiana and Mississippi.

"Our managers are responsible for checking on the people they hire," Holladay said. "We subscribe to an inexpensive Internet service, which checks for police records, judgments and other basics."

Holladay said his stations tightened security about three years ago, but even after Sept. 11 he doesn't think radio properties are targets for terrorists.

"While people directly affected by the attacks on New York and Washington may feel differently, nothing much has changed within our stations since Sept. 11," he said.

Clear Channel Communications grants a level of autonomy to its local clusters in hiring practices. Cary Pall is director of programming operations for the company's five-station Toledo cluster. He is responsible for hiring most of the air staff within his market group.

The cluster does not use outside companies to check backgrounds.

"We've always called around to get two or three people to corroborate claims applicants make," Pall said. "I usually pick up problems in the personal interview."

Donna Halper is president of Donna Halper and Associates of Boston, a small and medium radio market management consulting firm. She has seen a lot of exaggeration on résumés, which can be a concern when evaluating a potential employee; but, she says, the practice is not uncommon.

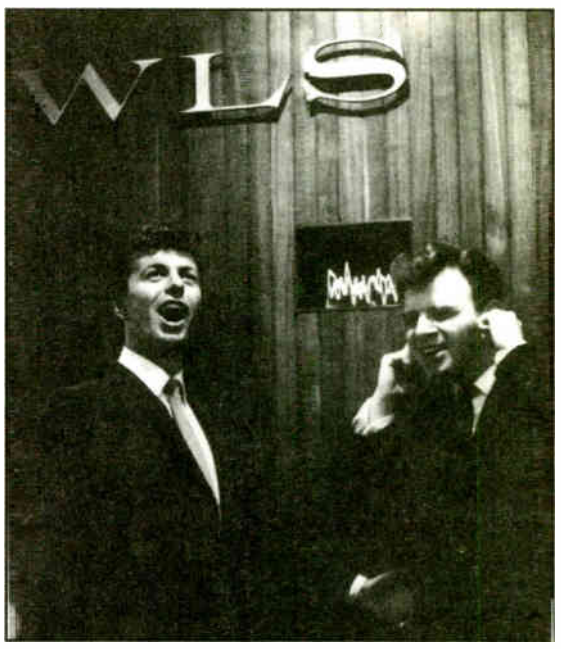
"People say they did a lot more than they did and with fewer jobs out there, they are just trying to make themselves look good," Halper said.

Common sense dictates that owners worry more about whether someone will steal petty cash than be a terrorist threat, Halper said.

"For some owners, the issues are alcohol and drug abuse in potential hires."

BOOK REVIEW

The Wisdom of Art Roberts



Dion hits a high note, Roberts stands by.

Art Roberts wasn't the usual "shuck 'n' jive," fast-talking top-40 jock, even though he was heard for a number of years in the 1960s on WLS(AM) in Chicago. His style was more cerebral. The listener had the impression that he was a kind, caring man.

Roberts exposed listeners to music from across the Atlantic, talked to teens in a no-nonsense way about their problems and in general sounded like a guy you wanted as a friend.

His paperback book, "Thinkin' Out Loud," is more of the same, but with the added perspective one gains with age and experience.

There are many pictures in this small book — Roberts with the Supremes, the Beatles, Donovan, Sam the Sham and other '60s icons. But the real treasures are to be found in the text.

One of the more valuable lessons for today's radio world is contained in a section called "What? Me in Sales?" Roberts talks about the necessity to make yourself valuable in more than one area. He describes how he got into sales and his successes and failures with clients.

Another great chapter is as true today as it was in 1965. "Hey, It's Your Turn to Do Production" sets the all-too-familiar scene of a jock rushing through a bunch of spots just to get them done with no thought to the content, delivery or results of the work.

Roberts was a perfectionist and believed that words meant something, that the inflections one used could mean the difference in getting traffic to visit that advertiser.

Another chapter, "Leaving Radio" concerns something that everyone in our industry has contemplated at one time or another. Roberts talks about using one's skills, passions and connections to get into more rewarding fields or to advance in the radio industry.

The entire book is written in short sentences, like Roberts talked. Simple. Direct. Honest.

The only big surprise is the last chapter, "Different Strokes for Different Folks," in which Roberts describes, painfully and directly, his recent stroke. He reveals how he felt, how he almost died and how he has recovered with the help of his loved ones and doctors. The chapter is unexpected and dramatically told.

You can order an autographed copy of "Thinking Out Loud" by visiting *www.artroberts.com*.

— *Ken R.*

Liddy Flips His Lid at WTNT

Recently, Clear Channel's WTNT(AM) welcomed syndicated talk show host G. Gordon Liddy to its new studios in Silver Spring, Md.

To greet him upon his arrival at the station, the WTNT staff dressed as Liddy-look-a-likes.

The Staff of WTNT

Internet Radio

Who Tops 2001?
See Page 36

WEB WATCH

Internet Radio Is Up, Internet Video Lags

by Craig Johnston

One of Web Watcher's friends read last month's installment and asked, "Why don't you write good news about Internet radio? Everything is 'this shut down' and 'that's gone.'"

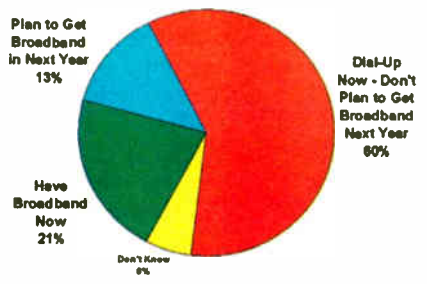
OK — fair enough. Here's some good news for Internet radio: Not everyone has broadband at home, not yet.

But according to **Arbitron's** recent study, **"Internet Eight: Advertising vs. Subscription — Which Business Model Will Win?"** the number of homes with broadband connection continues to grow at a healthy clip.

This is in spite of the rising price of broadband

See WEB WATCH, page 39 ▶

Homes with Internet Access Which Now Have or Plan to Get Broadband



Base: Currently Access the Internet at home

Source: Arbitron Internet Eight Study

Lindahl, Cox See Business Opportunities With CXRi

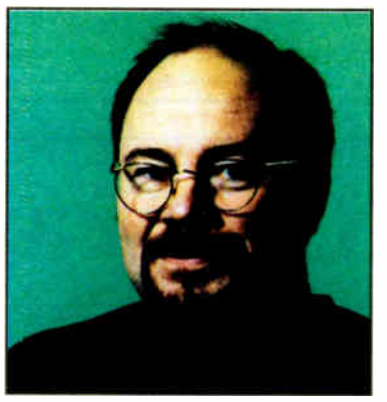
by Ken R.

By now most broadcast groups have established an Internet presence of some kind — at the very least station Web sites.

Many have established an online audio presence as well, the exception being Infinity Broadcasting, which flatly states there is not a viable streaming radio business model.

Cox Radio Interactive, the Internet division of Cox Radio Inc., bets that streaming its content and building multi-layered, interactive Web sites *is* a viable business model.

Cox, rated by Duncan's American Radio as the third-largest radio company based on revenue, has committed its resources — human and capital — to the development of its Internet strategy.



Gregg Lindahl

Gregg Lindahl is vice president of Cox Radio Interactive. He reports to Robert F. Neil, president of Cox Radio. Since CXRi launched in November of 2000, Lindahl has been responsible for all 76 Cox Radio station Web sites — all of them streaming.

According to the division's Web site, the CXRi sites attract 1.2 million unique users per month.

Old hand

Lindahl has watched Internet radio for some time. Prior to his position as head of the CXRi, he was president and COO of mp3radio.com, an Internet radio service that is a partnership between Cox Interactive Media and MP3.com.

In his opinion, the radio industry in general isn't doing very well with the Internet.

"I give most stations outside our group a 'D+' overall because of the dearth of functionality of most stations' Web sites," said Lindahl.

In assessing his company's efforts, Lindahl side steps the "grade" question for CXRi. He said that would be presumptive.

"But we're doing much better than most at creating content and usability on our sites based on what our target audiences want," Lindahl said.

CXRi knows something about what its listeners want. It has deployed a permission-based e-mail push system on its sites with partner MessageMedia Inc.'s UnityMail product.

Each CXRi site features an opt-in contest, ticket giveaway, prize or other offers that require users to log their name, age, gender, e-mail and phone numbers. Instead of targeting ads to listeners based on this information, CXRi sites send offers from its advertisers to users that opted into their database.

Multi-layered strategy

Lindahl said the e-mail campaigns are part of CXRi's overall platform sales. CXRi controls and never shares its users information with advertisers.

Click open any CXRi Web site. Front and center you will see a "listen live" box that is distinguished from the rest of the page by its quiet, utilitarian color scheme. Lindahl said this template is the work of CXRi's in-house Web team.

The company streams its audio in Windows format and offers a free Windows player that users can install in less than 10 minutes. StreamAudio, a subsidiary of peer-to-peer streaming service ChainCast Networks, provides streaming and ad insertion services to CXRi.

Listeners can also do a music "search" on CXRi sites, a multi-layered function that is provided by partner Alliance Entertainment Corp.

Music news, downloads, artist's biographies and compact disc purchase options are available with a click of the music search button on CXRi sites.

See CRXi, page 38 ▶

WHO'S TOPS IN NET RADIO 2001

Internet broadcaster MEDIAmazing.com topped MeasureCast's Internet radio station chart for 2001.

The Net-only Webcaster streamed 2.2 million more hours than any other Web radio broadcaster measured by MeasureCast in the year.

The No.1 streaming station network was WarpRadio Network, a group of 236 aggregated terrestrial radio stations.

WarpRadio exchanges or barters two minutes of radio station ad inventory per day from its radio network affiliates, in exchange for Internet streaming services.

The company's affiliates streamed more than 40 percent more hours in 2001 than its nearest competitor, CableMusic.com Inc.

There's no end to Net radio's growth in sight, according to MeasureCast CEO Ed Hardy.

"The total time spent listening to stations measured by MeasureCast last year rose nearly 400 percent," Hardy said, and was rapidly closing in on 500 percent as of the end of January.

— Laura Dely

Top-10 Internet Radio Stations 2001

Rank	Station	TTSL
1.	MEDIAmazing.com	6,394,644
2.	Virgin Radio	4,144,919 *
3.	JazzFM	3,060,837 *
4.	RadioMargaritaville.com	2,897,064
5.	ESPN Radio.com	2,823,932 *
6.	KING(FM)	2,079,209 *
7.	3WK Undergroundradio.com	1,869,785
8.	WFXZ(FM)	1,346,968 *
9.	WQXR(FM)	1,149,547 *
10.	WABC(AM)	1,131,588 *

* Denotes that station was measured only part of the year.

measurecast

Top-10 Internet Radio Networks 2001

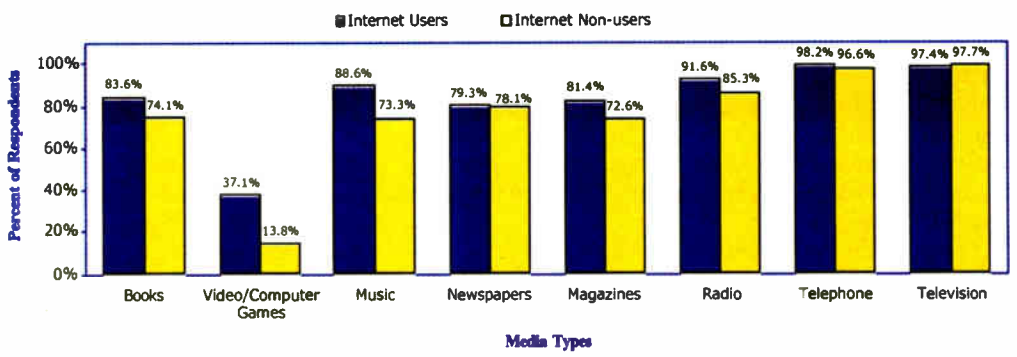
Rank	Network	TTSL
1.	WarpRadio	13,421,426
2.	CableMusic	7,792,672
3.	ABC Radio	7,781,323
4.	SurferNetwork	7,727,019
5.	MEDIAmazing	6,394,644
6.	StreamAudio	6,141,335
7.	Oneplace	5,736,288
8.	Virgin Radio	5,177,342
9.	JazzFM	3,060,837
10.	RadioMargaritaville	2,897,064

measurecast

You Can't Surf and Watch Television

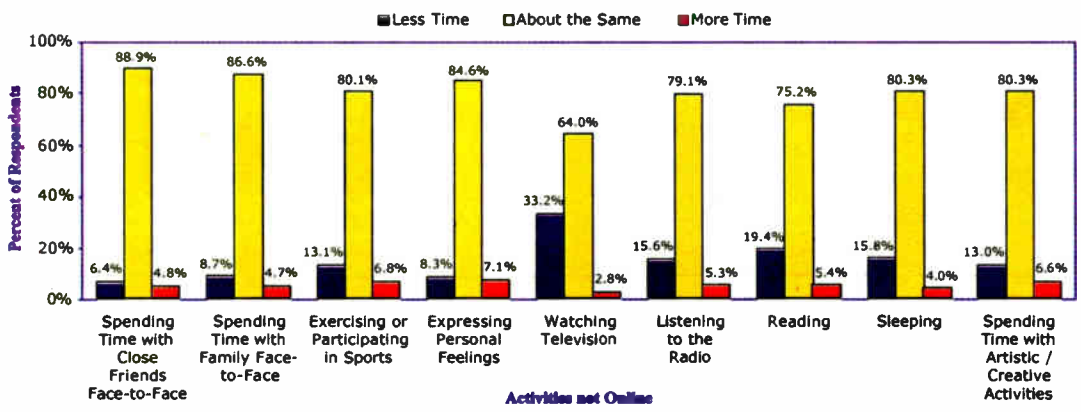
MEDIA USE

As in 2000, the 2001 UCLA Internet Report found that Internet users employ substantially more media than non-users. The only media used more by a larger percentage of non-users than users is television.



IS THE INTERNET CHANGING WHAT USERS DO AT HOME?

Most users report that they spend about the same amount of time on non-computing activities at home as they did before they had the Internet. Television viewing, however, showed a large decline.



It's not too surprising that a recent report finds that as Internet use increases, television viewing is most affected of all media.

Users spend less time watching TV once they have Internet access at home, according to the report. Radio listening also decreases as Internet use grows, the report finds, although only about half of the decrease in TV viewing.

Satisfaction

"UCLA Internet Report 2001 — Surveying the Digital Future," the second annual release, finds that Internet users overall are satisfied with online technology, which for most users includes a dial-up connection.

Consider this: users can dial up their favorite radio station, if it streams its content, and continue to listen while they shop, read news, write and read e-mail, Web browse or find entertainment information — the most online popular activities, according to the report.

As broadband remains an unnecessary luxury for the majority of Americans — the report finds that users rate the Internet a 4 on a scale from 1 (low) to 5 (high).

Mainstream utility

This is significant for radio. Until broadband becomes a mainstream utility, many analysts have said that television is an untenable online media.

The quality of streaming video with the dial-up connection that the majority of Americans use is so poor that no one would watch.

The skips and dropouts and poor image resolution on a tiny screen just about kills television online, at least for now.

Almost 40 percent of experienced users listen to music on their computer while they are engaged in other activities, according to the report. Almost a third of listeners with less than a year of online experience listen to music on their computers. And users in both groups also listen to the radio while online far more than they watch television — which is to be expected.

— Craig Johnston

In the Spotlight!

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CRXi

▶ Continued from page 35

Alliance Entertainment's All Music Guides locate anything commercially available on CD, according to the company.

Revenue split

The revenue from CD sales on CXRi sites is split about the same way that a retail record store splits with its wholesale suppliers, said Craig Hahn, CXRi's director of sales.

In-house, local Web producers provide each CXRi site with local events calendars.

For weather reports, CXRi was partnered with AccuWeather.com, but is now in a transition to a weather feature that was developed in-house at CXRi.

"We choose our partners based on economics in part," said Lindahl. "We develop a loose product spec and share it with vendors who have indicated an interest in helping us. We'll involve a lot of people in the final selection process."

In spite of its well-developed Web strategy, Lindahl confessed he believes that CXRi can be improved and refined. He said the company will continue to innovate.

"Is our execution as elegant as it could be? As consistent?" said Lindahl. "No, but we've done an awful lot in a short period of time that would make our grade better than average."

Lindahl admitted that because his company gives his stations a great deal of autonomy, there are some inconsistencies.

"Some of our stations get top marks; some in our group are average," said Lindahl. "It has to do with the markets, the competition and the people."

CXRi

Lindahl said that if CXRi succeeds, it's not because of some brilliant corporate oversight or incredible vision handed down from the home office.

"It comes down to great work by our local stations," Lindahl said.

Before Cox Radio launched the CXRi division, it conducted internal focus groups with its radio stations.

"We continually get input from them, formally and informally," said Lindahl.

"We have a whole department called 'Sight Services' which exists as the internal customer relations department," said Lindahl. "It's their job to communicate with stations, get input and see that their needs are served."

While CXRi has a national sales effort, separate from their terrestrial sales division, Cox allows its stations to work out Internet sales tactics.

Hahn has oversight of CXRi sales strategy, both local and national. While the company does not reveal its revenue numbers, Hahn said that CXRi's approach to sales is about the same as any terrestrial radio group's: about 80 percent of sales are local and the rest are national.

Sales local and national

"But CXRI has the national rep and I sell regionally," Hahn said. "And a lot of the local stations, either one or as a cluster, sell CXRi," Hahn said. "Our philosophy to treat the Net radio as 25th hour of the broadcast day."

"Ninety percent of CXRi's users are already listeners to the stations and 76 percent are P1 listeners, according to Arbitron's study from two years ago," said Hahn.

Hahn said CXRi sales are part of the total sales within Cox radio.

"Our local AEs begin (their sales) with radio and complete with Web sites," Hahn said. "We can do so much with the Web sites — coupons, tickets, games — we think of them as 'turbo-charged' radio stations. It's another way to reach listeners," Hahn said.

Cox designates an "Internet champion" in each market, usually an account executive or manager.

Lindahl said that each champion is someone who has shown an aptitude and a passion for Web projects and whose main function is to make sure that Internet strategies get the attention they deserve within the station.

"There may be specific additional compensation tied to the job and we recommend this to our stations," said Lindahl. "In some cases our managers hire a specific person for this job and those are the cases in which we have the best revenue results because that person is totally focused on the job."

Good prospect

Lindahl sees a bright future for Internet radio. It's a natural partner to the terrestrial signals, Lindahl believes.

Cox radio stations promote CXRi content each day in dozens of on-air mentions and off-line events. That's a model for success that many industry advisors advocate: push your Web site on-air, use your Web site to further develop your brand and listener loyalty.

"I think there's a plethora of opportunities to republish content we already create and use the Internet as the distribution platform," Lindahl said.

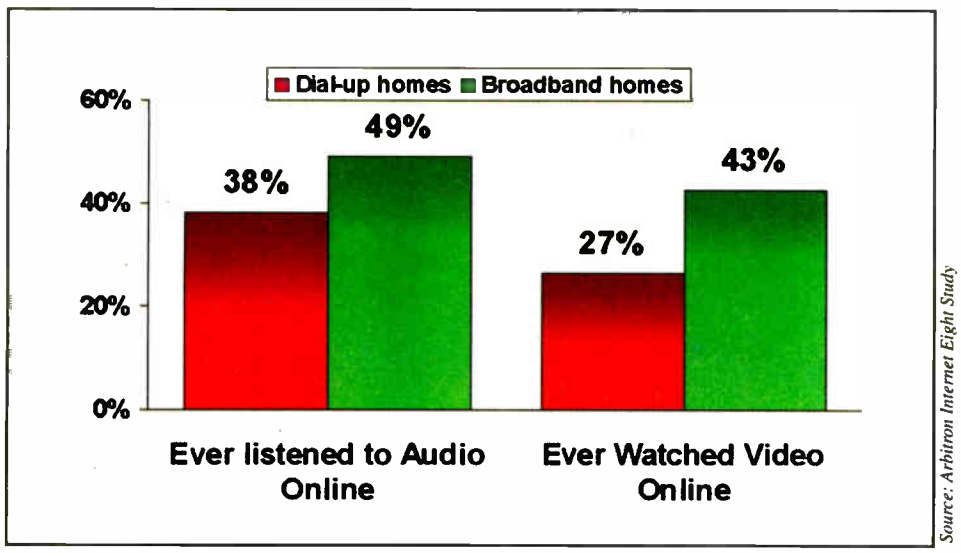
Ken R. is a former broadcaster who now owns a cable modem that improves his Internet surfing experience immensely.

He can be reached via e-mail to ken@kenr.com.

Web Watch

▶ Continued from page 35

access, which rose 12 percent last year, according to **ARS Inc.**, an Internet technology analysis firm. ARS also found that the cost of DSL service increased 10 percent in 2001.



Source: Arbitron Internet Eight Study

Arbitron finds that **nearly 75 percent of U.S. citizens now have access to the Internet at any location.** From January 2001 to January 2002, in homes with Internet access, broadband access grew from 12 to 21 percent, a 75-percent increase, according to the study.

Perhaps more telling, another 13 percent told Arbitron they plan on getting broadband this year.

They've gotta have it

"When we talk to people about broadband, some say they don't have it because they can't get it yet," said Arbitron's vice president of Webcast services, **William J. Rose**. "Some say they can't afford it, but everybody says they want it."

The Arbitron study shows that broadband access makes a terrific difference in whether an Internet user even samples video streaming on the Internet, while broadband matters less to those who sample audio streams.

Of those dial-up users who do sample video, many don't return after just a single try, according to Arbitron's previous Internet study, from six months ago. But with broadband connections, video quality vastly improves.

That makes sense to Web Watcher: Streaming video over a dial-up connection is a slide show of postage-stamp sized images. However, audio on this kind of connection sounds pretty good.

So while most dial-up Internet users find streamed video unsatisfying, Internet radio has a chance to build a loyal following, but that window of opportunity is likely to be narrow.

As more homes get broadband access, will there be anything to watch?

Web Watcher ran into **RealNetworks Inc.'s President** and **COO Larry Jacobson** at the **National Association of Television Programming Executives Convention** in January. He was deal-making for the **RealOne** online multimedia subscription service.

"What we're here doing at NATPE is we're extending our conversations with our programming partners to take the next logical step in the process, which is: How do you get more programming packaged for subscription on the Internet?" said Jacobson.

They don't sell radio programming at NATPE. Jacobson and his competitors were buying *television* programming.

Still, according to **MeasureCast's** numbers, Internet radio had a meteoric growth rate in 2001.

"The Internet radio industry is on a roll," stated **MeasureCast CEO Ed Hardy**. "Streaming broadcasters attracted millions of new listeners in 2001. The total time spent listening to stations measured by MeasureCast last year rose nearly **400 percent**."

That growth trend continued in the first part of 2002. Advice to radio broadcasters from Web Watcher: Make hay while the sun still shines.

One company doing exactly that is **Listen.com**, which late last year added its subscription online music service **Rhapsody**, with music licensed from 46 independent labels to its existing ad-supported Internet radio lineup of 50 Internet radio channels. (Content for those channels is provided by an in-house staff of 18 programmers at Listen.com.)

In January it began to license the catalog of major record label **Bertelsmann AG**, then a few weeks later announced similar agreements with **EMI Group** and **Sony Music Entertainment**.


Sean Ryan

"This gives us the rights to the equivalent or more music than any other service on the Internet," said Listen.com **CEO Sean Ryan**.

With the addition of the major label music to its offering, the company **raised its minimum** subscription rate to **$9.95 a month**, from the **$5.95 monthly rate** it launched with, just two months earlier.

Web Watcher notes the company's strategy appears to be to become like a record store, where consumers find music from all of the labels. Listen.com needs only sign **AOL Time Warner Co. and Universal Music Group** to score a **major label bingo**.

The Listen.com Internet radio service remains free, but users must now register with the Rhapsody service to access the channels.

"At this point, we're moving people toward paying for music," said Ryan. He compares the situation to that of cable TV, where some channels are free and require payment.

RealNetworks announced that its combined **RealOne** and **GoldPass** online media subscription services **topped 500,000 subscribers** in January.

"This proves that consumers are willing to pay for premium content and reinforces the strength of the Internet as a tool in generating new revenue streams for our content partners and other major media companies," stated Real's Jacobson.


Larry Jacobson

The RealOne service includes access to ABC News, E! Networks, the National Basketball Association, Wall Street Journal Online and more for $9.95 per month. The combination of RealOne with RealOne Music, the company's online major-label music service, is **$19.95**.

Other developments

There was news on the ad-supported Internet radio front as well. Streaming media advertising services company **Hiwire Inc.** will serve as advertising sales representative for **StreamAudio**, **Live365.com**, **Beethoven.com** and the **SurferNetwork**.

The total time spent listening to stations measured by MeasureCast last year rose nearly 400 percent.

StreamAudio, a subsidiary of the **ChainCast Networks**, provides streaming and ad insertion for several major broadcasting groups. Its customers include Live365.com, which regularly tops Arbitron's Webcast Networks Ratings Report.

It also includes Beethoven.com, a popular Internet classical music station; **Cox Radio Interactive**, Cox Radio's 76-station streaming division and the SurferNetwork, which offers more than 1,000 terrestrial radio station broadcasts online — all are StreamAudio customers.

Internet radio got some competition from a company whose Web streaming is done for exposure, not for profit. **Sirius Satellite Radio** found a way for potential customers to sample its wares before its launch, when it put its 60 commercial-free music channels on the redesigned Sirius Web site.

To listen online, listeners must first register to become "**Sirius Insiders**," a process that provides the company with the name, age, gender, birthday, addresses — both e-mail and snail — as well as phone numbers. Web Watcher tips his hat to the satellite broadcaster's smart marketing that lies behind the cute little Sirius dog logo.

Once users have surrendered their personal data, they may listen to live streams of the 60 Sirius music channels, chat with other "Insiders," go backstage on their favorite channels and view interviews, photos and other exclusive content.

Competitor **XM Satellite Radio Inc.** also offers potential customers a chance to sample loops representative of its channels over the Internet.

When Web Watcher hears about good news for the common man, he thinks it deserves to be noted. Aspiring music artists may receive a boost from an Internet music channel devoted exclusively to their exposure.

The arrangement is between music channel/streamer **Radio Free Virgin** and the 13,000-member, U.S.-based Internet music community group **Just Plain Folks**.

"Just Plain Folks is an organization open to all aspiring artists at any level of career development," stated **Brian Austin Whitney**, the organization's founder. "The common barriers that may keep great music from being heard on mainstream media outlets simply don't exist here."

See, Web Watcher can bring good news.

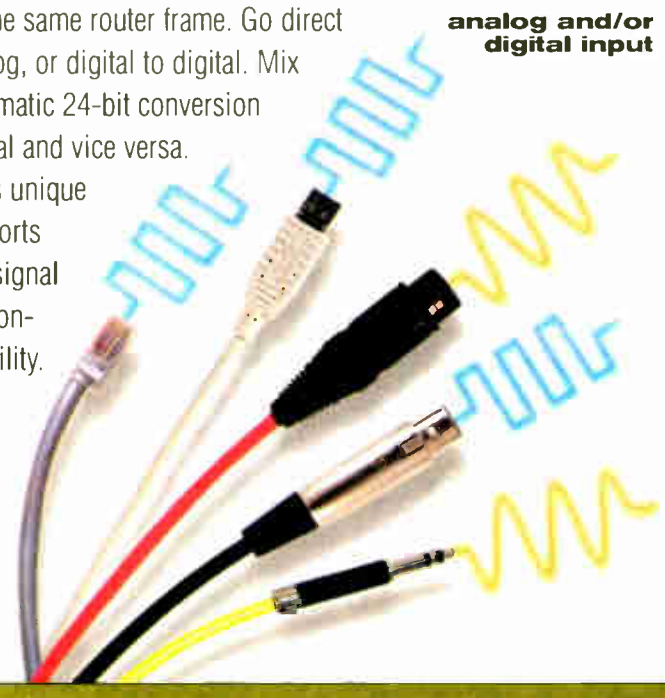
Craig Johnston is an Internet and multimedia producer in Seattle.

Contact him via e-mail at Craig@CraigJohnston.com.

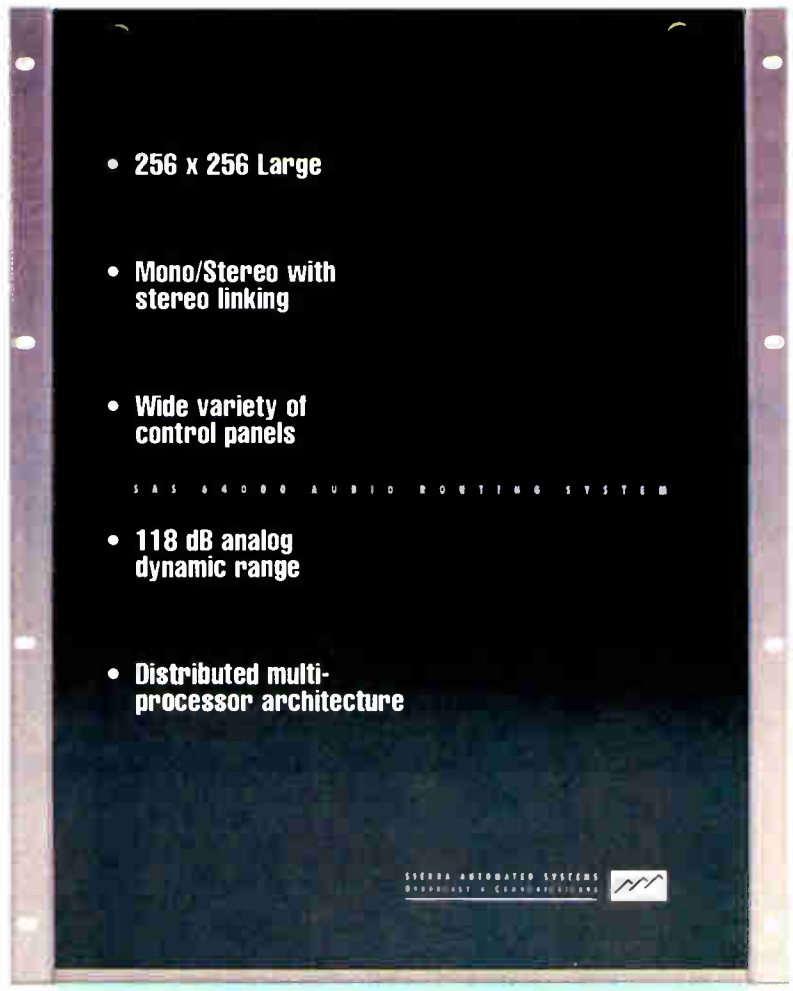
ROUTING SYSTEM

IN If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital. A true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. Best of all, the SAS64000 Audio Routing System creates a path to AES/EBU digital audio without creating analog obsolescence.

This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Mix it up with automatic 24-bit conversion analog to digital and vice versa. Either way, this unique architecture sports uninterrupted signal integrity and non-blocking flexibility.



analog and/or digital input



Mix and !

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Studio Sessions

Radio World — Resource for Radio On-Air, Production and Recording — March 1, 2002

PRODUCT EVALUATION

A-T Cardioid Resets Bottom Line

by Ty Ford

Low-cost, Chinese-made microphones flooding the U.S. market in the last two years have altered the pro audio marketplace radically.

Audio-Technica has taken its time in responding to the challenge, but its latest effort, the large-diameter, side-address, cardioid AT3035 electret condenser microphone, deserves recognition with its published self-noise of 12 dB-A (more on that later), 12 dB/octave LF rolloff at 80 Hz, 10 dB pad and suspension mount. The retail price is $349.

The AT3035 has the right features at an attractive price.

Sturdy, well-made

At 14 ounces, the brass body has a nice heft, feels sturdy and is well-made. The AT3035 capsule is nothing like any A-T capsule I have seen.

The capsule is mounted stiffly to the top of a hard, black plastic hemisphere and is held in place by a C-clamp that also serves as the ground connection.

The diaphragm looks smaller than 1 inch in diameter, but closer inspection reveals a small circumferential flange that hides the true diameter of the diaphragm. Phantom power of 11 to 52 VDC at 3 milliamps is required. The maximum SPL with 10 dB pad is 158 dB, 148 dB without pad.

Perhaps taking a tip from the Neumann TLM 103, the AT3035 circuit board is small, circular and firmly attached to the base of the body. On it are a few small surface mount technology (SMT) components and an output transformer.

The circular head grille consists of a sturdy two-layered metal mesh: fine mesh inside, coarse metal outside. The parts fit together nicely, giving the impression of a solidly made microphone.

Impressions

The spider suspension mount is simple and effective and has a brass, threaded insert for 5/8-inch mounting.

If you are using an RE20, SM7 or 421, swapping out to any cardioid condenser microphone will require some rethinking.

Through two channels of a GML microphone preamplifier, the AT3035 was about 3 dB less sensitive than a Neumann TLM 103. Although the published self-noise specs of the AT3035 are 5 dB higher than those of the TLM 103, after adjusting mic preamps for equal level, I found the difference in self-noise to be almost inaudible.

As such, I would revise downward the self-noise figure. At about 9 dB-A, it is quiet enough to allow you to hear noises in your studio that previously may have gone unnoticed.

The AT3035 sounded more dense with a slight edge; the TLM 103 slightly more

See AT3035, page 47 ▶

TIPS AND TRICKS

A Choral Concert For Broadcast

by Bruce Bartlett

Musical groups in your community are great sources of program material. You can record local choral groups, municipal bands and orchestras and such for broadcast.

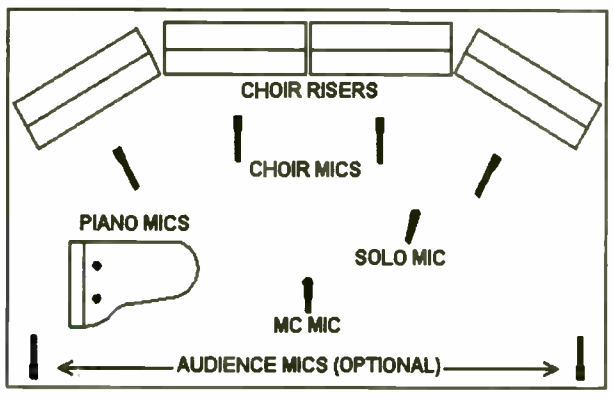


Fig. 1: Microphone Positions for Recording a Choral Concert for Broadcast

Homework

If the musical group is good enough, the recording can be uploaded to satellite for national distribution.

Here are some ways to record, mix and edit a choral concert.

First, contact the director of the organization to find out the instrumentation.

How many voices are in the choir? Any soloists? Is there a piano or other instruments? If this is a live concert, will audience microphones be needed?

Once you have this information, you can draw a stage plot, like the one shown in Fig. 1. From this diagram, generate an equipment list of microphones, mic stands, snake, recorder and so on.

Usually it is best to record on a multitrack recorder, which allows one to adjust the mix balances after the session. This permits the mix to be done in quiet surroundings over familiar monitors, letting you take as much time as is needed to perfect the mix.

An easy way to record to multitrack is to patch the recorder into the insert jacks

See TIPS, page 49 ▶

PRODUCT GUIDE

Products for Radio Air & Production Studios

Mail info and photos to: RW Product Guide, P.O. Box 1214, Falls Church, VA 22041

Classic Jingles Available on CD

Classic Johnny Mann jingles are available on CD to jingle collectors. Stations such as KHJ, KFRC, KFWB ("Color Radio"), KEWB, WMCA, CKLW and others are included in a series of CD products being distributed by Ken R. LLC.

The original jingles were obtained from sources including the private collections of Johnny Mann and Chuck Blore. The jingles were processed with CEDAR De-Noise to remove any hiss.

One of the collections, "The Real KHJ by Johnny Mann," is a limited edition of 200 two-CD sets; no more will be made. This set has been described as "the ultimate collector's item" and includes a one-hour interview with Mann describing how the KHJ *a cappellas* came into existence and about his other work backing up entertainers such as Frank Sinatra.

Johnny Mann

"Johnny Mann: Let the Games Begin" features patriotic songs, such as "Yankee Doodle," "Dixie" and "America the Beautiful." The Johnny Mann Singers recorded this collection in 2000 and the arrangements are by Mann.

The collections range from $19.95 to $59, plus shipping and handling.

For more information contact Ken R. LLC in Ohio at (419) 866-5300, e-mail Ken@kenr.com *or visit* www.kenr.com.

Pro Tools Compatibility From Metric Halo

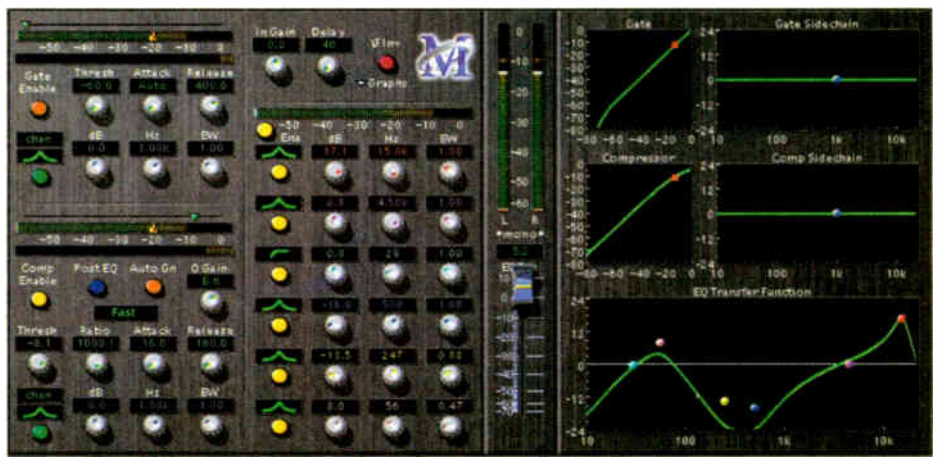
The Pro Tools-compatible ChannelStrip from Metric Halo is a console channel strip audio processing section with a TDM plug-in interface. The company says it offers DSP and an interface to allow Pro Tools users to work as efficiently as with a dedicated mixing console.

Standard audio processing facilities are provided in the plug-in, including input gain/trim, expander/gate with integrated side-chain filter, compressor with integrated side-chain filter and six-band parametric 48-bit EQ.

There are six selectable filter types per band: peaking/parametric +/-24 dB boost/cut per band, high shelf with adjustable dip, low shelf with adjustable dip, bandpass, high cut and low cut. There is a user-adjustable, 255-sample delay, output gain/trim and high-resolution metering for each processing block.

Price: $345 to $699.

For more information, contact Metric Halo in New York at (888) 638-4527 or visit www.channelstrip.com.



Convenient Tube Mic Kit From DPA

The DPA 3532-T tube mic kit is based on the popular 4041 microphone, using a tube preamp. The 4041 is a large-diameter (1-inch) microphone suitable for vocals and solo recordings, as well as strings and wind instruments.

The microphone is packaged with the DPA 3541 studio mic kit. The 4041 has a transparent audio path and a low noise floor (maximum 7 dB). The mic's SPL handling capability is 144 dB peak.

Each mic kit includes a pair of microphones in a foam-lined briefcase (the KE3532) with tube preamps (MMP4000-T) and omnidirectional 1-inch cartridges.

The 3532T stereo mic kit also contains the following accessories: a two-channel high-voltage mic amp (HMA4000), two 30-foot lengths of mic cable (DAO4110), two windscreens (DUA00 40) and one stereo boom with holders (UA0836). Price: $8,000.

For more information about DPA Micro-phones, contact distributor TGI North America Inc. in Ontario at (877) 426-4844 or visit the company Web site at www.dpamicrophones.com.

Rave Reviews!

"Excellent Product" — Doug Walker, Clear Channel, Cincinnati

"Telos has taken two great products [the Zephyr and the Zephyr Express] and made them better. They listened to the customer." — Raul Velez KNBR, KFOG, Susquehanna Broadcasting of San Francisco

"Telos asked us what we wanted and they put it in there... you can't ask for anything more than that." — Paul Burt, Clear Channel, New Orleans

"It's even easier to use than the original Zephyr." — Michael Black, WEOS, Geneva, New York (NPR affiliate station)

"The most popular ISDN digital transceiver in the country has a fresh new look... Zephyr Xstream, a slick, updated version of [the] familiar Zephyr." — Steve Kirsch, Silver Lake Audio, New York

Telos

www.zephyr.com

PRODUCT EVALUATION

New Studio Voice From Behringer

by Alan R. Peterson

Since the mid-1990s, German manufacturer Behringer has rolled out some fine audio gear. True, its product line was sometimes overshadowed by legal wrangles, most notably with Mackie Designs. But those two companies reached a confidential settlement in 1999.

Today, Behringer is producing a line of compressors, feedback minimizers, processors and mixers that not only sound good, but are also recognized as terrific bargains as well. Plus, these products exist in plentiful numbers and can be had by a simple trip to the corner music superstore.

One such product is the VX2000 Ultra-Voice Pro, a 1RU microphone preamp and processor that is intended for vocalists on stage and in the studio, but is also appropriate as an inexpensive alternative to more complex and costlier broadcast mic processors.

Stacked against another

The tendency in examining a new product is to compare such a device with a longtime favorite, and it is not a stretch to say a comparison could be made with the Symetrix 528, a trusty friend in the production rack.

But Behringer seems to be aiming more for musicality and a certain subjective feel with the VX2000, rather than the precise and quantifiable parameters set forth by the Symetrix unit.

Jocks afraid to mess with the parametric EQ section of the 528 might be more inclined to experiment with the friendlier EQ section of the VX2000.

The unit I reviewed was packaged with a line cord and user manuals in three languages — how can you not smile at a book titled *"Bedienungsanleitung"*?

The VX2000 can be used right out of the box with almost no manual flipping necessary; the signal flow and the flow of the front panel match quite well. If you have ever set knobs on a 528, the Behringer unit will be a stroll in the sun.

The back panel reveals gold-plated XLR connectors and quarter-inch phone jacks for all ins and outs.

Also on the rear panel, a pair of insert send/return jacks to patch in another type of processor if desired. A male XLR jack marked Recording taps an output prior to the unit's de-essing circuit.

The front panel has the distinctive Behringer jet-black motif with white labeling, shiny aluminum wings, black knobs and illuminated buttons.

The inside of the box may infuriate you: it appears as if you have paid for an empty chassis!

The VX2000 can be used right out of the box with almost no manual flipping necessary.

Actually, all of the works exist on a tiny PC board mounted vertically behind the front panel. Good quality 4580 op amp chips and the occasional TL072 and LM389 SMCs dot the circuit board.

The I/O circuits and the power supply caps and diodes reside on a similarly tiny PC board mounted to the back.

What takes up a fair portion of the real estate inside the chassis is the toroidal power transformer. If Behringer did away with the toroidal unit and used a wallwart, the processor's circuit boards could almost fit inside a paper towel tube.

Twistin' the knobs away

Behringer makes no secret about wanting a vintage sound and feel. The input stage itself is labeled Discrete Vintage Input.

The input stage is populated by a gain control, a mic/line selector button, a 48V phantom power switch, a low-cut rumble filter and a phase inverter button.

The rumble filter offers more than your typical 75 Hz air conditioner suppression. A second knob next to the gain control lets you dial in the corner frequency where you want the cutting to begin, anywhere from 15 to 360 Hz.

The next stage drops an expander/gate into the signal path. One button switches from gate to expander, while another bypasses the effect. Simple threshold and depth knobs make it easy to dial in the amount of reduction desired by ear.

Next, a stage marked Tube Emulation adds a quasi-tape saturation effect to the signal path. The effect is often done with clipping diodes or FETs, and there certainly is not a tube to be found in the VX2000.

I'll be honest in telling you I could come up with no instance when I would ever need such a process in broadcast

See BEHRINGER, page 45 ▶

Behringer

▶ Continued from page 44

audio. Even if I were trying to emulate the sound of a ribbon microphone (in bad need of re-ribboning), I would probably do so with mic modeling software. Still, it is there if you have a need for it.

The opto compressor stage isn't a classic Urei squeezebox, but it does the job.

With yet another nod to classic technology and terminology, this stage evens out the dynamics of your microphone signal using the surface-mount equivalent of the old lightbulb/LDR opto-couplers.

Threshold

A single knob lets you dial in the threshold where you want compression to begin. There is no variable ratio control, only a single button that alternates between a little squeezing directly to Squish City.

A button marked Fast shortens the attack time of the compressor, while a knob adjusts the release time. Tune this stage very carefully against the expander and you've got Mr. Testosterone-Liner-Guy. Even your tongue-clicks will command respect.

Behringer added an enhancer, which adaptively adds brilliance to heavily compressed signals that have lost highs. Like EQ, it is easy to overuse this feature, especially if your ears become fatigued over a long day in the studio. Add a little if you must, but you probably won't have to.

The three-band voice-optimized EQ stage of the VX2000 does not offer the ultra-wide possibilities the Symetrix 528 does.

The frequencies are, for the most part, nailed down to the range where it does the most good in the human voice.

There is no Q (bandwidth) control, which means you won't be able to notch out that shrill little overtone in the client's daughter's voice.

But with only four dials and simple legends like Breath and Warmth, the EQ stage on the VX2000 is simple to operate, and results are immediately heard without stopping to analyze what exactly you dialed in.

The Tuning and Warmth controls comprise a sweepable boost/cut stage from 130 through 720 Hz, -12 to +8 dB. According to the manual, the Q narrows somewhat in level reduction mode.

The Presence knob shines things up around 1.7 kHz, while the Breath knob affords you some breathing room up and around 8 kHz. An Absence button drops in some filtering around 4 kHz to remove a touch of harshness.

Now riddle me this: If harshness was such an issue for this processor, why have that earlier tube saturation distortion stage?

Finally, the signal exits through a bypassable opto-driven de-esser stage and a master volume control. The de-esser controls include a threshold knob and the frequency range dial. The unit I reviewed used the charming European convention of "8k6" to convey 8.6 kHz on the front-panel legend.

Conclusions

Although the Behringer VX2000 Ultra-Voice Pro is for musicians and singers, it fulfills a need in the modern broadcast production studio, or more accurately, production *kiosk*.

I see this processor riding to the rescue in those new narrow recording and dubbing spaces that are quickly being built to accommodate multiple purposes for multiple stations, such as quickie radio production and voice tracking.

Not every studio or recording space need be a candidate for the biggest and costliest microphone processor built today. A VX2000 combined with a simple Shure SM57 microphone sounds surprisingly respectable, is inexpensive to put together, and can be used and tuned up by almost anybody.

It is easy to draw out a pointer chart for the Behringer unit, showing which direction the knob pointers should go to achieve a certain effect or signature sound. And let's be honest: Most folks have been diagramming their Symetrix 528 settings this way for years!

Two notes to conclude on. First, don't necessarily go by the published specs in the manual. Claimed frequency response is 10 Hz to *200 kHz*, which is pretty darned amazing until one notices that the measurements were taken in Bypass mode — in other words, *straight wire* with no electronics involved. That's a bit too sneaky for me.

Second, domestic availability of this model may be tricky. My review unit was sent from Germany rather than the company's American distributor. According to the company, however, as of press time, the VX2000 may now be available at larger retail chains.

I admit a preference to the similarly inexpensive dbx 286 mic processor, only because I owned that unit first. But there is much the Behringer product can offer.

You too may never find a use for that tape saturation stage, but at a portion of the asking price of other mic processors, you may want to watch for the VX2000 Ultra-Voice Pro to arrive on our shores for yourself.

Alan Peterson is an on-air host for WAVA(FM), Washington, and a long-time RW writer and columnist. Reach him via e-mail to alanpeterson@earthlink.net.

Product Capsule:
Behringer VX2000 Ultra-Voice Pro Microphone Processor

Thumbs Up
- ✓ Well-constructed with quality components
- ✓ Extremely inexpensive
- ✓ Larger-than-life vocal compression
- ✓ Simple panel

Thumbs Down
- ✓ Limited EQ
- ✓ What to do with the tube emulation stage?

Price: $159

For more information contact Behringer in Washington state at (425) 672-0816 or e-mail support@behringer.com.

PRODUCT GUIDE

Software Plug-Ins Replace Hardware Processors

Bomb Factory software plug-ins provide photorealistic representations of professional studio equipment and can replace popular hardware processors.

The company says the software was designed to capture nuances of real-world equipment at an affordable, space-saving level. The user's PC screen will show each knob and switch. Inside, every tube, transistor and transformer is captured digitally.

The software replicates familiar gear in affordable plug-in versions. The Fairchild 660, for example, replicates a 100-lb., $35,000 Fairchild compressor in a version that fits in a PC for $399.

Plug-ins include the Joemeek SC2 compressor ($399) and Meequalizer ($249), the Bob Moog Moogerfooger Ring Modulator, Lowpass Filter, Analog Delay and 12-Stage Phaser ($249 each or $599 for the Moogerfooger Bundle).

The SansAmp PSA-1 plug-in ($499) includes 49 original SansAmp presets, including Marshall, Mesa Boogie, Hiwatt, Fender and Ampeg SVT sounds.

Prices range from $249 to $599, not including the $39.95 iLok USB Smart Key required for using Bomb Factory software on USB-equipped computers.

For more information call Bomb Factory Digital Inc. in California at (818) 558-7171 or visit the company Web site at www.bombfactory.com.

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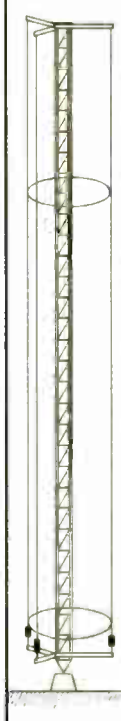

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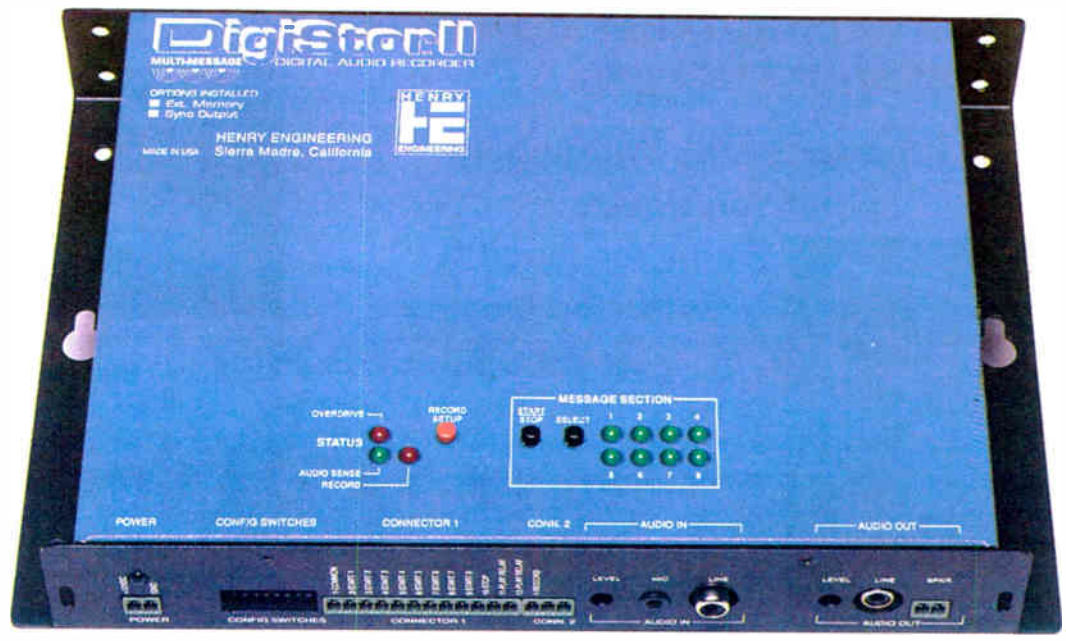
PRODUCT EVALUATION

Silver Sweeps Winner Puts DigiStor II to Work

by Bob Seaberg
Seaberg Communications Service



WHEATON, Ill. I'd like to offer my thanks to Henry Engineering and Radio World's Silver Sweepstakes for the DigiStor II digital audio recorder I recently received (Oct. 24, 2001, page 4). It is a really neat device.

When I received the unit, I scanned the instructions and gave it a test drive to see what would happen using only the front-panel switches. I was able to record on all eight channels, but operation was a bit confusing.

I telephoned Hank Lansberg at Henry Engineering to thank him for the unit and to clarify operation. He mentioned that the front-panel switches are primarily to check the unit and not intended for programming. He suggested I make use of the remote control switches. This proved to be good advice. I quickly mastered the learning curve.

Initially I thought it necessary to utilize eight message channels to obtain eight minutes of recording. One channel can store eight minutes, however; and actually I was able to record slightly more than nine minutes.

Audio quality was excellent for speech; music was acceptable within the audio bandwidth limitations of 6.5 kHz.

For using the telecoupler, the instructions stressed that pin No. 1 of the telecoupler assembly must be mated to remote control connector pin No. 1. While certainly reasonable, pin No. 1 is not clearly identified on the unique, heat-shrink-covered assembly.

A little peering under the heat-shrink revealed a jumper that the sketch shows is near to pin No. 1. I tried a phone call to the unit and got no response. The instructions say all switches should be up, not mentioning that switch No. 8, "recording disabled," must be down.

Once I figured this out, DigiStor II performed like a champ.

I am in the process of installing a Part 15 low-power camp radio that will allow parents dropping their kids off at camp to receive instructions in their cars as to parking, check-in, etc. The DigiStor II will be ideal for this application.

Thanks for this great prize.

I am installing a Part 15 low-power radio station that will allow parents dropping off campers to receive instructions in their cars as to parking and check-in.

AT3035

▶ Continued from page 41

open and with more top and bottom.

My impressions remained intact when I swapped out the GML for an Aphex 1100 tube preamp. There was less upper bass or lower midrange "chest" with the AT3035 and it was also less prone to the LF increase due to proximity effect.

Not woofy

I could speak within 1 or 2 inches of the grille without getting overly woofy. This experience did not match the frequency plots, which show the AT3035 basically flat down to 60 Hz and the TLM 103 flat to 75 Hz before each slowly fall off.

On the top end, the AT3035 certainly is not the least bit dark-sounding, but perhaps not as airy as the TLM 103.

The frequency plot for the AT3035 shows two small peaks at 6 and 13 kHz. The TLM 103 frequency plot shows the HF response up the same amount at 6 kHz and staying there until 15 kHz.

I had a pair of AT3035s here for the review. They sounded virtually identical.

If you are using an Electro-Voice RE20, Shure SM7 or Sennheiser 421 mics, swapping out to any cardioid condenser microphone will require some rethinking.

First is the issue of microphone sensitivity. Most condenser microphones are noticeably more sensitive than dynamic types. Replacing a dynamic with a condenser usually means you have to back off the input sensitivity of the preamp and the threshold of any compressors.

Because condenser microphones often have a more extended top end, it may be necessary to adjust any EQ in the mic chain.

Get 90 degrees off-axis from an RE27 N/D and you are pretty much gone except for some low-level, off-axis, phasey weirdness. Like most cardioid condenser microphones, however, the AT3035 has a much wider cardioid pattern. As a result, it is a lot more sensitive to bad room acoustics than the dynamic mics I have mentioned.

Suck up sound

If your studios have a lot of hard reflective surfaces like glass and untreated walls, you will hear the room — the louder the talent's voice, the more room you will hear. A balance of absorptive and diffusive surfaces that suck up and break up the sound is the best way to treat the problem.

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Ty Ford may be reached at www.jagunet.com/~tford.

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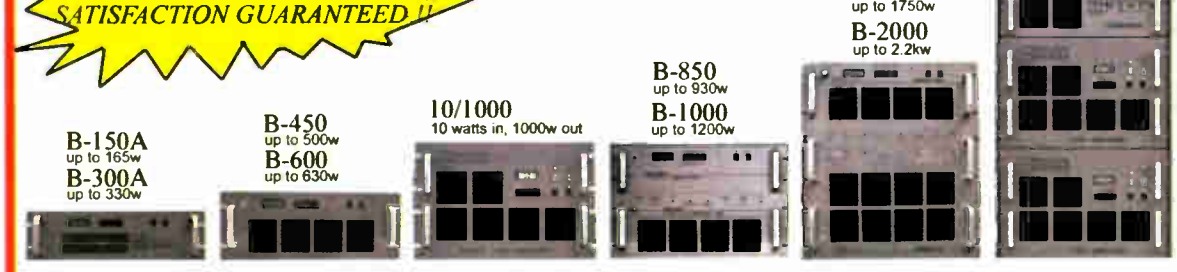

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Tips

▶ Continued from page 41

in the PA console at the venue. Usually the insert-send jacks are pre-fader; any fader changes done during the concert will not show up on your tape. A typical track assignment might be like this:

1 - Choir left
2 - Choir center
3 - Choir center
4 - Choir right
5 - Piano low
6 - Piano high
7 - Soloists
8 - MC

Audience microphones can go on tracks 9 and 10 if you have enough tracks.

If it is not feasible to tie up the console insert jacks, connect to the direct-out jacks. Just note that those are usually post-fader.

Another option is to connect to the aux-send outputs. Turn up aux-1 send for mic 1, aux-2 send for mic 2, and so on. Of course, this arrangement requires a console with eight aux sends.

Setup and recording

When you arrive at the rehearsal, set up your multitrack recorder next to the front-of-house console and plug it in. An eight-channel snake (phone-to-phone, or phone-to-RCA) provides a neat hookup between console and recorder.

You will use the same microphones for recording and PA. Once the choir risers are set up on stage, place a cardioid condenser mic on a tall stand about 3 feet in front of each choral section.

This mic placement is fairly close in order to prevent feedback, and to reduce pickup of amplifier fan noise and air-handling rumble. Each microphone should be a few feet above the head height of the back row, angled down toward the choir. This mic position gives a good balance between the choir rows.

Set up another microphone for soloists and the master of ceremonies. A good mic choice here is a cardioid condenser vocal mic with a foam windscreen.

Then mount a couple of cardioid condensers inside the piano, perhaps about 8 inches above the hammers and 8 inches horizontally from them, over the bass and treble strings.

Finally, mic the audience by putting a couple of cardioids at either end of the stage aimed at the crowd. This simple technique works well. If you don't have enough tracks to record audience reaction, just bring up the choir mics in the mixdown during applause.

Plug the microphones into the PA stage box, noting which mic goes into which input. Back at the console, mark the mic assignments with a strip of masking tape below the corresponding faders.

Set the recording level for each track with the PA console input trims (and maybe with the aux send levels). Ask the director to have the choir perform a loud piece. If you are recording digitally, try setting the peak levels to -10 dB, which allows some headroom for surprises.

Just before the concert starts, begin recording. Note the tape counter times of each song's start and stop point. You will refer to those times later during mixdown.

Back in the studio, play the multitrack tape and set up a mix.

Because the choir was miked closely to reduce feedback, it will sound dry and a little bright.

Add some artificial reverb, and consider rolling off some highs to achieve a natural tonal balance. As for the audience mics, solo mic and MC mic, bring them up and down as needed. Record the mixes to DAT.

You might prefer to mix the concert recording almost nonstop. If the mix needs to be changed for a particular song, back up the multitrack, reset the faders, and start up the multitrack again. Keep the DAT rolling. Write down the DAT counter times where edits will be needed.

Editing

After copying the DAT recording of the mixes to your computer hard drive, edit the recording using digital editing software. The concert might need to be pared down to 58:30 in order to fit a one-hour slot. To do this, remove pauses between songs, shorten applause, and edit out songs, if any, that the director said were performed poorly.

If the concert is too short to fill the allotted program time, consider adding CD selections performed by the same group. Put some applause after these selections so that they sound like they are part of the concert. Overlap the reverberant tail of each CD song with the beginning of the applause; this will make the CD performance and applause sound like they are in the same room.

You might need to adjust the levels of some songs up or down, or compress the entire program slightly, so that song levels are consistent.

Finally, copy the edited recording to DAT, leaving one minute of blank tape at the beginning to avoid dropouts. There's your finished concert tape, ready to broadcast.

Bruce Bartlett recently recorded a choral concert for national distribution on NPR.

Reach him in c/o RW.

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BSR model EQ3000, stereo frequency EQ/spectrum analyzer. Has RCA connections, L/R In/Out, LR Tape 1 In/Out, LR Tape 2 In/Out, microphone In. Electric Paing & Design, POB 8822, Incline Village NV 89452. 775-831-3490.

Comrex Nexus ISDN codec unit. Works perfectly, used 1 year, $1300. Charles, Pitroad Racing Network, WCON, 706-886-0652.

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dbx PB-48, 48 point patch bays, new, still in box, never used, $130 ea +shpg. Susan Ernest, KSID, POB 37, Sidney NE 69162. 308-254-5803.

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Otari ARS-100C (3) stereo PB r-r's. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

REMOTE MICROWAVE (cont.)

Burk TC-8 remote control, wireless, $1250 +shpg. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

Moseley STL receiver 505/C, 950.150 mHz, $850 +shpg. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

SATELLITE EQUIPMENT
Want to Sell

Zephyr's 4 cards #304, excellent condition, BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

STATIONS
Want to Sell

PROFITABLE, CASH-FLOWING STATIONS, (2) FM's & (1) AM. BEST SMALL MARKET ANYWHERE! NEW EQUIPMENT, INCREDIBLE LOCATION & LIMITED COMPETITION. FAMILY ILLNESS FORCES SALE. POSSIBLE FINANCING. Email: radioonair@aol.com.

DUE TO DEATH OF OUR FATHER, TWO GREAT RADIO STATIONS FOR SALE: North East California, great hunting and fishing, 5000 watt AM 570, Class C1 FM 100,000 watt, $250,000/BO. Highly motivated! Phone 530-233-3570.

TEST EQUIPMENT
Want to Sell

Ampex 300E vacuum tube voltmeter, $30; Beta Scope non destructive thickness guage, $30; (4) HP 400D vacuum tube voltmeters, $40/all; (4) NRI 12 vacuum tube voltmeter, $25; HP 400L vacuum tube voltmeter, $20; Sierra Electronics scope in metal box, $20; Standard electrical products Type LR-5 Adjust-A-Volt variable transformer, cable cut, $20; Supreme 574 electronic set tester in case w/manual, $40; Motorola TA-42 input & output terminals, T&R 2-25 amp fuses, 1-15 amp fuse, $30. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Potomac 19D & RMP 19D antenna monitor. Useable for 2 to 5 tower array. Recently calibrated & has manual & power cords. Very good condition, BO. Mark Borchert, Triad Broadcasting, 2720 7th Ave South, Fargo ND 58103. 701-237-4500.

TRANSMITTERS
Want to Sell

BE FM-30, 30KW FM. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

Harris-Gates BC-10H 10KW AM transmitter. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

McMartin BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

RCA BTF-20-E1. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

RCA BTF-5-E1 5KW FM transmitter, single phase. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

Continental 314R1 power rock AM transmitter, 1 kW AM tuned to 1600 kHz, located in Chicago IL, $5000. George Arroyo, WONQ, 1033 Semoran Blvd #253, Casselberry FL 32707. 407-830-0800.

Continental 814R1, 2.5kW FM, removed from service in 7/01 due to upgrade & frequency change, will include 802-A exciter, needs repair, tuned to 95.3, $5000. Tony St James, KFLP, POB 658, Floydada TX 79235. 806-983-5704.

Harris Gates 2, 2500W solid state AM transmitter, 6 adjustable power levels, LED overload, module status indicator & many more features, 1510 kHz, like new, never used, excellent condition, $21,500. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299.

Harris MW-5 AM transmitter, 5 kW, tuned to 1140 kHz, presently on air, some spare parts, $10,000. Located in Orlando FL. George Arroyo, WONQ, 1033 Semoran Blvd #253, Casselberry FL 32707. 407-830-0800.

Harris MW-5, 5 kW, tuned to 1290 kHz, missing plate transformer, new transformer cost $3750, located in West Palm Beach FL, $2500. George Arroyo, WONQ, 1033 Semoran Blvd #253, Casselberry FL 32707. 407-830-0800.

CONSULTANTS

DISTRIBUTOR DIRECTORY

Harris SX-1 solid state AM 1 kW, tuned to 1190 kHz, located in West Palm Beach FL, $6000. George Arroyo, WONQ, 1033 Semoran Blvd #253, Casselberry FL 32707. 407-830-0800.

Rust 15000W transmitters (2), along with spare parts, $3000 takes all. Donald Swanson, Midwest Bible Radio, 1534 Buchanan Ave, Sioux City IA 51106. 712-252-4621.

Tepco J-340, used 2 years, like new, 2 units available, $2000 ea. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

CCA 1000-D 1kW FM transmitter, $2800/BO +shpg. Joseph Bahr, Islands Comm, POB 656, San Juan PR 00914-6556. 787-725-4164.

Energy-Onix 15kW FM transmitter, $14,000 +shpg. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

Energy-Onix 5kW AM transmitter, $12,000 +shpg. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

Harris 10H, 10 kW FM transmitter, $8000 +shpg. Joseph Bahr, Islands Comm, POB 656, San Juan PR 00914-6556. 787-725-4164.

Harris Gates 2 2500W solid state AM xmtr. 6 Adjustable power levels, LED overload, Module Status indicator & many more features. 1510kHz, like new, never used, $21,500. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299.

Want to Buy

BE or CSI 5.0 kW FM transmitter. Joseph Bahr, Islands Comm, POB 6556, San Juan PR 00914-6556. 787-725-4164.

Gates BC 250 GY wanted, any model, parts, etc., prefer 1967. Ken Kuenzie, KRMS, POB 225, Osage Beach MO 65065. 573-348-2772 ext 207.

Gates/Harris Vanguard I or II. Looking for parts/transmitters, tech help, ideas, etc. Ken Kuenzie, KRMS, POB 225, Osage Beach MO 65065. 573-348-2772 ext 207.

TUBES
Want to Sell

EIMAC, AMPEREX, ED-COM, 3CX2500F3, 3CX3000A7, 4CX250B, 4CX300A, 4CX1000A, 4CX1500B, 4CX5000A, 4-400C, 811, 833C, ETC. WESTGATE 800-213-4563.

Want to Buy

Western Electric, loose, boxed, or dirty radio & audio tubes needed. Paying top prices. Larry Drago, WELI, POB 85, New Haven CT 06501. 203-230-5255.

TURNTABLES
Want to Sell

Gates CB-66B TT's (2), no arms, BO. Jack Vobbe, WLEW, 935 South Van Dyke Rd, Bad Axe MI 48413. 989-269-9931.

Acoustic Research TT for 33-1/3 & 45 rpm single vinyl records. Drive bands are at least 10 yrs old & may need replacing. Well cared for, original manual with care instructions included, BO +shpg. Electric Paint & Design, POB 8822, Incline Village NV 89452. 775-831-3490.

Russco Fidelity-Master phono preamps (2), like new, $75 ea +shpg. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-2224.

Russco Studio-Pro turntables (2) with "Shure" tone arms, works good, $100 ea +shpg. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-2224.

Technics SL-1200MK2 (2) mobile unit TT's. Needs a little work, BO +shpg. Curt Rogers, KRRW, Highway 4 & 30 North, St James MN 56081. 507-375-3386.

EMPLOYMENT

HELP WANTED

POSITIONS WANTED

American Broadcasting School graduate seeking new career in broadcasting. Sales is my strong suit. Also interested in production, board ops, and on-air. Garry, 405-799-6222.

DOE position wanted (employee/contract), 30+ years RF experience, AM directional construction/maintenance my specialty. Excellent management and people skills, bilingual. Florida area desired. Engineer, Box 740482, Dallas TX 75374. Email: philo_Farnsworth@yahoolcom.

Fresh & exciting young man willing to work any format & willing to relocate anywhere. Proficient in Cool Pro & other production methods. Good copywriting skills. John, 405-209-3481.

Recent American Broadcasting School graduate who would like to relocate for a career in newscasting, copywriting or any area of production. Very good behind the scenes man. Thomas, 405-413-1085.

Prodigious producer, air show talent. Corina, Corina, queen of the air waves, with super CA's, PSA's & more. Willing to relocate. 405-414-4440 or livecorduroy24@yahoo.com.

ACTION-GRAM

EQUIPMENT LISTINGS

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 _____

Title _____

Company/Station _____

Address _____

City/State _____

Zip Code _____ — _____

Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

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Brief Description: _____
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Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
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_____
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Price: _____

*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 listee.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 703-998-7600 • Fax: 703-998-2966

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◆READER'S FORUM◆

XM Radio

Larry Tighe's letter in the Dec. 19, 2001, RW is kind of scary. If the owner of a station hasn't been back to terrestrial radio since he put in his XM radio, what does that portend for us mere mortals?

Dan Rau
Salesman
ERI
Shirley, Mass.

The letter by Larry Tighe, owner of WRNJ(AM) in Hackettstown, N.J., sparked my interest to send in a reply.

The media has played a large role in the disintegration of our families, neighborhoods and towns by supporting concepts such as satellite radio, NPR and the corporate cloning of broadcasting.

Our society is becoming more fragmented as people lose touch with the people and happenings in their local communities. As a result, our towns have lost the spirit that helped people form the ties that build a neighborhood or community.

Thanks to our frenetically paced society, few people have time to read the local newspaper in the same manner that our parents did. Our only practical means of gaining local information is from radio. However, most of the local stations across America are owned by corporate giants that show little interest in programming local information and news. Since these giants are unwilling to sell stations to local people (even stations that lose money), we have little chance of gaining any form of local news in our towns.

Unless we have a change in values, the future of our communities doesn't look promising. Local radio could play an important role again in fostering strong relationships within our towns, provided local independent ownership is given a chance. But with the Telecommunications Act, NPR and the FCC all fighting local commercial independent broadcasting, it's not likely we'll soon see an increase in local programming on our radio stations.

I ask you, is this what people really want?

William C. Walker
Proprietor
WILW(AM)
West Hartford, Conn.

Titus contact info

I was surprised to see that Titus Technological Laboratories was missing from your Radio World Source Book. Please add us to future issues of the Source Book.

The information is as follows:

Titus Technological Laboratories
77 Kreiger Lane
Glastonbury, CT 06033
(860) 633-5472
www.TITUSLABS.com

We manufacture on-air lights, automatic analog and digital switchers, audio routers, television VITS remote-control systems, and custom products and fabrication.

Lawrence L. Titus
Owner
Titus Technological Laboratories
Glastonbury, Conn.

Looking back from 2012

It's June 2012. The radio industry is still recovering from many transitions of the past decade.

Perhaps it's because we weren't looking back at the lessons of the past to see what was coming. Old-timers in the business tell about owners who tried to make money with stations that used music on audio tape, early satellite music feeds or music on computer hard drives.

The one factor that determined if many of those early automated stations succeeded or failed was the ability to sound live and local. Now that radio is recovering from the collapse of the giant radio conglomerates, what was it that caused their demise?

In many markets, the small low-power stations ate away at the market share of the giants. How did they do it? They stuck to the basic rule that has always made radio work: It has to feel live and local.

They passed out bumper stickers at events. They understand their markets based on day-to-day local experience that they combined with market data to create winning stations. They sat on the United Way board. They knew their sponsors and clients based on long-term relationships.

By sticking to the live-and-local rule they saw audience growth as the conglomerates lost audience.

The downward spiral accelerated as giant group owners continued to try cutting costs by eliminating localized radio and replacing it with canned formats. Eventually they became so generic that overall radio listenership dropped to a level that was too low to attract the national advertisers who were their lifeblood.

Now, with thousands of stations sold or being sold for a fraction of earlier values, radio must recreate itself. Will radio recover the audience it has lost to Web, satellite, cable music and portable music technology? Unless the new owner-broadcasters rediscover why people listened before the age of the conglomerates, radio is part of a by-gone era.

By the way, thanks to the FCC for relaxing ownership rules and precipitating this meltdown.

Michael Baldauf
Independent Consulting
Broadcast Engineer
Pueblo, Colo.

Write to Us

RADIO WORLD
READER'S FORUM
P.O. Box 1214
Falls Church, VA 22041
radioworld@imaspub.com

The Means, Not the Ends

Two apparently unrelated stories in this issue of Radio World give us pause to reflect about the future.

Skip Pizzi's column about in-band, on-channel digital radio neatly summarizes the worries felt by many skeptics of this pending technology after a decade of promises. These doubts are relevant as we approach the NAB2002 convention, with its promise of an IBOC hardware roll-out and the expectation that the FCC will give some form of endorsement to IBOC at last.

Radio World remains convinced that this technology is worth pursuing, that the industry should embrace it. Radio constantly should seek to evolve, to ask itself how to improve its position relative to other media. IBOC offers numerous benefits, immediate and long-term.

We do share plenty of worries, given the mess of digital television and the failure of radio and its regulators to implement technological changes smoothly in the past 25 years.

Those who advocate IBOC bear great responsibility to inform broadcasters and the public about the benefits of their system. It would be a shame for broadcasters to spend all this time and effort upgrading our infrastructure, only to have this better form of radio drowned out by interest in satellite radio and other exciting media.

Remember, broadcasters won't spend that money — nor should they — if the benefits are not clear and immediate.

Clear communication would also benefit those involved in the debate over the Cash device, as reported on page 1.

We view the Cash box, when used responsibly, as a legitimate form of processing to make delivery of our product more efficient.

Radio does bear responsibility, however, for informing its customers when their own ads are modified. If a station sells a spot based on its length, the station must be honest in communicating to the client when the spot is modified, even "micro-edited."

Understandably, some owners are hesitant to even admit they use the device. But this approach can be seen as unethical. Radio should not act as though it has something to hide; it is in fact a responsible user of technology. Groups should develop guidelines for the use of Cash, in coordination with the manufacturer, and be honest with radio advertisers about it.

The common theme to these two stories is the old standard: "Content is king." If IBOC delivers a better product, radio and consumers will adopt it. If radio delivers profitable audience to its clients and good entertainment to listeners, no one must fear IBOC, nor Cash or any other technology.

Technology is a means to an end, not the end itself.

— RW

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AUDITRONICS SERIES 2600

IT'S NEW – IT'S A BARGAIN – AND IT'S *MODULAR*, giving you any combination of mic, line or accessory modules. It's also INSTALLER FRIENDLY, with a hinged meterbridge that opens wide for direct access to connectors, trimmers and logic switches. Onboard cue and headphone amps keep you in budget. BEST OF ALL, it's **AUDITRONICS,** so you know it's **TOUGH** AS **STEEL!**

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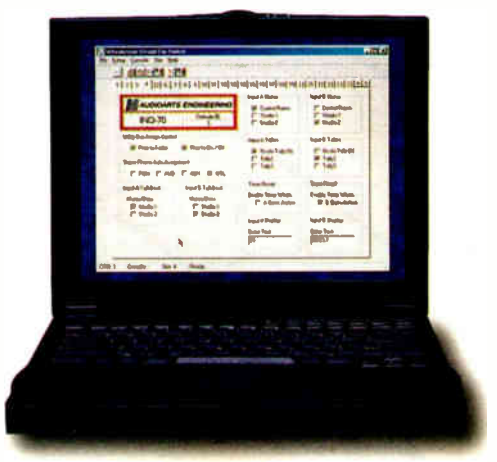
AUDIOARTS DIGITAL D-70

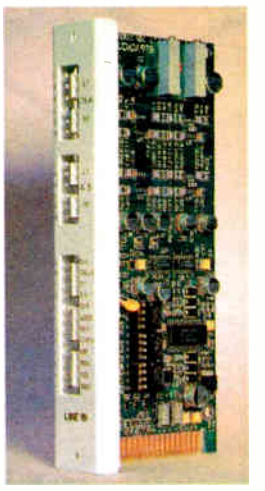
The D-70 digital console from AUDIOARTS not only utilizes the latest in digital technology and chip sets, it can be ordered with a serial interface that lets it integrate with most popular automation systems and station routers; it even has WHEATSTONE's exclusive VDIP™ software system.

Plug-in modules let you have any combination of mic, analog or digital line inputs, and the 4 stereo busses give you plenty of flexibility (each has both digital and analog outputs). With sample rate conversion on all digital inputs plus selectable console clock rates of 32, 44.1 or 48KHz (and an optional external house sync) the D-70 can fit right in with all your facility's present equipment.



WHEATSTONE'S VDIP™ Virtual Dipswitch Software lets you configure D-70 input channels with a laptop computer. Once configured console runs stand-alone.

With a compact, tabletop-mount footprint and a modular rear connector system that utilizes plug-in submodules for easy analog-to-digital field switches, the D-70 can be configured onsite quickly and easily. On the functional side, fullscale digital peak plus simultaneous VU metering, LED illumination everywhere, built-in machine interface, automatic timer and clock (standalone or ESE slave) all come standard, along with separate source selection for control room and studio plus built in talkback. You can even order the D-70 console with a SUPERPHONE module to support two callers with automatic digitally generated mix-minus. Both digital and analog line selector panels are also available.



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