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The Clear-Channel Matter

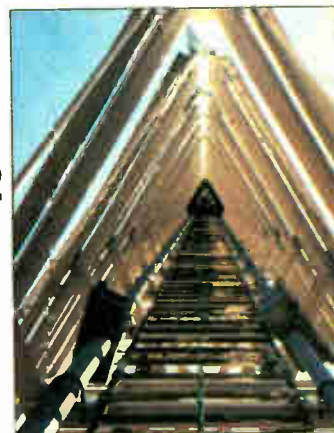
Mark Durenberger digs into the history of these legendary 'avenues of the sky.'

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Hang On Tight!

RW's *Man of Steel* takes us up for a good look around.

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Radio World

The Newspaper for Radio Managers and Engineers

June 7, 2000

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RW NewsBytes Now Every Business Day At www.rwonline.com

NEWS ANALYSIS

Canadian DAB Reaches Into U.S.

by James Careless

WINDSOR, Ontario Can a radio station improve its market share by going digital? That is what four stations in Windsor are about to find out.

For years, the four stations operated by CHUM Ltd. — CKLW(AM), CKWW(AM), CIMX-FM and CIDR-FM — have been competing against radio stations in the United States market of Detroit.

It has not been a fair fight: Windsor is a city of just 250,000 people. Detroit,

with its 3.8 million citizens age 12 and above, is the seventh-largest radio market in the United States according to Arbitron's radio metro market figures.

About 50 United States radio stations are heard in the Detroit marketplace, as well as in Windsor, which lies just across the Detroit River, making it difficult for commercial Canadian radio to survive here.

In fact, before CHUM bought CKLW and CIMX-FM, the money-losing stations were up for sale for

See CANADA, page 12 ▶

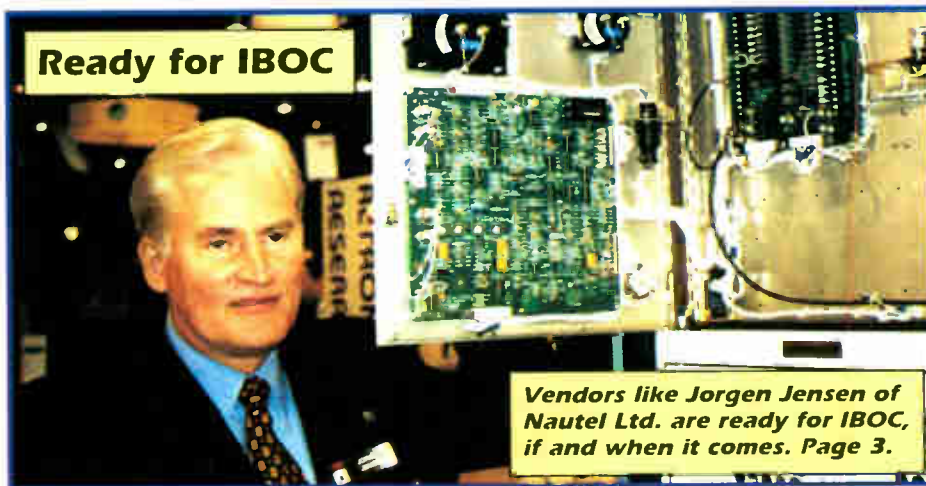


Photo by Leslie Stinson

Antex and AudioScience Avoid Trial

by Randy J. Stine

GARDENA, Calif. Soundcard manufacturers Antex Electronics and AudioScience Inc. will not be going to court this fall. They have reached a settlement in the copyright infringement lawsuit that Antex had filed against AudioScience.

As part of the deal, the companies have agreed to an unrestricted cross-license of the software drivers that were the basis of the original complaint.

The suit, filed in U.S. District Court for the Central District of California in October 1999, centered around ownership rights to source codes that enable the companies to write software drivers for their digital audio adapter boards (RW, Nov. 10, 1999).

The agreement was announced in April. A financial settlement was not disclosed.

"(Antex) is very pleased with the See ANTEX, page 7 ▶



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NEWSWATCH

Viacom, CBS: \$34 Billion Deal Done

Viacom Inc. has to sell off stations in Los Angeles; Chicago; Dallas/Ft. Worth, Texas; Baltimore; and Sacramento, Calif., in order to comply with local radio-TV cross-ownership rules.

The FCC gave Viacom six months to comply when the commission approved the purchase of CBS Corp. for a deal valued at about \$34 billion.

The local radio-TV cross-ownership rules allow one company to own up to two

TV and six radio stations, or in some cases, one TV and up to seven radio stations in markets where at least 20 independently owned media voices remain after a merger.

The FCC gave Viacom 12 months to meet the TV national ownership cap, which limits to 35 percent the aggregate number of TV households that are reached by one group owner.

Viacom also has 12 months to come into compliance with the dual network rule, which prohibits a major TV network (CBS) from having an ownership interest in another TV network, such as Viacom's United Paramount Network.

The deal closed May 4. CBS shareholders received 1.085 shares of

Viacom's non-voting class B stock for every share of CBS stock they had held.

CBS no longer trades as a separate stock; Infinity Broadcasting still trades on the New York Stock Exchange as "INF," and is now a Viacom subsidiary.

Two Commissioners Object to Deal

WASHINGTON Two of the five FCC commissioners disagreed with portions of the FCC order approving the transfer of 162 radio stations, 38 TV stations, several translators and satellite stations from

CBS to Viacom.

Commissioner Gloria Tristani said the FCC did not analyze whether the merger would give one entity too much control "over the marketplace of ideas." That, she said, was an abdication of the commission's responsibility to ensure mergers serve the public interest.

Commissioner Harold Furchtgott-Roth objected to the radio spin-offs, finding the cross-ownership restrictions "legally

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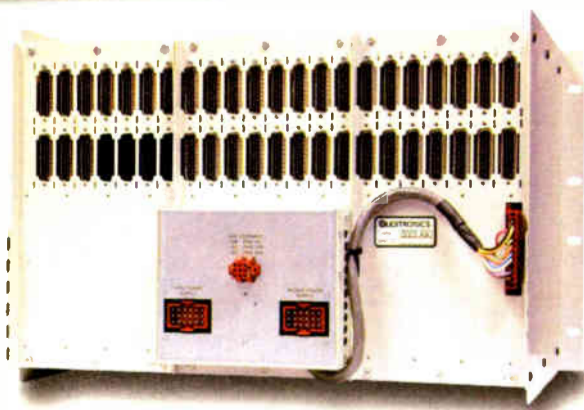
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AUDITRONICS



DIGITAL NEWS

Suppliers Prep for IBOC DAB

by Leslie Stimson

If the radio industry adopts an in-band, on-channel digital broadcasting system, will manufacturers and suppliers be ready with IBOC-compatible equipment?

The answer is yes, according to comments made by suppliers to *RW* in recent weeks, and to customers at convention exhibit booths this spring.

Suppliers have been able to provide more answers, in part because the DAB proponents have formed alliances with them.

Vendors are hopeful. They believe IBOC will happen in the United States, and they hope to have a standard by the end of this year, with equipment ready and stations beginning to make the transition in 2001.

IBOC transmitters, exciters

Both USA Digital Radio and Lucent Digital Radio have told the standards-setting National Radio Systems Committee that they agree to participate in the so-called Phase II, or comparison testing.

Hope for DAB progress was apparent in the number of vendors that displayed IBOC-compatible transmitters and exciters at NAB2000 in April. Those vendors included Harris Corp., Armstrong Transmitter Corp., Continental Electronics, Broadcast Electronics, QEI Corp. and Nautel Ltd.



Attendees could hear AM and FM demos of LDR's IBOC system at its booth

While Harris said its DX series AM transmitters already were capable of passing the IBOC signal, Harris displayed the 3DX-50, a new implementation of its digital amplitude modulation technology.

This 50 kW MW transmitter offers new benefits, including improved IBOC performance, the company said. It eliminates the intermediate power amplifier by using what Harris calls "digital direct drive" for more accurate signal generation and an improved output filter that provides wider bandwidth for the IBOC signal.

Harris promoted the IBOC compatibility of other transmitters — its Platinum Z CD Series 5 kW solid-state FM transmitter with a Digit CD digital exciter, and its Gates Two 2 kW AM solid-state transmitter.

The Platinum Z CD and Gates transmitters have the required bandwidth and are capable of transmitting IBOC waveforms with some modifications, Harris said.

Don Spragg, director of radio RF products and programs, said Harris has supported the development of IBOC from its earliest stages, providing AM and FM transmitters for testing and public demonstrations for nearly a decade.



Armstrong's Ernie Belanger adjusts a 2000 SC solid-state FM analog transmitter

"Our most recent breakthroughs have included the 3DX-50 in AM and our recent demonstration of common amplification in FM."

Harris is now an investor in USADR as well as a vendor partner.

A radio engineer trying to predict what the IBOC landscape might look like could get some idea from observing the equipment and vendors that were involved in various booths and DAB demos in Las Vegas.

Booth demos

For a low-power demo in the exhibit hall, Harris generated and received both analog and digital signals using USADR's IBOC exciters and receivers. The source audio originated from the Harris Pacific Digital studio demo using the Enco DAD_{PRO}32 hard-disk digital audio system in its booth. The digital audio path was completed with a Harris Intraplex STL Plus, a T1-based studio-to-transmitter link.

Harris transmitted the signals in four modes — AM analog, AM digital, FM analog and FM digital. Each digital audio signal was fed into its associated audio processor. The Orban Optimod-DAB 6200 processor was used for both the AM and FM digital signals; the Optimod 9200 was used for AM analog audio and the 8200 for FM analog audio.

The output of the AM IBOC exciter fed the Gates Two transmitter with analog and digital signals. The FM audio processors fed the Harris Digit CD exciter and a prototype iDAB exciter from USADR. The signals from the two exciters were combined at a low level and amplified using a modified Z5CD FM transmitter.

Also at the show, Armstrong Transmitter Sales and Marketing Manager Ernie Belanger said a linearized version of the Armstrong TX single-tube transmitter line was being used by IBOC developers for testing purposes.

A linearized version of the 5000 SC solid-state FM transmitter was used in a live demonstration at the Lucent Digital Radio booth.

Belanger said to achieve the digital output equal to an analog 100 kW station

will require a linearized transmitter capable of about 2,500 watts.

"With the present combiner technology there is a 10 dB combiner loss on the digital side which needs to be accounted for," Belanger said.

Linearization — flattening the magnitude and phase response of an RF amplifier over as wide a bandwidth as possible — raises the power level of a transmitter smoothly, said Ben Benjamin, Lucent Digital Radio VP, product development. That is important, he said, to reconstruct the transmitted digital signals accurately.

Lucent generated a signal from the studio in its booth in the exhibit hall, and sent it over a Harris Intraplex STL Plus T1 line to KNPR(FM) studios about five miles west of the Las Vegas Convention Center. The signal was processed using an Orban Optimod 6200 DAB processor, then sent over a Harris Aurora 2.4 GHz STL to the antenna site. The digital signal was fed to LDR's prototype IBOC exciter, then through Armstrong's X-1 FM single tube digital transmitter. The analog signal was fed to a Continental transmitter. The analog and digital signals were combined using an ERI combiner and the signal was broadcast live by KNPR.

More displays

LDR also displayed IBOC-compatible Harris, Armstrong and Nautel transmitters in the LDR booth.

USADR originated its signal from the studios of KWNR and transported it on a Moseley Starlink SL9003Q digital STL.

The digital AES/EBU audio signal was processed with an Omnia-3fm digital audio processor, fed into the USADR digital exciter. The iDAB digital signal was then fed to the Harris Z-10 FM transmitter.

The digital RF signal and host analog signal were combined with a Passive Power injector and broadcast on KWNR.

Broadcast Electronics displayed its 1 kW FM-IC1, which includes an FX-50 exciter. Both are IBOC-compatible.

BE ran its transmitter at 100 watts into a dummy load. BE took audio from a CD player in the hall and processed it into FM analog and digital signals using primarily

See IBOC VENDORS, page 8 ▶

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Common experience draws us together. It creates a sense of community that we humans crave.

If you had lived 1,000 years ago, that shared experience would have been the cycle of the seasons. The constant threat of hunger. The race against the calendar to plant and harvest food to keep yourself, your family and your livestock alive through another winter.

Today, it's e-mail.

OK, maybe that's a stretch. But consider the reaction to the Love Bug virus just a few weeks ago.

Within hours, businesses around the Earth became aware of a serious threat to their information commerce.

This was more than the latest minor quackery. The virus caused financial harm to people who rely on the integrity of their data, and demonstrated how large our international e-community is.

I recently wrote a column called "Confessions of an E-Mail Pig." I said that in a typical month, I send something like 1,000 e-mails, and receive as many more. Those numbers probably are conservative.

I also 'fessed up that I sometimes bombard the **RW** staff with e-mails. And I hinted that many of us today don't always use our smarts in how we rely on e-mail.

More readers have commented about that column that any other I've written. Your responses teach me that no matter how big the issues of the day, no matter how widely we as journalists range in our pursuit of the unusual, the experience of everyday things is what brings us together.

★ ★ ★

I've learned other things, too. For one thing, not to rely on e-mail for vital communication.

I want to, I really do. I'd like to fire off a batch of e-mails to writers or sources, then wait for things to happen, confident that my messages got

through. After all, if I make a phone call to someone and leave a voice-mail, the ball is in their court, right?

Even if that's true for the telephone (and it's debatable), you can't make that assumption with e-mail. I simply cannot assume that the global electronic network has put my messages in the intended mailboxes.

Messages get delayed. Failure notifications don't make it back. Systems crash.

So Lesson No. 1: If it really, really matters, make a phone call. Or send e-mail, *then* call.

I've also learned I may have to wait for a reply. As a former employer used to say about the fax machine: "Just because you can get your message to me faster doesn't mean I have to answer instantly."

A reply is at the convenience of the recipient, not the sender.

And I must remember that many people don't keep e-mail open all the time, as I tend to. Even in 2000, in the age of GroupWise and Bill Gates, not all business people check their e-mail daily. Not everyone in our business has e-mail.

Therefore, Lesson No. 2: If it's urgent, make a phone call.

I should also be more vigilant about my records. Back those suckers up. Make archives.

And I should not open attachments from people I don't know, particularly EXE files, those darn executables that people love to send to their friends.

But is a lame joke worth another crash, more lost data?

I've been good lately on this score. I was happy to find out I wasn't the one who opened a bad file and brought the Love Bug into our company.

But I *could* have been, with a moment of weakness.

Lesson No. 3: Think before I click.

The constant assault of technology into our lives sometimes comes at the expense of understanding.

Many of us use computer tools without full knowledge of the limita-

tions. This can lead to dangerous behavior in which we unwittingly put our computers, businesses and personal data at risk. Education is key.

The age of the virus also teaches us to invest in computer professionals and software to protect our systems.

Lessons No. 4 and 5: Understand my computer tools, and encourage the company to pay a pro to keep up with viruses and other technology threats.

★ ★ ★

One more conclusion (I could draw many):

The e-mail screen is no replacement for the human face. It cannot convey humor, sarcasm or intent with the infinite detail of our physiognomy.

But e-mail is so darn convenient. And this causes problems.

For years I wondered why other people took offense at some things I wrote. I thought I had worded the e-mails courteously.

Looking back, I realize that the text, stripped of the information in my facial expressions and tone of voice, could be interpreted incorrectly.

Usually, if I had written my e-mails with a bit of sarcasm in the back of my mind, that emotion came through in the message — and without the softening edge that a personal conversation might have included.

And I wasn't there to clarify my statement instantly if the recipient misread it, as would have been the case with a phone call or visit.

I hope I've fixed that habit now. I try to use e-mail for non-emotional topics, and save messages of criticism or unusual sensitivity to deliver in person.

But I see the same misunderstandings happening to other people, who fire off messages they deem helpful and are surprised when recipients take umbrage. And you have no doubt seen this phenomenon constantly in online chat groups, where the rhetoric can escalate at the tap of a Send key.

We don't need more misunderstand-

From the Editor



Paul J. McLane

ing in our workplace. In the end, there's nothing as effective as our own voices and faces.

In radio more than any other business, our job is to communicate effectively. If you really care about getting an important message across, do it in person or by phone.

★ ★ ★

A member of our staff copied this and sent it to me. Via e-mail, of course:

You know it's time to stop e-mailing when:

You turn off your computer and are suddenly filled with a feeling of emptiness.

You wake up at 3 a.m. to go to the bathroom, and check your e-mail on the way back to bed.

You spend most of a plane trip with your laptop in your lap, and your child in the overhead compartment.

Your firstborn is named dot-com.

You move into a new house, and decide to Netscape before you landscape.

You decide to stay in college for another year, just for the free Internet service.

You find yourself typing "com" after every period.com

You start tilting your head sideways to smile. :-)

And you know it's time to stop e-mailing when, immediately after reading this list, you e-mail it to someone.

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BUSINESS DIGEST

New Swiss Measurements 'A First'

BERNE, Switzerland Soon, Swiss radio listeners will no longer need pencils for audience surveys.

Beginning this summer, the Radiocontrol wristwatch system will record tiny bits of station audio from a sample of listeners.

This is the first full-scale implementation of passive measurement for radio in any country, according to the company.

Radiocontrol has been in development since 1992 in Switzerland under the direction of Matthias Steinmann, director of research for national public radio service SRG-SSR.

In December 1999, the SRG-SSR management decided to implement the system fully.

The 2000 audience surveys will use both the Radiocontrol and traditional methods to determine listening habits, but starting next year, Radiocontrol



will become the sole method of radio measurement here.

The Radiocontrol watch collects radio signals audible to the wearer and digitizes and compresses the data. A control center records the audio of about 90 radio stations and then compares it with data downloaded from the watches.

The system eliminates the problem of memory lapses or misidentification of stations by listeners.

Beta tests of Radiocontrol have been conducted over the past year and suggest an underreporting of radio station listening at certain times of the day or week.

Audience researchers have cited increasing costs and sampling difficulties in radio surveys as a primary reason for adopting a passive measurement system like Radiocontrol.

There will be 600 of the watch-like devices, manufactured by Liechti AG, in permanent use throughout Switzerland, with 300 in the German-speaking region, 200 in the French-speaking region and 100 in the Italian-speaking region.

The surveys will involve 16,000 test subjects, who will wear a Radiocontrol watch twice a year for seven days.

— Michael Hedges

GUEST COMMENTARY

Few LPFM Allocations Would Fit

by Frank McCoy

Guy Wire, Radio World's masked engineer at www.rwonline.com took time out from practicing his quick soldering gun draw recently. Instead, we got a bit of "I told ya so" over LPFM.

But Guy got it right.

Guy surmised that the tracks were greased at the commission and no matter the objections, LPFM was a sure thing. He also took a minute to look at the impact — who might or might not get something out of it.

Guy used the town of Challis, Idaho, as an example of a rural community. The 1990 U.S. Census lists Challis as a city of 1,073 persons.

Challis may be a lovely place — probably is — but it is a long way from any large communities and, as such, would benefit from local media.

So, will LPFM help there? The answer is no.

Challis channels

A quick channel study at the post office coordinates for Challis, Idaho, reveals 37 channels available for Class A facilities or greater. In fairness, some are adjacent and, as such, not all of them could be allotted.

Nonetheless, at least 10 facilities could be petitioned for Challis, Idaho. With a simple expression of interest mailed to the FCC, Washington, D.C. 20554, a channel or channels can be made available. The price is a 33-cent stamp. With slight site restrictions, some lucky applicants could receive Class C channels.

On the other hand, Class As can be as little as 100 W legally, so they could be cheap, too.

The Communications Act provides for auctions in cases where the available facilities are exceeded by the expressions of interest. This is unlikely in Challis. Probably there is a channel for everyone who wants one. Thus, in Challis, the existing system gets the job done. No need for LPFM.

By contrast, there are no vacant Class A allotments in Chicago, New York or Los Angeles. In Chicago even the NCE (noncommercial educational) band is a checkerboard of negotiated interference that came about when the Class D non-com stations were mandated to increase power.

Because there is a Class B FM pretty much every 800 KHz, with interleaved Class A stations in the surrounding suburbs, there probably are few or no vacant LPFM channels either.

This is partly because in the early days of FM, little thought was given to FM spacing. The FCC was so delighted to have any FM applicants, they let anybody build pretty much anything on any channel anywhere.

Then, as the service matured, interference became an issue and the present FM spacing table was the solution. Still, in the three most populous places in America, there will be very few opportunities for LPFM.

I argued, along with other commenters, to have TV channel 6 added to the bottom of the FM band. Broadcasters are giving it up anyway as part of DTV (digital television). It won't displace any existing ser-

vice and is conveniently located right next to the existing NCE band.



Frank McCoy

Most radios already tune to 87.9 and 87.7 MHz, so two of the channels are available right now in TV markets without a Channel 6 assignment, and will be everywhere else in a few years.

Frequency-synthesis FM radios make adding to the band easy for the manufacturers. If the FCC mandates that FM receivers have 30 more channels to be sold in the United States, the waters will part and that's how it will be.

Unfortunately, the time-sharing strate-

gy mandated for the few vacant LPFM allotments in major markets, along with the difficulty of making a financial go of it on the radio, is going to create a "churn" of licensees for these allotments.

They will become much like the public access channels on cable. Interested groups will come and go. These "beggars of the air" always will be short of funds and unable to look after themselves technically or otherwise.

Eventually there will have to be an agency to administer this radio revolving door. Guess who's going to get the bill?

Since Guy made a prediction in 1998 that LPFM was in broadcasting's future, I'd like to make one: The major-market LPFM licensees, few though they may be, will eventually be consolidated from the time-share arrangements LPFM mandates.

Some loudmouth, gun-toting, conspiracy-theorizing right-winger with cash will buy out all the time-shares. Won't that just boil Mr. Kennard's bacon?

Seriously, I'm all for new voices. Let 'em on. They are the life and spirit of broadcasting. But find them channel space where they have some prospect for survival and continuity.

McCoy is vice president, engineering, American Media Services, Austin, Texas.

RW welcomes other points of view at radioworld@imaspub.com

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◆ NEWSWATCH ◆

► NEWSWATCH, continued from page 2
unsound." He also said the limits also violate the Telecommunications Act of 1996.

Now that the deal has closed, Mel Karmazin is president and chief operating officer of Viacom while Sumner Redstone remains chairman and chief executive officer.

Auction Delayed For TV's 60-69

WASHINGTON FCC Chairman Bill Kennard apprised members of Congress he intends to postpone the auction for TV Channels 60-69 until Sept. 6.

The commission previously moved up the auction dates to June when Congress informed the commission the proceeds needed to be in the U.S. Treasury by Sept. 30.

Explaining the postponement, Kennard said that UHF broadcasters are using the 700 MHz band and will continue to do so until the target 2006 deadline for TV's digital conversion.

"This factor makes this auction extremely complex," wrote Kennard in a letter explaining his decision.

He said the extra time would allow bidders to develop better business plans and to form strategic alliances.

Bidders will use the spectrum for

wireless phone and Internet services.

Earlier, the Consumer Electronics Alliance had proposed the FCC reserve a portion of the spectrum for a new service called Mobile Multimedia Broadcast Service, which CEA said would consist of multichannel audio delivery with data capacity and robust mobile reception.

CEA criticized the congressional decision to move up the date by which the auction funds needed to be in the U.S. Treasury from Jan. 2001 to this September.

CEA said even with the auctions moving to September, that was not enough time for the association to effectively lobby for MMBS.

FCC Unlawful On LPFM?

WASHINGTON Rep. Billy Tauzin, R-La., chairman of the House Telecom Subcommittee, wants the Department of Justice to investigate whether the FCC violated the law by lobbying against H.R. 3439, the bill that would limit the number of low-power FM stations the FCC could license. The bill's author, Rep. Michael Oxley, R-Ohio, also wrote to the DOJ.

FCC Chairman Bill Kennard said his staffers did not violate the Anti-Lobbying

Act when they faxed information to members of Congress opposing the bill.

Kennard stated government staffers may communicate directly with members of Congress and their staffs in support of administration or department positions.

SBE Sets Financial Records

LAS VEGAS The Society of Broadcast Engineers has gone 10 years without increasing its dues, and is now debt-free.

Treasurer John Batson made the announcement at NAB2000. He said SBE's assets stand at \$767,361, an all-time high.

Five years ago, that figure was \$240,752.

Secretary Barry Thomas reported that membership is at 5,336, with 104 chapters in 46 states and 43 other countries. All of those figures are SBE records.

Membership is up 13 percent compared to five years ago.

Buffalo, Chapter 133 was added in 1999.

Society President Andy Butler received chuckles when he said that the next SBE membership meeting "would be held on Mars." He was referring to Mars, Pa., a suburb of Pittsburgh, where Chapter 20 will hold its regional meeting

concurrently later this year.

The National Meeting is Oct. 3-4, 2000, hosted by Chapter 20, Pittsburgh and the annual regional convention it presents.

— Ken R.

Stockholders OK Clear Channel, AMFM Merger

Stockholders have approved the purchase of AMFM Inc. by Clear Channel Communications Inc. in a deal valued at \$23 billion.

Under terms of the recent agreement, AMFM shareholders would receive 0.94 shares of Clear Channel common stock for each share of AMFM held on the record when the deal is finalized — which is expected by Sept. 30.

After an expected 125 spin-offs to comply with ownership rules, Clear Channel would own more than 950 radio stations post-merger (**RW**, Nov. 10, 1999).

Correction

That wasn't Dwight Ellis in the photo from the NAB Career Center ("NAB Photo Gallery" **RW**, May 10, page 36) — that was Gary Wordlaw, president and general manager, WTVH-TV, Syracuse, N.Y.

DJ Dave... I am sorry to bother you at home, but I've detected a fault in spot number 321. It may be missing. Perhaps you should look into it.



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Soundcard Producers Settle Suit

► ANTEX, continued from page 1
settlement. I think it's win-win for everybody involved. Everyone seems to be genuinely pleased with it," said James Antrim, Antex president and chief executive officer.

"I'm especially pleased (the suit) lasted only about five months before we reached this agreement."

Exploratory phase

Antrim said the case was scheduled for trial this fall. No depositions were taken prior to the announced settlement. "Things were still in the exploratory phase," he said.

Antex alleged copyright infringement, breach of contract and misappropriation of trade secrets against AudioScience and three of its executives: Richard Gross, president; Stephen Turner, vice president of engineering; and Andrew Elder, director of software engineering.

Another defendant in the case was Electronic Design Associates and Howard Jelinek, its president. EDA is a software engineering company.

Gross is the former vice president of sales for Antex. He left the company in 1996. Elder and Turner are former consulting engineers to EDA.

pression and processing algorithms for soundcards based on the Texas Instruments C6000 DSP family. by AudioScience, the settlement includes an agreement between Antex, AudioScience and EDA "for the unrestricted cross-license of the DOS and

I'm very glad it's been settled and we can move on with our work.

— EDA's Howard Jelinek

Instruments C6000 DSP family.

According to a press release issued

AudioScience and EDA "for the unrestricted cross-license of the DOS and

Windows Software Drivers."

"It's a three-way cross-license agreement really — a multiple direction agreement in terms of licensing between the three of us," Antrim said.

Both Antex and AudioScience will be allowed to use the core software and source codes developed by EDA, Antrim said.

As a result of the settlement, Gross said the development agreement between AudioScience and EDA has been "terminated."

The two companies will no longer work together on software development.

EDA's Jelinek called the lawsuit "time-consuming."

"We are just trying to make a living at this. I'm very glad it's been settled and we can move on with our work," he said.

The two companies will no longer work together on software development.

"We're satisfied with the outcome to the point that they dropped the claims against (AudioScience)," Gross said. "Basically, it's a live-and-let-live resolution."

Antex's case centered on what it termed "intellectual property." Antrim described the drivers as a layer of software between the machine function and the operating system.

The drivers contain the commands that allow the computer and soundcard to communicate with each other. Soundcards encode and decode the audio stream for playback on a PC-based digital audio storage system.

Joint projects

Beginning in 1987, Antex and EDA worked together on several software projects.

The companies agreed to develop and market digital soundcards jointly. Both sides disagreed as to when the agreement ended. Antrim claims Antex and EDA are still bound by the original agreement. EDA disagreed; asserting the agreement ended in 1997.

However, just prior to the Antex lawsuit, AudioScience and EDA entered into a similar development contract. The two companies agreed to develop audio com-

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COMREX

Job Seekers, Employers Meet at NAB2000

by Sharon Rae Pettigrew

LAS VEGAS Broadcast stations always need good employees. Station managers are always looking for new hires. That need matches the aim of graduates looking to enter the job market for the first time, or for some industry veterans who may need to face new challenges.

at this year's standing-room-only NAB/Broadcast Education Association Career Fair at NAB2000.

"This is the largest participation of job seekers and folks looking for people to hire that we've ever had," said Ellis. "We had close to 2,000 people attend last year and we're expecting a 60-70 percent increase over last year's numbers."

cast with new media and all other related industries."

And just as in other industries, said Ellis, broadcasting needs employees. "Employees who are ready," he said, "to hit the ground running and who are trainable and understand technology and can run the necessary programs needed to maintain a company in the new business of media in this country."

the panel who address what is happening in the industry in terms of diversity and professionals who can speak to the whole political dynamic that is pushing the convergence of broadcast with new media," said Ellis.

Panelist Julio Moran, executive director of California Chicano News Media, Los Angeles, told attendees that networking is the name of the game.

"Be prepared," he said. "You have to know what your skills are and develop them, then network. More people hire people they know than complete strangers."

Jannette Dates, dean of the School of Communications at Howard University, Washington, D.C., was also on the panel.

"Work hard," she advised the crowd,

See CAREER, page 12 ▶



The Career Fair offered information to broadcast job seekers

Potential employers and those looking to be hired met at NAB2000.

"Tickled and overwhelmed" — two words used by Dwight Ellis, NAB VP, Human Resource Development, describing his feelings about the turnout

Why the marked increase?

"There is a change in need," said Ellis, "in the demand for employees in all industries. Broadcasting is in a leadership position in the convergence of free over-the-air traditional broad-

Career dos and don'ts

About 200 people came to the fair's Career Employment Seminar to hear advice from radio and television pros on career dos and don'ts, industry trends and the current job market.

"We hold this symposium to position people as to how they should conduct themselves and present themselves to the job recruiters," said Ellis.

"We have outstanding managers on

IBOC-Compatible Gear Is Rolled Out

▶ **IBOC VENDORS**, continued from page 3
Omnia-3fm processors. BE also used the Orban Optimod-DAB 6200 processing system.

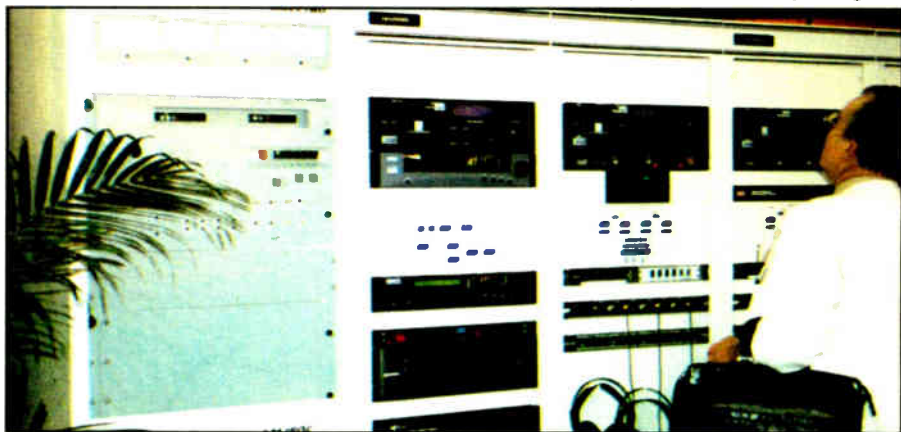
It combined the signals at a low level, and, using an antenna on the roof, broadcast a live signal so attendees could hear the audio in the USADR and BE booths.

QEI Corp. displayed a 5 kW Quantum M-Series FM solid-state transmitter. The transmitter was connected to a Shively digital injection system and an Omnia processor to show attendees what an IBOC setup would look like for high power levels.

could buy a second transmitter, and combine the output of the new digital transmitter with the output from its current analog transmitter using an external combiner.

Experts assume that stations making the digital transition will prefer to retrofit their equipment rather than purchase a new transmitter. If so, the cost of combiners, filters, STLs and processors comes into play.

Robert Surette, manager of RF engineering for Shively Labs, and Scott Stull, USADR broadcast equipment business manager, said Shively's digital



Harris displayed IBOC-compatible transmitters and exciters

Dielectric Communications exhibited dielectric combiners and filters to be used to eliminate out-of-band emissions when the digital energy is being injected into the signal.

Those who would want to use higher power levels could opt to use a larger power transmitter and larger filter, rather than purchase a second transmitter.

Tim Bealor, product manager of RF transmitters for BE, agreed that solid-state FM transmitters must be linearized to transmit a digital signal. But linearization results in power loss, he said.

To compensate, he suggested engineers who want a total power output of 10 kW, for example, might purchase a 20 kW solid-state transmitter and linearize it to achieve a TPO of 10 kW.

Alternatively, he said, the station

signal injection system is a prime candidate for USADR's iDAB logo, part of USADR's brand-licensing plan.

Shively's system integrates an IBOC combiner with an IBOC filter, for what Surette called the "iDAB filter injection system."

Attendees could listen to AM and FM IBOC demos for USADR in the Broadcast Electronics, Harris, Nautel and QEI booths.

Lucent vendor partners directed attendees to the Lucent Digital Radio booth for listening demos.

At the show, USADR announced equipment alliances with Armstrong, as well as Jampro RF Systems Inc. and Dielectric Communications to test combiners and filters and with Moseley Associates Inc. for STLs.



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NEWS MAKER

FCC Fosters Mergers, Rivalries

The following are excerpts from a speech by FCC Chairman Bill Kennard on media convergence prepared for the Practicing Law Institute/Federal Communications Bar Association Policy and Regulations Conference in December 1999.

New technology is eliminating barriers to marketplace entry, opening up new possibilities in global trade, and transforming the sale and transfer of products and services as we know it. It is what people in the computer industry call ... eliminating the middleman, and it allows companies to interface directly with their customers down the street, across town, and around the globe ...

We have deployed spectrum for thousands of licenses for new and innovative services — PCS, LMDS, DARS and others.

Anyone who watches television or listens to radio in America — which is everybody — has recently been bombarded with dot-com ads. ... In the first half of (1999), Internet companies spent \$755 million on advertising; in the second half analysts predict the figure will, at a minimum, quadruple.

The challenge

And in this new era we face a fundamental challenge: How do we foster competition in an era of convergence? How do we pry open monopoly markets and how do we protect competition once we do?

There is a lot at stake here. The communications and information industry accounts for roughly a third of the nation's economic growth; it is pouring billions into the economy, generating enormous wealth and opportunity, and producing innovations that are the envy of the world. And we have to keep this engine of growth going.

Most of us in telecommunications talk about how wonderful it would be if we had competition across the board. When I talk about competition, I am talking about competition in three basic components of the network: in the content, conduits and intelligence.

Content is the cable, video and other programming that comes over the network; the conduits are the pipes — the wires, cables, and spectrum — that carry content to the consumer; and the intelligence is the machines and software that process content for the consumer — the computers, browsers, set-top boxes, and operating systems.

To have a truly competitive marketplace, we must have robust competition in each of these three components of the network. I envision a network of networks freely interconnecting to bring a wide range of services to the American public.

Cable companies will compete with satellite systems, fixed wireless with telephone.

Right now the seeds are being planted to grow this network of networks, so that one day firms will interconnect freely to bring a range of services to consumers.

But we have a ways to go before that vision is fully realized, and it is our job to nurture those seeds and make sure they grow.

Facilitating competition

From day one of my chairmanship, the FCC has been nurturing convergent competition. We pried open markets by aggressively implementing the 1996 Telecommunications Act and have worked to ensure that mergers do not threaten competition.

Firms that dominate any one element of the network — its content, conduits or intelligence — can raise prices, stifle innovation and harm competition. When that happens, there are only two ways to introduce competition in markets: a structural approach, usually involving divestiture, or a regulatory approach as envisioned in the 1996 act. These are the two ways to break up monopolies and there are no shortcuts ...

We will not trade competition for speculative promises of new services.

We have promoted competition by pumping more spectrum into the marketplace. Look at what we have done with spectrum auctions. We have deployed spectrum for thousands of licenses for new and innovative services — PCS, LMDS, DARS and others. Even now, we are considering rules that will free up 36 MHz of spectrum, spectrum that firms can use to deploy broadband and other advanced services. We are also seeking ways to make sure that new technologies can effectively compete against the wireline monopoly.

Guarding competition

And once markets are opened, we have to make sure they stay open. In 1994, we auctioned PCS spectrum. Before those auctions, most Americans had a choice between only two wireless providers, if they were lucky. Today, over three-fourths of Americans have access to at least five wireless providers. This means many more choices for consumers and cheaper phone rates: Since 1994, prices have fallen by some 40 percent. And the number of wireless subscribers has tripled.

Now, some wireless companies wanted us to relax a rule limiting how much spectrum they could own. Firms said they needed the extra spectrum



William Kennard

for third-generation services, called 3G. But earlier (in 1999), we maintained the 45 MHz spectrum cap for most of the country. We said we would not allow consolidation that might reduce competition and jeopardize lower prices.

We made clear that we will not trade competition for speculative promises of new services.

Challenges of the new era

Our experience with spectrum underscores the central challenge of the new era: how to encourage firms to enter new markets while also guarding competition in competitive markets. Companies often come to the FCC and say they need to get bigger. They say that if we just let them consolidate, they will be able to deploy broadband, enter new markets and foster innovation across the board.

And in some cases they may be right. Consolidation can allow firms to take advantage of economies of scale, combine services into "bundled" packages, and develop the financial muscle to enter new markets and take chances on new technologies.

And in these cases, consumers win: They enjoy more choices, one-stop shopping, new technologies and lower prices.

But I have to tell you. We must greet these claims with a healthy dose of skepticism. At the FCC we have great economists. They tell me it is unclear which markets — competitive or monopoly — best foster innovation. And, if anything, history shows that competitive markets are better than monopoly markets at getting new technologies in the hands of consumers.

And let us not forget: Competition today can be a precursor to competition tomorrow. When firms merge, they tend to become larger, more entrenched incumbents with deeper pockets.

They have already eliminated one competitor, and they can deter future competitors from entering their markets. So firms that want me to trade competition today for innovation and competition in some distant tomorrow should be prepared to make a very compelling case.

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World Radio History

Canada Tracks DAB Progress

► CANADA, continued from page 1
two years, only receiving a \$1 (U.S.) offer in that entire time period.

To help the stations compete against Detroit, the Canadian government allowed CHUM to buy CKLW and CIMX-FM in 1993, letting it own all the private radio stations in Windsor. The government also reduced the Canadian content requirements, allowing the four stations to play a minimum of 20-percent Canadian music, as opposed to the 30-percent standard elsewhere.

CHUM-owned stations are drawing United States listeners.

But even with these exceptions, CHUM has a hard time holding onto the Windsor audience. "About 65 percent" of Windsor listeners tuned to Detroit stations, said Eric Proksch, vice president and general manager of the four stations.

Despite the competition for listeners, things are looking up for the

CHUM stations. By combining resources, the stations are managing to break even on expenses, said Windsor Star TV/radio writer Ted Shaw.

Attraction

In addition, the stations are attracting U.S. listeners. According to the Arbitron Company's Winter 2000 Detroit ratings, adult standards station CKWW is the 16th station in the market, with a 2.4 share among all metro persons 12+, Mon.-Sun., 6 a.m.-midnight.

Alternative music station CIMX is 18th with 2.1; adult alternative CIDR-FM is tied for 26th place with a 0.7; and news/talk CKLW is 28th with a 0.6 share.

Combined, the CHUM stations garner a total share of 5.8 in the Detroit market. CHUM has a Detroit radio sales office.

A total of 31 commercial stations

qualified for Arbitron's Winter 2000 Detroit Market Report with WNIC(FM) showing a 7.9 share of the market and WJLB(FM) at a 5.7 share.

On Jan. 3, however, the situation changed: Windsor went digital.

The CHUM stations began simulcasting DAB programs on the L-band using the Eureka 147 DAB system. But U.S. broadcasters are debating an in-band, on-channel digital radio solution that is still in development.

Canadian sources say the two systems are not necessarily mutually exclusive, that it is conceivable Canada could also adopt IBOC.

Digital broadcasts

The CHUM digital broadcasts come from a single 4,369-W multichannel transmitter and a 702-foot-high top-mounted antenna on the CHUM FM tower, 12.4 miles south of Detroit.

To date, the DAB signals have yet to take the market by storm.

"The problem that they have is there aren't that many receivers in the market," said Shaw.

Eureka 147 proponents hope this problem will disappear over time as less-expensive models come to market.

NAB/BEA Career Fair Deemed a Success

► CAREER, continued from page 8
which ranged from entry-level to senior-management job seekers. "Be aggressive and get background information so you don't go into an interview green."

Attendee Dawn M. Alexander, a senior at Northern Arizona University, said she is looking for information to help her move ahead when she graduates from college.

"I want a career in a news broadcasting setting," said Alexander. "These professionals have concrete information I can walk away with."

Panelist Gary Wordlaw, president and general manager of WTVH-TV in Syracuse, N.Y., had some good advice for those just getting into the business.

"Don't give up," he said. "There are jobs available. Just because you are an intern, or because you are a first timer, don't give up."

Off to the fair

The Broadcast Career Fair, presented by NAB's Department of Human Resource Development and the Broadcast Education Association, immediately followed the symposium.

"Everybody wants to work for the Sports, News and Entertainment divisions," said Frank Giabia, general manager of Technical Manpower Scheduling for ABC Broadcast Operations and Engineering. "We are the fourth division, BO & E. We support those other three divisions and supply them with technical manpower," he said.

"Everybody wants to be a star, but you can't have a Super Bowl without BO & E supplying the cameramen,"

In addition, Canadian automobile manufacturers plan to install AM/FM/L-band receivers soon.

But as DAB makes inroads in Canada, the big question remains: Will digital broadcasting raise the fortunes of CHUM not just in Windsor, but Detroit?

On the "yes" side of the coin was January's North American International Auto Show in Detroit. CHUM set up a booth to demonstrate just how good Canadian DAB sounded. According to Proksch, the public response was "overwhelming."

However, on the "no" side is the belief, one that Proksch shares, that superior audio quality alone will not repatriate the Windsor radio audience.

"I think it is just good radio that will bring listeners back," he said. Digital radio by itself "will not have that big of an impact."

Observers said as long as the audio quality is reasonably decent — and for most listeners FM is — then content will determine which stations listeners tune in to.

Given this, the transition to digital in Windsor is unlikely to draw in the balance of Detroit-area listeners. Instead, as Proksch said, the ratings battle will still come down to content.

RW News Editor/Washington Bureau Chief Leslie Stimson contributed to this report.

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Giabia said. "The audio, the lighting, the tape, the editing. Everything that goes on comes from our division."

Help wanted

Donald Washington is a human resources associate for National Public Radio.

He said he is looking for employees.

These pros have concrete information I can walk away with.

— Dawn Alexander, Student

"Hosts, interns, producers, directors, writers. We are looking for a number of people with different types of skills and experiences in broadcasting," said Washington.

Tricia Moynihan, a senior at Florida State University, aspires to be a TV or radio news director or production editor. "This is a great place for a student to get connections. I'm interested in NPR," she said, scanning the room, spotting the NPR booth. "I gotta go."

The NAB/BEA Career Fair was sponsored by The Career & Education Network.

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ROOTS OF RADIO

Behind the Clear-Channel Matter

Mark Durenberger

This is the first in a series of articles about the history of clear-channel AM radio stations.

The year was 1980. The FCC was about to alter the face of U.S. broadcasting dramatically by issuing two rulemakings.

Docket 80-90 would soon transform the FM band, but the issue with the longest history and heaviest baggage was the AM clear-channel proceeding.

This series of articles will describe how early radio regulations stimulated the development of high-power AM broadcasting, by protecting the signals of certain stations from interference across the United States. This protection was designed to allow these high-power stations to deliver radio to underserved rural areas.

Mixed success

The mixed success of the plan and the opposition it generated from the "have-not" broadcasters stimulated a 50-year regulatory brouhaha that was finally settled by a 1980 Report and Order that would change the AM dial forever.

The story of the breakup of the U.S. clear channels makes interesting reading.

The "clear channels" were the bedrock of what was called the "Standard Broadcast Band." The stations given clear-channel protection were incentivized by this protection to provide full-service programming across their service areas, and they invested in the resources to carry out that obligation.

So it's not surprising that they were very concerned about protecting and growing their investment. A look behind the curtain, where the lobbying and maneuvering was going on, demonstrates the determination and resolve of

the players involved.

And what a conflict! On one side were the clear-channel broadcasters, fighting to protect their wide-service areas from encroachment by other signals. To better serve those regions, some were also pushing for AM "super power," in the order of a half-million watts.

try regulators were concerned with providing reliable nighttime radio to the under-served "white areas" of the country.

While a number of channels were set aside for wide-area coverage from a single site, it turned out the stations on these "clear" channels could not provide solid

These solo signals were not protected only within the United States but, because of the way international radio agreements were written, neighboring countries had to limit co-channel interference contours to no closer than several hundred miles from their borders with the United States.

The current rules also specify that the "clear channels" will provide wide-area service through a combination of daytime ground wave and nighttime sky-wave energy.

As we know, nighttime sky wave can extend the service area of some AM stations far beyond the reach of tall-tower FMs. Sky-wave coverage was one reason for the early success of full-service clear channel stations, but it was this same sky wave that would become a major factor in the ultimate reconfiguration of the AM broadcast band.

Early days

To better understand the fate of the clear channels, it's useful to review how the initial "clear" assignments were made.

The first of four "Radio Conferences" dealing with broadcasting in the United States was convened by Secretary of Commerce Herbert Hoover in 1922.

Out of that conference came the first standard classifications of stations, by power and type of service. (Of interest to our report was the so-called "Class B Radiotelephony Broadcasting Station," the grandfather of the high-power clear-channel operations.)

Because so many early stations were clustered around three general frequencies — "wavelengths" in the parlance of the day — it wasn't long before there weren't enough "wavelengths" to handle the demand.

So in 1923, Hoover convened the Second Radio Conference to deal with rising interference issues, as more and more radio stations came on the air with little regard for precise wavelength tolerance.

To satisfy the demand for licenses, the 1923 conference expanded the AM broadcast band from 550 to 1350 "kilocycles" ("kc"), setting aside channels from 550 kc to 1000 kc for "territorial" coverage, in 10 kc steps.

(It would be more than a quarter-century before "kilocycles" would become "kilohertz.")

The 1923 conference also began to label operating channels by frequency rather than wavelength.

Forty of these frequencies (550-800 kc and 870-1000 kc) were reserved for high-power wide-area "Class B" operation. (Shortly thereafter, four more channels were added and the "B" group extended to 1040 kc.)

The country was divided into five radio zones, with the "B" assignments spread more or less evenly across the five zones. The conference thereby set the table for extensive protection of stations providing high-power, wide-area service.

In 1924, the Third Conference extended the upper limit of the band to 1500 kc, grouped the high-power Class B stations from 550 to 1070 kc and

See CLEAR CHANNELS, page 15 ►

"How Many Stations on One Wavelength?"

"Part II, of a Discussion of the Problem of Enabling More Than One Station to Operate on the Same Wavelength and Same Program

"It would not be necessary to limit the number of stations on a given Chain; the more the better. Perfect reception of that program could be obtained by everyone at all times."

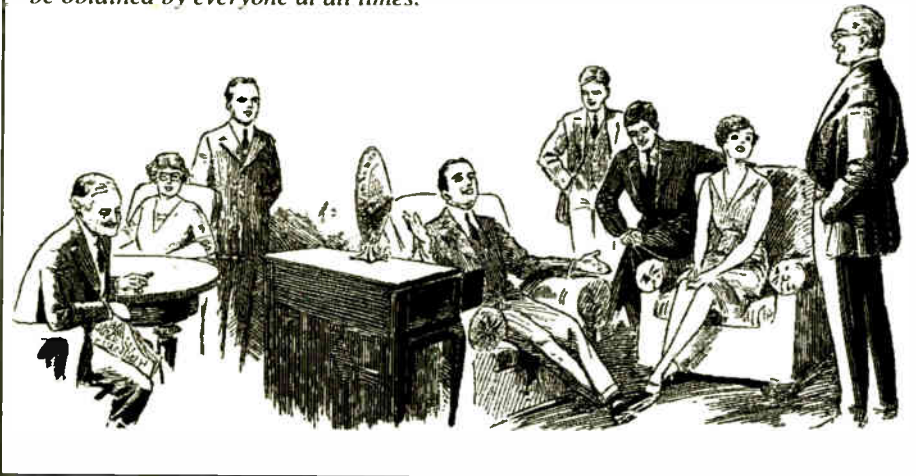


Illustration from "Radio News," July 1928

On the other side of the table were the rest of the broadcasters, the "have-nots" and others who felt such a powerful concentration of media influence was not in the public interest.

What makes this story so remarkable is that many of the pivotal issues in the battle would be irrelevant in today's radio world.

As far back as the late 1920s, indus-

coverage of the vast underserved areas, even with 50,000 watts.

Given the physics of the situation, there seemed to be only two ways to solve the problem: add additional stations on the clears, or grant massive power increases to the existing solo operators. These alternatives would define the clear-channel issue for more than a half-century.

Research

In researching this matter, we looked at thousands of pages of pleadings and arguments, in public records and private libraries. We owe a debt of gratitude to WCCO Radio for providing a review of its technical files, and we thank WSM in Nashville for making available its own records and those of the Clear-Channel Broadcasting Service (CCBS).

CCBS would play a key role in promoting the welfare of the clear channels and advocating AM "super power."

In this regard we also want to recognize Ward Quall, one of radio's great statesmen. He was a key force behind CCBS, and his input into this report was invaluable.

We also owe a "thank you" to Thomas White for his excellent work on the formation of the broadcast band. Learn more at the Web site www.olderadio.com/archives

Section 73.231 of current FCC Rules defines a clear channel as "one on which stations are assigned to serve wide areas."

There was a time when that was an understatement. Until the early 1960s, "clear channel" meant just that: there was only one domestic assignment on each of a couple of dozen AM frequencies from 640 to 1210 kHz.

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► CLEAR CHANNELS, continued from page 14 recognized Canada's right to six of the channels.

In the notes of the 1924 conference are concerns about the efficacy of expanding the band to 1500, "since few radios would tune that high."

(This same concern would surface 60 years later, during the Expanded-Band proceedings.)

As the spectrum filled, regulators searched for new ways to provide more capacity.

One group suggested narrowing the spacing to 8 kc. Fortunately, this idea was put to sleep quickly. But this same sort of silliness would resurface in the late 1970s when the NTIA, wishing to provide more channels "in the name of opportunity and diversity," tried to convert the Western Hemisphere to 9 khz spacing.

Broadcast bedlam

While the broadcast industry was growing, radio receivers were undergoing design improvements that made them far more sensitive.

Better receivers pulled in distant stations, which clashed with local signals. Listeners now heard interference "whistles" of varying beat notes generated by frequency drift in the equipment.

(In broadcasting's infancy, the technical performance of frequency-control equipment left a lot to be desired, and the beat would change pitch, as tubes warmed up or as stations played with transmitter tuning).

In spite of the Radio Conferences, by the mid-1920s it was clear that radio's expansion was outstripping the government's ability to regulate the industry. Existing rules weren't adequate to govern operation on the crowded band.

New technical guidelines were being announced, but there was little enforcement. It wasn't unusual for stations to change operating wavelengths and power levels arbitrarily, to find the "clearest dial spot."

In the earliest days, station frequency was set by aligning a knob pointer with a pencil mark on the transmitter's "wavelength" control dial — a pencil mark left behind by the last Radio Inspector.

During what became known as the "Chaos of 1926," the Commerce Department's authority was gutted by a federal district court, on a ruling overriding Hoover's denial of a license to an unqualified applicant.

Hoover and Commerce threw up their collective hands and began to authorize everyone who applied. Immediately, some 200 new stations took to the air with abandon and with little regard for the rules, and the result almost destroyed U.S. radio.

It quickly became obvious that, unless RF anarchy was to be the norm, a "sheriff of the airwaves" was needed. A massive groundswell of interference complaints finally stimulated Congress to enact the Radio Act of 1927, and to create the Federal Radio Commission to administer this new act.

The FRC's charter was two-fold: first, to establish "avenues through the sky," radio channels freed of interference to the extent they could provide reliable service over great distances; second, to "preclude obscenities into the home," by enforcing rules of decorum on the licensees.

Through a set of "General Orders," the FRC confirmed 550 kc to 1500 kc as the U.S. "Standard Broadcast Band."

To provide "avenues through the sky," it reaffirmed the set-aside of fre-

The 40 Clear-Channel Assignments as of October 1928

Frequency (kHz)	Dominant Station
640	KFI
650	WSM
660	WEAF
670	WMAQ
680	KPO
700	WLW
710	WOR
720	WGN/WLIB
740	WSB
750	WJR
760	WJZ
770	WBBM/KFAB
790	KGO
800	WFAA/WBAP
810	WCCO
820	WHAS
830	KOA
850	WWL
860	WABC (WCBS)
870	WLS/WENR
970	KJR/WOC
980	KDKA
990	WBZ
1000	KYW (Chicago)
1020	WHAS
1040	KRLD/WFAA
1050	KNX/WHO/WOI
1060	WBAL
1070	WTAM/WEAR
1080	WBT
1090	KMOX
1100	WLWL/WPG
1110	WRVA
1130	KSL/KFKB
1140	WAPI
1150	WHAM
1160	WOWO
1170	WCAU
1180	KEX/KOB
1190	WOAI

Source: The October 1928 "Radio Index" Tuning Book

quencies for wide-area coverage and proposed that *only one station be allowed to operate at night on each of these 40 channels.*

The "clear" channels and their occupants, as of October 1928, are listed in Figure 2, above.

Many of these assignments would change over the next dozen years, and only KFI and WMAQ would remain where they started, with their original call letters.

Of interest to our story is that the Federal Radio Commission suggested the maximum authorized power on these 40 channels might be "several hundred kilowatts." This may have been the first official suggestion that "super-power" stations in excess of 50,000 watts might one day be authorized.

Certainly the signals being sent by the FRC gave hope to early investors that their commitment to the growth of radio might be rewarded.

When next we connect, we'll meet the "FCC" and watch as broadcasters built toward 50,000 watts and beyond.



Mark Durenberger is the general manager of Group W Network Services in Minneapolis and an occasional RW contributor. He writes that, because he's been around since God created the electron, he has extensive familiarity with the "clear-channel matter."

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FEED LINE

DA System Control

W.C. Alexander

This is last in a series of articles about troubleshooting the various components of a directional antenna system. The previous part appeared May 10.

Except in the simplest single-mode directional antenna systems, there is some sort of control system that is responsible for switching between different directional and non-directional modes.

Such systems can be simple relay-driven logic, complex industrial computer controls or somewhere in between. These systems usually are quite reliable, but when there is a failure, a faulty control system can put a station off the air.

The best tool at your disposal in troubleshooting a control system is familiarity with it. Becoming acquainted with your array's control system and all of its elements will save a great deal of time later.

Know the type of system, the configuration and routing of the wiring harness, the voltages in the system, the type of RF contactors employed and other pertinent information. When there is a failure, you're going to have to become educated on these items anyway.

Familiarizing yourself with the system in advance also will alert you to maintenance items that need periodic attention.

Sequencing

A typical control system will employ simple relay-driven logic with perhaps a time delay or two (mechanical or electrical), RF contactors in the phasor cabinet(s) and antenna tuning units, a number of microswitches to monitor the position of the contactors, and some sort of multi-conductor cabling to tie it all together.

Many older systems operated exclusively on 120 volts AC; most newer ones operate on 24 volts DC with only the contactor solenoids operated from higher voltage.

The purpose of a control system is to sequence the removal of excitation, motion of the contactors and restoration of excitation in such a manner that no contactor moves while RF is applied to the system.

The control system also should prevent restoration of RF unless all contactors have moved to the proper position. The system should not allow the transmitter to come back on if one contactor in the system is not in the proper position.

A typical pattern-change would go something like this:

(1) The new pattern is selected either by local or remote control.

(2) Excitation is removed from the system, either by opening of a transmitter interlock or some other means.

(3) A time delay, usually in the 0.5 to 2 second range, takes place, giving the transmitter kill circuits time to "settle," ensuring that RF is removed from the system.

(4) All contactors that must move to effect the pattern change are actuated.

(5) Another short time delay takes place, giving all the contactors in the system time to "settle."

(6) If all the contactors have moved to their proper new positions, the excitation is restored to the system.

Many of the better control systems also interlock the power level of the

transmitter through diode steering or other means. A station that operates 10 kW day and 500 watts night would certainly be in trouble should 10 kW be applied to the night common point. The components in that circuit would not last long.

The station engineer must understand what is supposed to happen when a pattern or transmitter change takes place. This will allow you to trace your way through the circuit and process in a logical manner.



Part of the four-tower array of WMAL(AM) in Washington, D.C.

With luck, the person who built or manufactured the system provided a circuit description and schematic that is still available and legible. If not, you may have to trace the circuit out for yourself.

Now let's look at the basic components of such a system, starting with the RF contactor.

RF contactors come in several forms. The most popular is the solenoid-actuated type in which a pair of solenoids actuates a mechanism that closes one or more heavy-duty bar-and-fingerstock contacts.

This type of solenoid is rugged and reliable but its action is somewhat violent. The contacts "slam" home under the power of the solenoid. This action produces vibration and other mechanical stresses that eventually can lead to failure.

Harris uses motor-driven RF contactors that have the advantage of much gentler action. The disadvantage is much slower action. It can take several seconds for a switch to change positions.

Both types of RF contactors employ mechanical microswitches to interrupt AC current to the solenoids when the mechanism has reached the limits of its travel and to signal the control system that the contactor has seated in a particular position.

These switches are subject to damage from the repeated violent action of the solenoid-driven contactor mechanism, from lightning, insects and the elements. Indeed, the RF contactor microswitch is perhaps the most likely part of the system to give trouble. Because of this, you should keep at least one spare of every type of switch in the system on hand as a spare.

Over the years, I have seen all sorts of problems with RF contactors. RF problems, as evidenced by arc marks, pitting and soot on the contacts, indicate that the contactor is being actuated while RF excitation is still applied to the system.

If you see such evidence, you had better figure out why. Sooner or later, something will be seriously damaged. Contacts on the RF contactor can become welded together from such action, freezing the mechanism.

In north Texas, fire ants present a real challenge as they seem to have some sort of affinity for AC power. I have seen these tiny insects pack the switch mechanism of an RF contactor so that the microswitch could not properly close or open.

With a big steel tower connected to an RF contactor, lightning is a real problem. A lightning strike can weld contacts together, freezing the mechanism. Lightning can also jump over to the AC or DC control wires on a contactor, damaging microswitches, solenoids and wiring.

A microswitch that does not properly open can result in AC current being applied to a solenoid much longer than the second

or two that is required to actuate the switch. This almost always results in a burned-out solenoid and it can result in a fire.

Many times, the only way to check for proper operation of an RF contactor is to remove power and excitation from the system, physically move the contactor and use an ohmmeter to check for proper opening and closing of the microswitches. The resistance of each solenoid can also be measured.

Control wiring

Now let's turn to control wiring.

The multi-conductor wiring that is used to connect the controller in the transmitter building to the RF contactors at the towers can be found above or below ground, in conduit or direct-buried, and in continuous runs or spliced.

It pays to know the configuration, location and condition of the system control wiring.

Because such cabling often is exposed to the elements, it is subject to damage, wear and tear from wind, weather, insects and vandals. A visual inspection of the exposed portions of the control wiring should be part of your regular site maintenance routine.

Lightning can cause damage to control wiring that shorts two or more conductors to one another or to ground. This damage can occur virtually anywhere along the cable's length.

It may be necessary to cut the cable at an accessible midpoint location and check in both directions to see where the problem lies. A better way is to use a time-domain reflectometer (TDR) to locate the fault. Many tower companies, cable and telephone companies have such equipment.

In one of our 50 kW directional antenna installations, a faulty ground on an above-ground transmission line between towers allowed a high voltage to form on the outer conductor of the transmission line at a particular location. The voltage was so high that an arc eventually developed, punching through the plastic outer

See FEEDLINE, page 33 ►



International Datacasting Wins Order From CSCC

Virginia-based **Computer Systems & Communications Corp.** chose the SuperFlex datacasting system from **International Datacasting Corp.**

SuperFlex allows users to establish high-speed satellite IP networks. CSCC will use it to broadcast data for the Partnership for Peace Information Management Network from an uplink facility near Brussels, Belgium.

PIMS is a U.S. Department of Defense program that provides an information management network to strengthen cooperation and promote database development between the United States and partner countries.

CSCC is a subsidiary of General Dynamics.

For information contact Michael Rack at International Datacasting in Canada at (613) 596-4120 or visit www.intldata.ca

Ward-Beck Series in Rogers' Neighborhood

Rogers Communications bought **Ward-Beck Systems R2K** radio consoles for installation in several of its radio stations in Canada.

A number of models from the R2K Series have been ordered for CKKS/CKWX Vancouver, CFAC/CFFR/CHM/CKIS Calgary, CKY Winnipeg. CHFI/CFTR Toronto and CIWW/CKBY Ottawa.

Kirk Nesbitt, Ward-Beck's director of engineering in Toronto, commissioned the design of a custom input module to suit the specific needs of Rogers Radio Broadcast Group.

For information contact Eugene Johnson at Ward-Beck in Toronto at (800) 771-2556 or visit www.ward-beck.com

Aphex Wins Converts

Christian station **KNDL(FM)** in Angwin, Calif., 80 miles north of San Francisco, chose the **Aphex 2020 FM Processor**.

"I saw the Aphex ad that pointed out it uses analog processing with digital control, and I really liked that concept," David Shantz, general manager, said. "Digital can be much harsher than analog, so we wanted to try it out."

Shantz claims wider coverage now. "I got three calls from people in Sacramento saying all of a sudden the station was coming in better." Aphex says this coverage adds perhaps 100,000 potential listeners.

Elsewhere, Australian commercial radio chain **DMG Australia** standardized the sound of its network by purchasing six Aphex audio processors.

For information contact Aphex at (818) 767-2929 or visit www.aphexsys.com

***CD Ramps Up**

ConneXus Corp. said *CD, its interactive consumer service, added five San Jose, Calif., stations to its offerings in the San Francisco Bay area.

*CD allows consumers to identify and buy the music that's playing on their radio by calling (650) 588-SONG or going online.

The stations joined 10 San Francisco stations that went live earlier. The company planned to unveil similar services in Los Angeles and New York as part of a national roll-out.

When a user calls *CD, an interactive voice response system prompts them to enter the station they are listening to, and tells them the name of the song, the artist and the title of the CD. Callers can hear samples from other songs on the CD or scan tunes the station has recently played before buying the music.

Similar services are available through the Web site. ConneXus does not require a software interface with the station scheduling system or special encoding of broadcast material.

For information contact the company in Pennsylvania at (610) 578-0800 or visit www.starcd.com

Multiplexer Heard 'Round The World'

The **Armed Forces Network** is solving messaging system problems and improving uplink capacity at its worldwide broadcast center with a unidirectional serial multiplexer from **Data Comm for Business**.

The Armed Forces Radio and Television Service Broadcast Center in Riverside, Calif., wanted to improve its affiliate messaging system, used to deliver text-based radio and television scheduling changes and updates as well as a wire-service news feed.

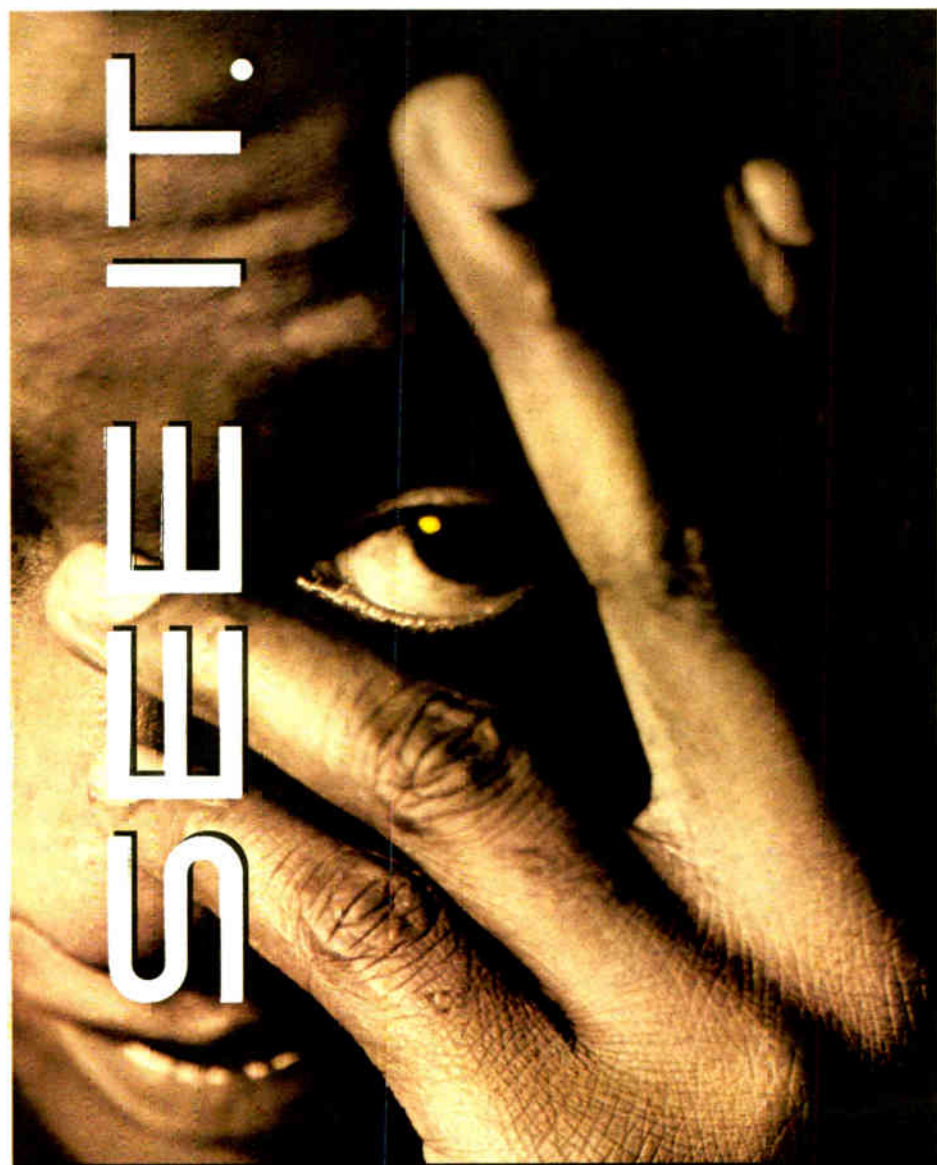
"The one-way serial multiplexer AFRTS is now using was originally developed in late 1998 as a customized solution for an Environment Canada research project that required one-way air-to-ground transmission," said Russ Straayer, president of DCB.

DCB's efforts for the Canadian project resulted in what it calls the first out-of-the-box serial multiplexer designed to work across unidirectional data communication links.

For more information contact Data Comm for Business in Illinois at (217) 352-3207, (800) 4DCBNET or visit www.dcbnet.com

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MARKET PLACE

Bird Digital RF Power Meter

Bird Electronic introduced the Model 5000 Digital RF Power Meter, a handheld device with dual digital readout and analog bar-graph displays.

The Model 5000 provides accurate power readings for digital and analog transmissions with a frequency range of 2 MHz to 3.6 GHz, for power levels from 1 W to 1 kW.



The heart of the Model 5000 is the Model 5010 Directional Power Sensor.

According to Steve Hannah, sales manager for Bird Electronic, "The Model 5000 can handle the unique waveforms encountered in digital modulation as well as conventional FM signals. The Model 5000 utilizes existing APM-16 elements."

The Model 5000 is expected to begin shipping in the third quarter of this year.

For more information contact Bird Electronic in Ohio at (440) 248-1200, fax (440) 248-5426, e-mail: sales@bird-electronic.com or visit www.bird-electronic.com

Andrew, NTL Sign Deal

Andrew Corp. has signed an agreement with transmission-services provider NTL Inc.

Under the terms of the worldwide pact, Andrew will supply NTL with ValuStar, ValuLine, broadcast, earth station and microwave antennas; Heliac coaxial cable, waveguide, connectors and accessories; and pressurization equipment for use at NTL sites in the United Kingdom, Ireland, Australia and Asia.

"This new contract is another milestone in a long collaborative relationship with NTL," said Debra Huttenburg, group president for communication systems at Andrew.

Andrew and NTL previously collaborated on the 1999 Digital Terrestrial TV project, which included ValuStar-based antenna systems for DTTV and DAB satellite distribution.

For more information contact Andrew Corp. in Illinois at (708) 349-3300, fax (708) 349-5444 or visit the Web site at www.andrew.com

GUEST COMMENTARY

DSL vs. ISDN: Not Interchangeable

Rolf Taylor

The author is applications engineer with Telos Systems, a manufacturer of codecs and phone systems for radio station use.

DSL — Digital Subscriber Lines — are the hot new product being offered by telephone companies to customers hungry for fast, relatively inexpensive online connections.

You can hardly pick up a newspaper or magazine without seeing ads promising connections "100 times faster than a 56k modem." The temptation to sign up immediately is great.

Many audio professionals, especially radio stations, wonder why they can't order DSL lines and use them for a "one-stop connectivity" approach — for the Internet and everything else, including the real-time audio transmission now afforded with dial-up ISDN through codecs like the Telos Zephyr.

Why can't we use DSL for 'one-stop connectivity' including the Internet and real-time audio transmission?

Why order ISDN when DSL is the hot new thing?

Others have come to us wanting to use our codecs with DSL lines they have just installed.

Let's help clear up the confusion by looking at current offerings from the phone companies and discussing their appropriateness for the applications now served by codecs and ISDN lines.

The telcos are pushing DSL so hard for a lot of reasons, but chief among them is cost — *their* cost. But that doesn't make it the right choice for every application.

Unfortunately, the telcos add to the problem by telling people ISDN is an obsolete technology, when that isn't really true.

ISDN for Internet?

ISDN is not the ideal choice for packet connections to the Internet. This is one area where the telcos have it right when they push the new technologies for that purpose.

Packet data allows for data to be lost and then re-sent.

For this reason it does not support "real-time" applications such as the Zephyr codec, which require a continuous uninterrupted stream of data.

Systems designed for Internet use, such as Telos' Audioactive, have large buffers that allow time for packet retransmission. In fact, our Audioactive netcoder will work well with DSL by taking the audio input and providing a data stream output that is compatible with DSL.

But ISDN remains the ideal choice

where circuit switched connections are needed. If you need play-by-play from the live game, or you're in a network broadcast situation feeding other stations, the Zephyr and ISDN are your most flexible, reliable and cost-effective way to go.

Unfortunately, the phone companies seem to be making some of the same mistakes with ADSL and the newer DSL types (technically, ISDN and T1 lines are types of DSL) that they did in marketing ISDN.

Proprietary technology

Currently, each phone company is using a proprietary technology. That means you probably have little or no choice in the manufacturer of the "Data Communications Equipment" — the DCE, or modem.

In other words, if you move to another region, you will need to buy new equipment.

Furthermore, most of the ADSL/DSL



when it will be is offered in the remotest locations.

One of the main questions engineers must research before rushing ahead with DSL is: Can their telco provide a newer-DSL line from the studio to the transmitter?

If so, the technology has some potential for certain types of full-time connections. But as is generally the case, the phone company end of a DSL line goes to either the telco ISP or into the packet switched network.

While the phone companies keep promoting the new technologies as "replacements for ISDN," they really appear to be "alternatives to ISDN for connecting to your Internet provider."

Which is very cool in today's day and age, but not an equivalent technology, and certainly not a good choice as a replacement.

This leads us to the \$64,000 question asked by callers to our company: Can you use Zephyr with DSL?

But will it work

Technically, you might be able to use these DSL offerings with a Zephyr if the DCE allows two synchronous data streams at 56 or 64 kbps.

An engineer would rightly be skeptical about finding such a beast, because terminal adapters around today have 10 Base-T only, which does not support synchronous constant bit rate connections to guarantee constant data throughput.

When you consider the pros and cons, Zephyr and ISDN is the way to go for most broadcasters' remote audio needs, and probably will be for some time to come.

If you want to focus on audio streaming on the Internet, Audioactive will work nicely with DSL and allow you to get the benefits of the cost-savings being marketed by so many telecommunications companies today.

■ ■ ■

Contact the author via e-mail to info@telos-systems.com

RW welcomes other points of view and white papers from suppliers answering frequent questions from radio users.

Write or e-mail to the address on the inside last page of this issue.

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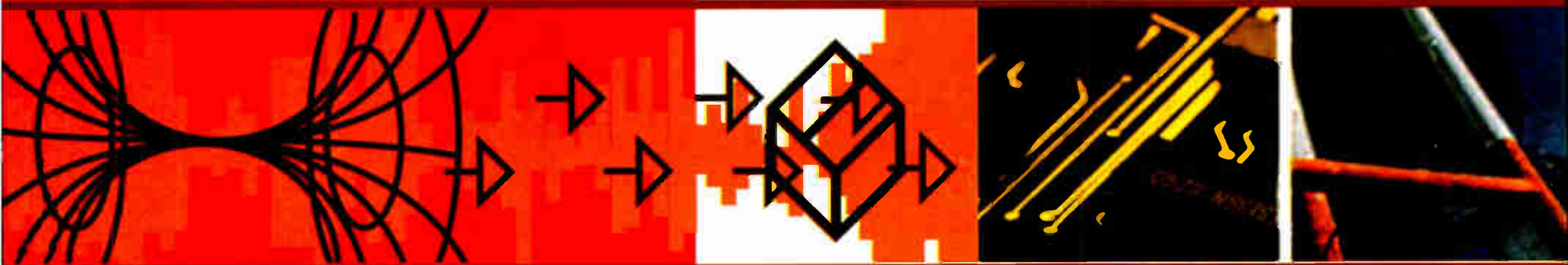
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NEWS MAKER

Snow Develops New Strategies

Paul J. McLane

A year has passed since Wheatstone Corp. acquired competing console maker Auditronics Inc.

Since then, Wheatstone has closed the Auditronics operation in Memphis, Tenn., bringing the manufacturing process into its headquarters in New Bern, N.C.

But Auditronics remains a separate product line and design philosophy at Wheatstone, part of an expanded product strategy visible to observers of this prominent radio manufacturer at the recent NAB2000 convention.

The company introduced five new digital consoles at the show, including two with the Auditronics brand name, according to President Gary Snow. That makes seven digital consoles in total.

"We've got more digital consoles than anyone else put together," he said. The five new boards are priced in a range from \$7,000 to the \$50,000 bracket.

Different approaches

Did the acquisition of a major console maker like Auditronics reduce customers' choices?

"It would have, if we had bought it and rolled the brand name up," Snow said. "But that's certainly not true of Auditronics."

As evidence, Snow said Wheatstone has a new NuStar digital console, the NuStar 4.0, promising more digital power. A split hardware approach lets the

AES sources, any of which can be selected at the board.

Also new under the Auditronics brand is the 220 Digital Audio Console,



Wheatstone D-5000 Console

engineer mount electronics in one room and console interface in another, a method preferred by some engineers. The digital architecture can support up to 256

a modular mixer with four stereo program busses; unlike the NuStar, its electronics and controls are in the same chassis. It can run under automation serial control.

"When you look at the 220, it feels like it's Auditronics," Snow said. "They use — we use — heavy-gauge steel. Some people just like it. I'm more of the aircraft bent; I go with the aluminum. But it does give a solid feel to the product."

Snow said this is the first digital console from Wheatstone with a price tag of under \$10,000, not counting its Audioarts brand.

op the Wheatstone brand he founded.

The new D-700 is a Wheatstone model built on the D-600 design, adding a more powerful master control module and an additional output module. Each channel has two stereo aux send controls, each of which can be pre- or post-fader, pre- or post-on/off.

A major feature of this board is its ability to recall 99 user presets. It can memorize console configurations with parameters such as bus assign, send levels, EQ, source select and on/off. Individual jocks can save their own settings, with coded access.

The board uses V-DIP technology, which allows the engineer to configure the console using a laptop instead of manual DIP switches.

"Clients began to ask for more," Snow said. "The D-700 is for radio, but it can do television. It's good for radio production, too."

Communication

This console also is serially controlled; it can "talk" to a Wheatstone router or to popular automation systems. D-600s have been linked to automation systems such as those made by Broadcast Electronics, Prophet Systems Innovations, MediaTouch and Scott Systems.

The price range of the D-700 is \$25,000 to \$50,000.

The D-5000 is a digital Wheatstone console for radio on-air, in the mid-\$20,000 range console, from the same technology family. It has serial control and individual displays and V-DIP settings. It is available in 12-, 18- or 22-fader versions.

Auditronics remains a separate product line and design philosophy at Wheatstone.

In the Audioarts family, the digital D-70 offers 12 or 20 faders and sells for \$7,000 to \$9,000. The board is modular internally, with a single front panel. It won a **Radio World** "Cool Stuff" Award at NAB2000.

Why are digital consoles becoming more price-competitive in general?

"Digital is still not the same cost as analog, but it's getting down there," Snow said.

"DSPs are cheaper, AES receivers and A/D converters are less expensive than they used to be. But they're still much more expensive than their analog counterparts. There are fewer passive parts, resistors and capacitors in a digital console. And they tend to test faster."

But digital technology is still not cheap.

"The six-layer circuit boards vs. two-layer are still a big expense," he said. "That's still a big nut. And it can take years to develop the technology that goes into these things, whereas the analog consoles the technology had been around

See WHEATSTONE, page 26 ▶

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The new ATC-1 Router reflects the company's recent focus on integration.

Snow said the approximately 20 employees of Auditronics were offered jobs when Wheatstone closed the Memphis plant. Three accepted jobs in North Carolina.

"The technical team from Auditronics is here," Snow said. "Jim Brown, a digital engineer, is the main Auditronics designer. Jerry Jacobsen has been the product support guy for years and years. That's an important part of bringing the continuity here. And Mark Cianciola is a fabulous manufacturing supervisor."

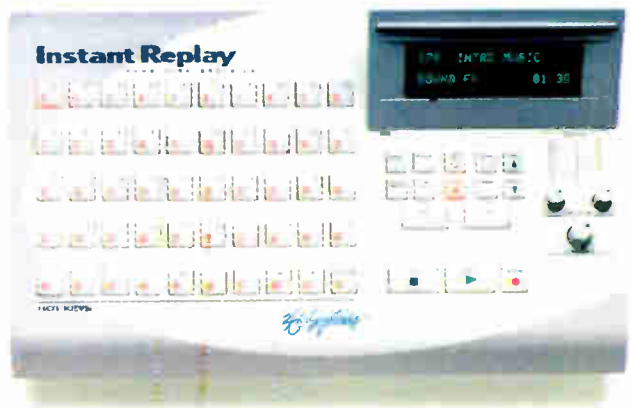
Meanwhile, Snow continues to devel-

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|

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Workbench

Radio World, June 7, 2000

Prep Now for Summer Emergencies

John Bisset

Roland Burgan, former VP of engineering for WHDF(AM), which is now WCCY, in Houghton, Mich., has a useful tip as we prepare for weather emergencies.

If your studio site lacks a backup generator, or has a generator that requires manual starting, you may find yourself without telephone service or even able to answer the

in several plug-in rechargeable flashlights. Mount them in each studio, and perhaps one in the hall.

Nothing is more unnerving than being plunged into complete darkness. Panic can set in; people can trip trying to find a way out. Plug-in flashlights eliminate the search for batteries. Mount them on the inside wall next to the door of the transmitter building.

I like finding new uses for things. Bill Gellhaus at WMRG Studios Inc. sends in a good use for those microphone cases.

Take the EV RE-20. It comes in a nice plastic foam-lined case. If you've got a P-Touch machine and lots of extra labeling ribbons, put the case to work for you.

Remove the bottom plastic foam, place the P-Touch cartridges in the bottom, and custom-cut the foam to keep the cartridges upright. The foam in the upper portion of the case keeps the cartridges from spilling over inside the case.

In our March 1 column, we showed a piano cover that was used to hide computer keyboards mounted in front of the audio console. The cover was hinged on the bottom, so it would fold down (instead of up, like a piano), exposing the keyboards when they were needed.

Bill suggests an alternative to de-cluttering your studio. A KVM (keyboard, video, mouse) switch combined with an articulated arm will reduce the number of keyboards, monitors and mice needed in a studio.

The problem with the cover is any free surface is covered quickly with materials of some form. If you need access to a keyboard quickly, you'll have to dig out the cover!

Bill was also concerned that the dropped cover would bang the knee of the operator,

and may not be ADA-compliant.

In fairness to the station using this, the cover was in a studio used for production, and keyboard access wasn't as important as in a full-time live air studio. The cover

One of the great benefits of preparing this column for you is the number of folks it reaches.

Hardly a week goes by that I don't hear from someone telling about how some *Workbench* tip "saved their hide" or made



Figure 1: Turn old microphone cases into new kit boxes.

telephone when your PBX power is down.

Without power, there is no ringing voltage to PBX multi-line systems, nor is there tally light power.

Here is a cheap, neat answer.

A small, computer-type uninterruptible power system on the AC line to the PBX will supply emergency power for telephone use for some time. A UPS also can power radio communications desk sets and other "necessary" pieces of equipment when an emergency occurs.

Stations with interior studios can invest

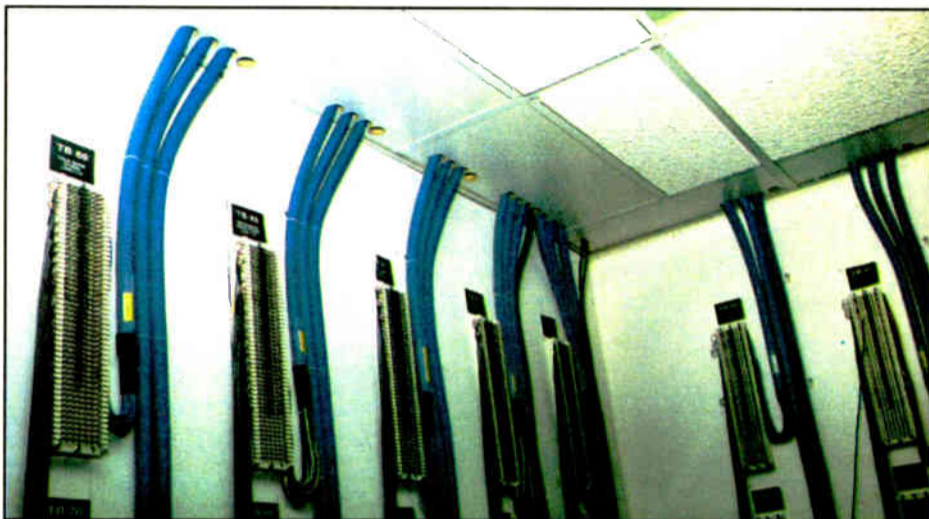


Figure 2: Pieces of white masonite can be drilled to permit wire passage into the ceiling.

actually folded completely under the console; it was shown hanging in the photo so our readers could see how it was attached.

Looking at routing cables through the ceiling of your wire room?

Rather than play with cutting ceiling tiles, consider what Ralph Messer and James Belt did at their facility in Morgantown, W.Va.

Figure 2 shows pieces of white masonite placed where the ceiling met the wall. The cable access holes kept the Gepco cable neat, and easy to identify. Additional holes were drilled for future expansion.

them look good in the eyes of their management. (Be sure to tell us — and tell our editor, too, at radioworld@imaspub.com)

But *Workbench* sometimes finds its way outside the broadcast setting, as we see in our next tip.

Tim Crane is a quality assurance manager with StereoGraphics, a manufacturing firm. The company makes 3D imaging devices that allow users to "see" true binocular 3D on a computer monitor.

One of the company's claims to fame is that NASA used its glasses to pilot the Mars Rover.

Tim's tip is intriguing. It's a free software download called Audio Action

See *WORKBENCH*, page 26 ▶

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DIGITAL

A Year Later, 'Auditronics' Lives in N.C.

► WHEATSTONE, continued from page 20 a long time."

Unlike some manufacturers, Snow does not expect his consoles to move in the direction of on-screen fader control.

Automation companies have been doing that for years, but he said it never seemed to catch on for console interfacing.

Testing

"We haven't had any clients ask for it. ... We test switches and faders for longevity (and) I can't imagine sliding your finger up and down a touchscreen 100,000 times and something not going wrong. And TFT screens are coming in, I can't imagine them lasting.

"Touchscreens go into kiosks and restaurants."

Digital is still not the same cost as analog, but it's getting down there.

— Gary Snow

Radio buyers also are seeing the Wheatstone name on audio routers, furniture and wiring products.

The introduction of Wheatstone's ATC-1 digital router is an important part of Snow's strategy because it connects to the console and to automation systems through serial control.

This may provide a glimpse into how companies like Wheatstone are responding to market changes.

"The key thing with our consoles is that they integrate. If a group is trying to put together a cost-efficient facility, what they really want to do is have shared audio sources, bring them into the router and bring those sources to the various control rooms," he said.

The ATC-1 uses sets of 32 channels

per digital or analog card. One box offers up to 256 ins and outs, with control options.

"We're also pushing furniture and cabling assemblies. We've tooled up — sources to punchblocks, punchblocks to

consoles," Snow said.

"We've resisted this in the past; we didn't want to be in the cable business. But groups want to put stations together, they want to do them cost effectively. They don't have the people to sit on the

floor and wire it all. We can pre-engineer a pile of that stuff.

"We're not in the integration business, but we can provide ready to go product that makes the system more plug-and-play."

When It Gets Hot, Get Going

► WORKBENCH, continued from page 24 Software. The Web address is www.nch.com.au/

This software is a selection of audio software tools for business. The Tone Generator *msetup.exe* is a simple, useful tone generator. The software will play sine, square, triangle, sawtooth waveforms at a selected frequency.

In addition, impulse and white noise are available.

You must have a Windows computer and a sound card.

For the tech at home, this is an ideal tool. Once downloaded, run *msetup.exe* which will automatically install the software. The online demonstration will explain the operation.

StereoGraphics' web site is another neat find. The address is www.stereographics.com

★★★

At the NAB Transmitter Workshop in Vegas, one of the suggestions was to monitor subcontractors sent to your site to do work.

Stu Albert, who does contract work in the Carolinas, sent me the photo in Figure 3. As the contractor to remove all the cables, and out comes the Sawz-all!

Actually, the station was undergoing a rebuild, and the outage was scheduled, but you get the idea.

★★★

Jim Arcaro is a CPBE in Cleveland. He was called to fix a problem at a site where the computer network was down. There was a direct lightning hit to the power line, and the fuses in the UPS and the DSUs blew.

Jim thought it strange that the fuses in

the DSUs would blow, because they were after the UPS, and all the equipment is grounded by a dedicated #6 ground wire.

Jim plugged the equipment directly into the wall, and got some of it working. He replaced the fuse in the UPS, and let the batteries begin to recharge.

While replacing the fuses in the DSUs, Jim noticed their fuses were ever so slightly blown — not black, as one would expect.

Calling the manufacturer of the DSU,

tested by gas tubes! A monitor, printer and print server were all saved by a high-quality surge strip, which took the hit instead.

Given this nightmare, and with thunderstorms on their way to many readers, we can take our lead from Jim, who is plugging his UPS into a wall-mount surge protector. Even though it's redundant, if it blows, he can just plug the UPS into the wall outlet and keep running.

Besides, it's a \$50 surge protector vs. a



Figure 3: Supervise contractors to avoid accidents like this!

Jim asked about the maximum rated input voltage for the equipment. For that particular DSU, the maximum was 130VAC. Remembering that the UPS was programmable, he checked the voltage and found it was set for the maximum of 138VAC!

Jim set it down to 128VAC, and reset all the other UPSs. The brownout voltage was OK at 105V, and the tech said the DSUs would work down to 90VAC.

Surprisingly, the routers and hubs were unfazed by all of this, thanks to the UPS. The dial-up modem took a hit from the phone line, even though the telco was pro-

\$900 UPS! In addition to sleeping well at night, your site is doubly protected.

■■■

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.

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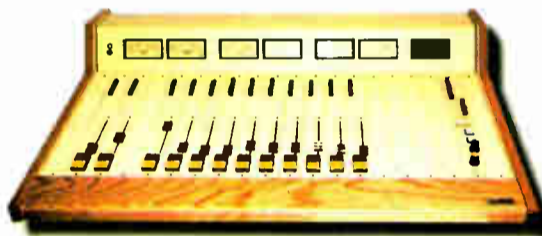
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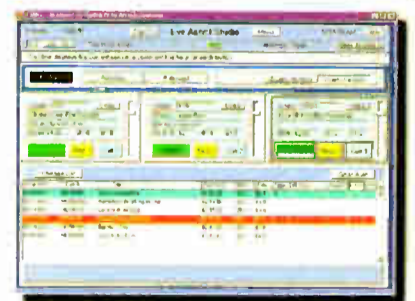
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Swingin' on a Shoestring

Ron Pesha

You gotta give credit to the ingenuity of small-market technicians. Or perhaps to their desperation, given the chronically poor fiscal showing in many of those one-station markets.

Half a century ago, a typical small American town with population above about 5,000 supported (barely) an AM station. Daytime-only (sign on at sunrise, off at sunset), or Class IV (250 watts, 100 W or even less in the 1940s, 1,000 W till sunset by the 1960s).

Locally owned or in a tight rural regional group, these facilities operated on the proverbial shoestring. Little was left for electronics after the antenna tower and type-accepted transmitter.

A real console

One small Arkansas city station had seen good times, outfitted with a new top-grade Western Electric studio in 1939.

When I worked there in 1959, Magnecord tape recorders with octal base vacuum tubes were state of the art but the board's six-pin tubes with grid caps on top were approaching obsolescence.

I did learn why control boards are called "consoles" by the old-timers.

This Western Electric unit didn't just sit on top of a desk, for it was built into its cabinetry. Furniture and electronics all in one.

Swing open the top half, and the lower half with those tubes and mica capacitors and heavy transformers sat below the level of the desk.

The time the announcer spilled the cola on the desk, gravity took over. Such sparking and sizzling when that conductive liquid met hard-wired tube sockets live with 300 volts DC!

Long Yard

Vacuum tubes dominated control boards through the 1960s. Some manufacturers saw a market and offered low-end control boards, such as the pre-Harris Gates Yard (it was three feet wide).

Hand-me-downs equipped other stations. In the 1960s, I visited a Colorado station using a control board from the mid-1930s.

No ergonomic designer planned that vertical front panel. A single zero-center pot controlled both turntable levels. Turn it counterclockwise for the left turntable, clockwise for the right.

The radio station 50 miles south made do with no control board. Visiting, I noticed three phono preamps, and a 4-inch-square steel chassis with a 6SC7 vacuum tube which equalized magnetic pickups and boosted the millivolt signal up to a high-impedance volt. These appeared to feed three ordinary carbon potentiometers mounted on a slab of hard-board.

Two turntables and three preamps? The third amplified the microphone (hopefully with the bass boost disabled). That was it. No remote inputs, no network feed, no tape. All spots read live. The limiter's meter substituted for VU indication.

Here's one station that made use of

the excess gain always provided by limiting amplifiers!

An Arizona station managed nicely with a second-hand Raytheon limiter, transmitter and board. But, apparently, the source station retained its turntables. Now parts catalogs in those days featured the replacement turntable, a

the vendor.

"I'm going down to the printshop (the local weekly newspaper)," said the manager, "and have them run off bingo cards."

We employees said nothing, realizing that a small printer can turn out any quantity — but all exactly alike.

Professor Pesha recalls life and equipment at radio stations circa 1959.

seven-inch stamped steel platter and small motor, used in teenagers' \$19.95 portable phonographs. And at this station. We were decades ahead of the times. Just like CDs, we didn't (couldn't) cue the recordings.

Motor power

Other stations lacked means to purchase QRK or Russco turntables — both from Fresno and curiously similar in design — but did secure older units second-hand.

The turntables at one Montana station were so old that the mechanisms were integral with the cabinets.

Open the access door and see the half-horsepower motor on the floor coupled to the platter with a massive gear train. It looked like a washing machine inside.

Sign-on time was 6 a.m., but I needed to arrive at 5:30 to start the turntables. The owner-manager insisted on reducing the heat overnight, and on a cold Montana morning, the stiff turntables rotated at two rpm when started.

This radio station manager recognized the value of contests. Lacking means to match the big station in the city 30 miles away that was giving away a car, he purchased a junker for a few hundred dollars.

A plank of wood upright on the roof of the vehicle read, "Listen to K--- and Win This Car."

I recall that he lettered it with a shoe-polish dauber. The salesman hated having to drive it about town.

Another gimmick featured a more modest prize. Somehow he acquired a case of pickles, and offered it as prize for the best letter describing, in 25 words or less, The Worst Pickle I Was Ever In.

Through weeks of nonstop promotion, one teenager's composition stood out above all others, probably because it was the only entry.

Bingo

K--- also played the then-ubiquitous bingo. "Visit our sponsors and get your free bingo cards, no purchase necessary."

The pads of play forms proved popular, the station manager increasingly consternated over their expense from

MARKET PLACE

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For more information contact the company in Ontario at (613) 596-4120, or visit the Web site at www.intldata.ca

When the manager returned later, he said nothing at all.

■ ■ ■

Got a favorite anecdote about radio technology? Write or send e-mail to the address on the inside last page of this issue.

Ronald Pesha is Adirondack Community College Professor Emeritus of Broadcasting. Reach him at (207) 733-2274 or via e-mail to rpesha@nemaine.com

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'The Life of a Tower Climber ...'

Troy Conner

Tower work is a strange business.

To me it is a bit like a circus big-top show. You load up the equipment you are going to need, hook up the trailer, pile everybody into the truck and hit the road.



Figure 1: The long climb ahead

Rigging the tower in preparation for any lifting has always in my mind been analogous to erecting the circus tent. It often takes as long, or longer, to put up the tent as it does to put on the show.

Then, after the show, the process must be reversed, the tent taken down, packed, and on the road they go, heading to the next town.

The romance of the sky

It all seems a bit romantic, and in the short term it is.

Ahh ...but in the longer term, 60-hour weeks, greasy roadside food and months of endless hotel rooms, the image becomes a bit tarnished.

That said, I can't think of any profession that I would rather pursue. I truly love my work. The deep sense of accomplishment at the conclusion of a challenging job is enormously satisfying.

When people ask what I do, I tell them that I have a master's degree in engineering, but that I really climb towers for a living.

I suppose I should introduce myself (or for some readers, reintroduce myself). My name is Troy Conner and I run a small tower firm in western North Carolina.

You may have read my column in the past. Other readers have not been so unfortunate.

We tower workers are indeed a strange breed.

To some degree, we are all afflicted with vertical wanderlust, quickly looking over the horizon as soon as the current fun is done. Most of us are addicted to the adrenaline and the chance to really see the world.



Figure 2: Looking down from about 1,200 feet

In that regard, I suppose it's kinda like being in the service. You don't usually get to choose where you are stationed, but if you keep at it long enough, just by dumb luck you'll get to see some beautiful places.

I can't really describe the view afforded from a 2,000-foot tower. It can be simply spectacular.

I watched the sunset once as I climbed down an 850-foot tower in Poughkeepsie, N.Y. Looking down on a section of the Hudson River as the sky slowly changed its hues was an experi-

ence a picture could never convey.

Other times it just ain't that pleasant.

Wind and weather

Wind and weather are the foremost enemy of the tower climber. I have been cold, wet and miserable on so many occasions that I am nearly immune to the weather. Part of it is proper clothing, the rest is simply dogged perseverance and mindset.

You have to learn how to put on a set of mental blinders and totally focus on the work at hand. Often I lose track of time entirely. Hours pass and yet I think it is still early in the day until



the day. That's not taking into account the wind chill!

It was akin to standing in the back of a pickup truck at highway speed and trying to accomplish something.

More than once I have asked myself, "Why am I here?" This is not a reflective, or philosophical question, but more of a specific "What in Hell are you doing here?"

One of the memorable instances of such introspection took place near Houston — in Sugarland, Texas, to be precise. There I was at 1,346 feet, standing with another man on a tiny platform about three feet square, suspended by a cable slightly smaller than your finger, preparing to ride down a guy wire 1,700 feet long.

Greasy guys

It wasn't that the ride down the cable was so unpleasant; it was the task at hand that prompted my thought.

We were greasing the cables to inhibit corrosion. Anyone familiar with that task knows it is messy, to say the least. The ride up each cable was exhilarating ... like a high-speed magic carpet ride into the sky. It was coming down that we dreaded.

All told, we greased more than 45,000 feet — eight-and-a-half miles — of cable and went through about 500 gallons of NO-OX-ID grease.

This special grease is some of the nastiest stuff I have ever worked with, a bit like axle grease but thicker. At the end of the day, we would have our T-shirts cut up the back so we could get them off without dragging all that grease over our faces.

We stripped down to our underwear

See STEEL, page 33 ▶

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► **STEEL**, continued from page 32 and would use gasoline-doused rags to try to clean ourselves up. Even wearing two T-shirts, my belly button would be full of grease, and we used sticks to scrape the stuff off our arms.



Figure 3: Ouch! Typical days are hard on the hands.

Once the gas started to burn, we would run to the hose and use GoJo to remove the gas. This process was repeated until we felt clean enough to get in our vehicles and drag our achin' butts to the hotel.

Back at the hotel, we kept more hand cleaner in the shower and would again alternate between soap and degreaser. Even after half an hour in the shower, our arms still felt sticky. The joke was that we could bead water like a freshly waxed car.

I can't think of any profession that I'd rather pursue. I truly love my work.

I think one of the happiest days of my life was when we finished greasing that beast.

Despite, or perhaps because of, the hardships, I hope to be a tower worker until I am physically unable to climb them anymore.

Somehow, knowing at the conclusion of a job of which not many people are physically capable, being mentally willing and crazy enough to do the work we do becomes a matter of pride.

The tower industry is not huge. Many of us work together off and on for years. We know one another. There is a real sense of camaraderie when a batch of tower people gets together.

I plan to cover a variety of tower-related topics in future columns. If you have an area of concern, or any questions, feel free to give me a call or send a fax. I would also welcome any suggestions, comments or complaints.

■■■
Troy Conner is the owner of Tower Maintenance Specialists. Reach him by phone at (704) 837-3526 or via fax at (704) 837-1015.

AM System Series Concludes

► **FEEDLINE**, continued from page 16 jacket and right through the adjacent control cable. RF arc damage to control cables is not an uncommon occurrence.

The basic system components also include relays and switches.

Most antenna system controllers use 24- or 110-volt relays to perform logic and switching functions. With the contact closures provided by the day/night, main/aux, DA/ND remote and local switches as well as the microswitches on the RF contactors, these relays provide a rugged, simple logic system.

People have asked me why we couldn't achieve the same results with CMOS or TTL gates with far fewer moving parts.

The answer is that we can, but because this equipment is connected more or less directly to several very effective lightning rods, the IC gates probably wouldn't survive the first thunderstorm.

Kintronic Laboratories came out last year with a PCL-based system controller that overcomes this problem by connecting the RF contactors in the system to the controller via fiber-optic cables.

In better-designed and -built systems, front-panel tally lights show the station engineer the position of every contactor in the system. Color-coding these lights according to day/night pattern or DA/ND can tell the engineer the status of the system at a glance.

Again, the key to quick troubleshooting is familiarity. If you know

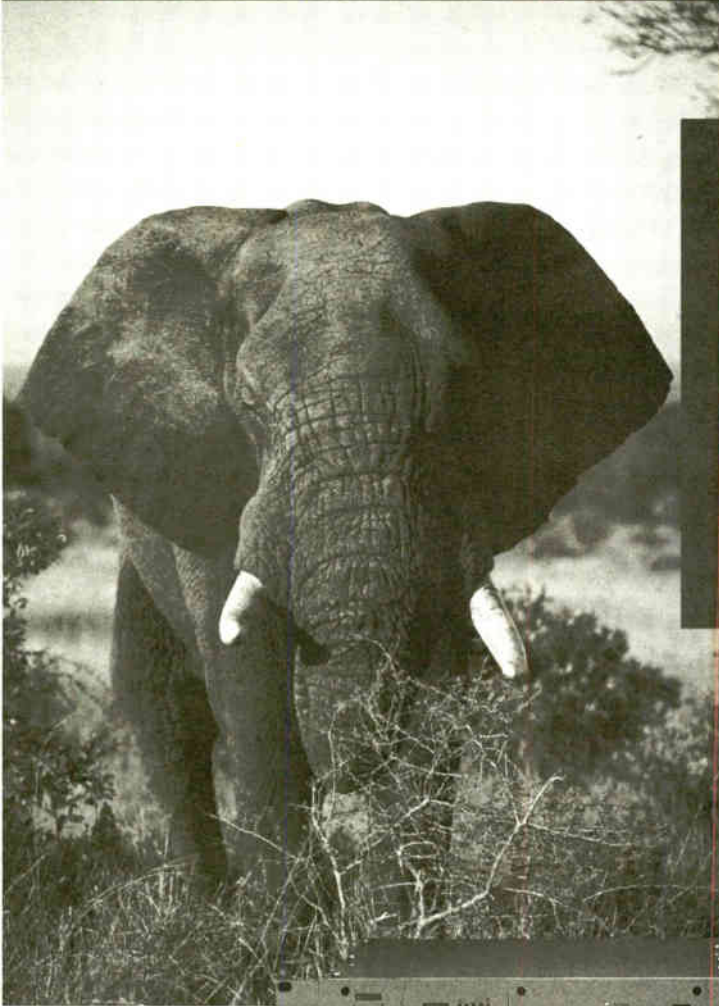
in advance how the system is supposed to work and can lay hands on the schematic diagram and circuit description in a hurry, your time spent troubleshooting a broken control system will be minimized.

Keep at least one spare of every type of relay used in the system, especially time-delay relays, on hand to speed repairs.

This concludes our series of articles on the care and feeding of AM directional antennas. Do you have questions or tips to share with fellow AM engineers on this topic? Send them to me via e-mail to cbceng@compuserve.com and we'll answer or share them with other readers in a future article.


■■■
Cris Alexander is director of engineering for Crawford Broadcasting.

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*Source: *Duncan's Radio Market Guide*, 1999 edition

**Source: *The American Radio* by Duncan's American Radio; based on Arbitron Spring 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight

***Source: Arbitron Fall 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight



Drew Rocks
Page 38

NEWS ANALYSIS

Who Goes to National Shows?

With Fewer Engineers Attending Big Shows, How Will They Find Out About New Equipment?

Ken R.

With NAB2000 past, and all of the new product assessments underway, a question remains: If fewer engineers attend each year, as anecdotal evidence suggests, how do technical staff learn about new equipment?

Since the advent of consolidation in the radio industry, industry observers say groups have cut costs through staff reduction and by tightening travel budgets, resulting in fewer engineers at the big shows.

Out-of-pocket

Some groups say they now depend on their contract engineers to pay their own way to national conventions or just drop by on the Web.

"Our engineers are hired on a contract basis, and we have not sent any engineers in the last four to five years," Gary Acker, president of Metropolitan Radio Group said.

"But even though we don't send them, we definitely count on their ability to keep up to date on new equipment and services."

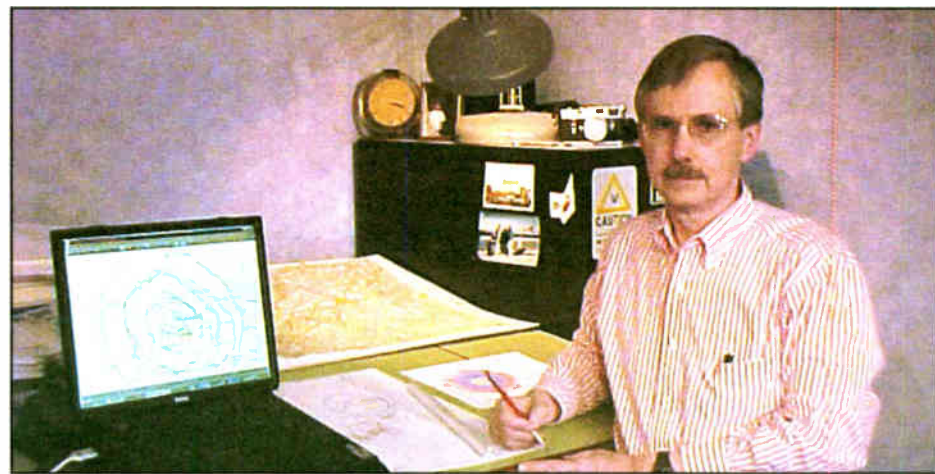
Metropolitan Radio Group, which is based in Ozark, Mo., owns a number of stations in Texas, Arkansas, Louisiana and other areas.

Ralph Hogan, a member of the board of the Society of Broadcast Engineers, said consolidation in some cases has been responsible for group owners sending only the principle engineering design team to conventions.

"The upside of consolidation is that it has encouraged a uniform set of hardware parameters within station

groups. There is economy in group buys," Hogan said.

Saga Communications sends certain key employees from its radio and television properties to large conventions, but Director of Engineering Greg Urbiel is a believer in smaller, regional conclaves.



Tim Warner

"The Michigan Association of Broadcasters puts on the Great Lakes Broadcasting Conference and Expo, which is great. At the local shows, I have more time to meet face to face with the vendors without waiting in the long NAB lines."

Saga owns 46 radio and five television properties.

Urbiel laments the radical decline in the number of engineers on staff at many groups, but is proud that he works for a company that retains staff engineers.

"Even though the business model

has changed, the daily care and feeding needs of our stations remain the same," said Urbiel. "At Saga, the local area is sacrosanct, and we are going to keep it that way. All my stations have their own staff engineers because radio still needs personal attention," said Urbiel.

Trade pubs

Lawrence Behr Associates in Greenville, N.C., is a consulting firm that has one foot in the broadcasting camp

and one in wireless communications.

"In our business, trade publications are very important because things change between conventions," said Mike Britner, vice president of business development. "A year in our industry can be a lifetime."

Britner also believes the Internet is increasingly important to keep up with the rapid changes. His company attends conventions held by NAB, the Cellular Telecommunications Industry Association and the Personal Communications Industry Association.

"We have always gone to conventions;

See WHO GOES, page 42 ▶

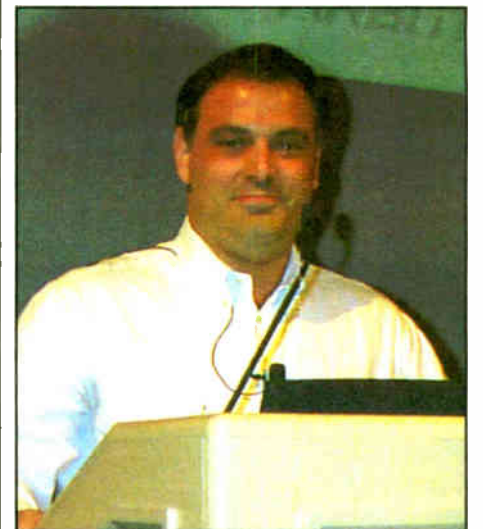
Ad Agencies Want Net Web Spots

Sandy Wells

The message is simple: Internet radio listening is on the rise. People listening are highly desirable to advertisers.

"The good news is it's hot," said Bill Rose, vice president and general manager of Information Services at Arbitron.

"Advertising agencies get the message. It's really time for people to go out and sell it. That's why I use Woody Allen's phrase, '80 percent of success is showing up.' You won't make the sale if you never make the call."

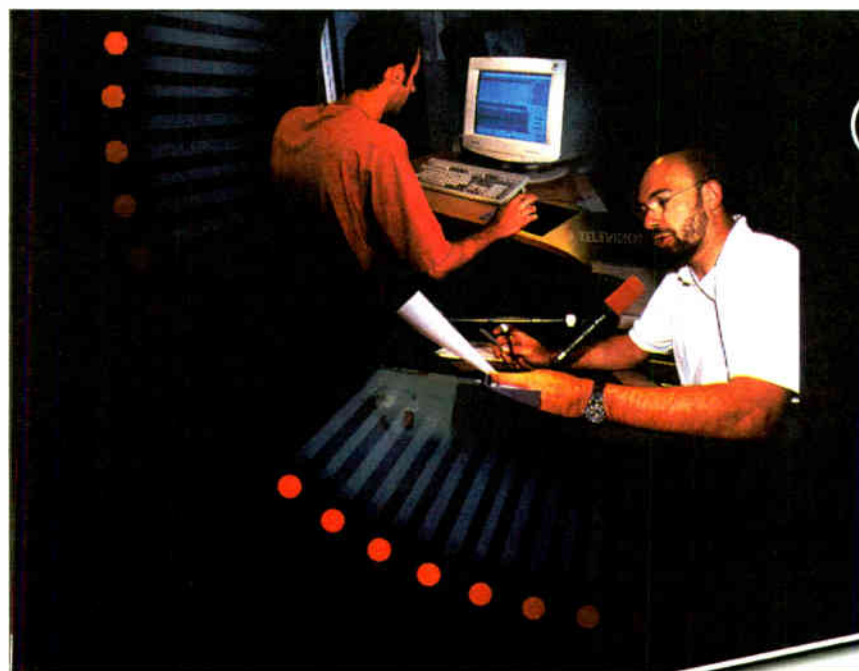


Bill Rose

Rose said a lot of advertisers want to learn how to use the new media.

"Costs could be a downside, but I don't know because no one has presented to me yet," said a group planning

See ARBITRON, page 40 ▶



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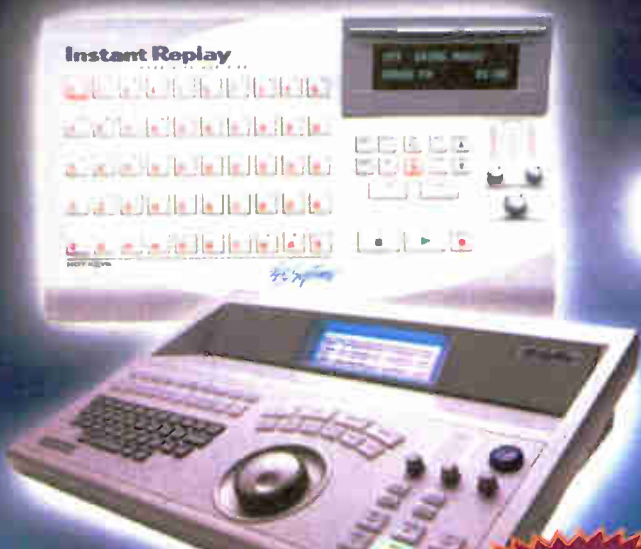
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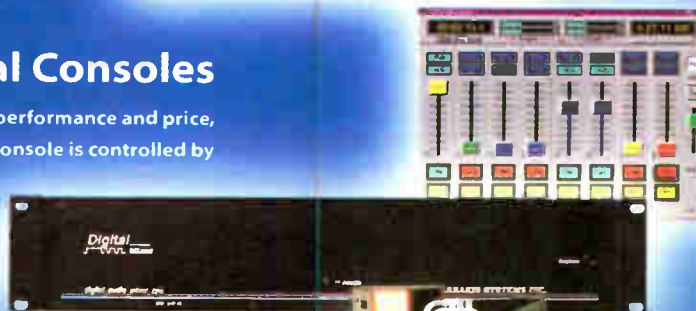
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Drew Carey Returns to Radio

Robert Rusk

Drew Carey is one of the most popular comedians today, but in the mid-1980s, he was waiting tables at Cleveland restaurants to pay his bills.

He didn't know it then, but luck — not to mention fame and fortune — was about to come his way. And it was radio to the rescue.



In 1985, Carey began writing material for an on-air personality at a local radio station. His career took flight and ultimately landed him his current — and coveted — spot on ABC-TV as star of a pair of shows:

the self-titled "The Drew Carey Show," now in its fifth season, and "Whose Line Is It Anyway?," now in its second season and based on the British comedy improv series of the same name.

Tom Feran, TV critic for "The Cleveland Plain Dealer," said, "Drew started writing jokes in 1985 at the urging of a disc jockey friend, after getting a book about joke-writing from the library.

His big booster, and a buyer for his material, became John Lanigan at WMJI(FM)."

Today, Lanigan continues to host morning drive at top-rated oldies outlet WMJI(FM). His show is the highest-rated daily show in Ohio, according to WMJI Program Director Denny Sanders,

weekly, two-hour "Drew Carey's Hi-Fi Club" on the United Stations Radio Networks.

Swing to surf

The nationally syndicated program is music-driven and features a colorful mix



United Stations Radio Networks and Manilla Productions joined Drew Carey to celebrate the launch of the 'Hi-Fi Club' in April. From left: Ben Manilla, Musician Ray Manzarek, Drew Carey, Dick Clark and Nick Verbitsky.



Drew Carey

that we know will stand out in the radio marketplace."

United Stations describes itself as the nation's largest independently owned and operated radio network.

The company produces and distributes multiple format-specific services for adult contemporary, album rock, contemporary hit, country, oldies, smooth jazz, talk and urban formats.

who bases this claim on Arbitron data.

Now Carey has returned to his radio roots. In April, he began hosting the

of eclectic tunes ranging from swing and surf to Latin and lounge songs.

"I always wanted to do a radio show," Carey said. "For me, the 'Hi-Fi Club' is a personalized weekly tour of my private record collection. It contains the same cool music that I play for my friends when they come over to visit."

The "Hi-Fi Club" is the creation of Carey's production company, Work Hard Inc., Ben Manilla Productions and United Stations.

The show is offered on a market-exclusive basis. A companion Web site (www.drewcareyshifclub.com) debuted in the second quarter of this year.

The New York-based company was founded by radio legends Dick Clark and Nick Verbitsky.

Ben Manilla Productions is a producer of radio programming and other audio presentations. The San Francisco-based company was formed in 1991 and has been recognized nationally for its unique approach and creative style.

The company's numerous industry accolades include the Associated Press and International Radio Festival awards.

Asked to sum up his childhood in Cleveland, Carey replies with the oft-heard, "Weirdo. Weirdo. Underachiever. Weirdo. Wierdo."

Carey doesn't dwell on it now, but as a child he had bouts of severe depression. At age eight, he faced the loss of his father, who died of a brain tumor. Depression followed Drew into young adulthood, when twice he attempted suicide.

Now in his early 40s, Carey has achieved success — and presumably inner-happiness — in both TV and radio. He insists, "I'm gonna have fun."



The site will feature playlists, show information and links to other Carey sites.

Those links may have to be pared down, though. Nearly 7,000 Web page matches come up on a search for "Drew Carey" on the Yahoo! search engine.

"Drew Carey is one of the most versatile and forward-thinking performers today," said Andy Denmark, United Stations vice president/programming. "By extending his craft to radio and pairing him with Ben Manilla Productions, we are creating a show

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Net Listening: Turn Your 'Streamies' to Gold

► ARBITRON, continued from page 35
manager from a major agency in Arbitron's Advertising Agency Survey on Webcasting.

The new report was presented with the Arbitron/Edison Media Research Internet Study IV, "The Buying Power of Streamies" at the recent Internet Conference in Scottsdale, Ariz.

The survey is a snapshot of attitudes and perceptions about Webcasting

of money on the Internet. Arbitron found that 71 percent allocate between 1 and 10 percent of their budget on Internet ads, and the overwhelming majority (83 percent) of that money goes to banners.

One out of five agencies place Webcast advertising and 38 percent of the agency executives did not know how much they were spending on Webcasting. Not surprisingly, 63 per-

cent stand and accept the value of ads on the Internet," said Rose.

"Streaming ads are better than banner ads because it adds an audio and video element to an otherwise static image. It makes it more compelling.

"A banner ad can only be used when you look at a browser. You can hear a (streaming) ad while working on something else. I can be listening to K-PIG (www.kpig.com) in Santa Cruz, Calif., and hear an ad while doing other work on the computer."

Arbitron's InfoStream Webcast ratings for the month of November determined that www.kpig.com a terrestrial adult alternative format station in Monterey, Calif., is the most listened to Webcaster, with a monthly cume of 60,700 listeners.

And radio broadcasters that are also streaming on the Internet, argues Rose, shouldn't be giving away their on-air spots that reach valuable Internet listeners as "freebies."

"Rather than give away the ads online, you can sell the ads to a more targeted audience — and a valuable target — a different kind of target than we are used to in radio.

"In radio, we regard 25-54 as a 'target,' but it's really a family reunion. There are all kinds of different listening habits and interests within that range. With a Webcasting ad, you're reaching people who make more money and who spend more time and money online. The technology allows targeting to a very discreet audience."

Rose said "Ad-serving" technology can help advertisers identify listeners according to geography, socio-economic characteristics and Web-surfing characteristics.

"We can get information on the type of person you are without knowing personal information," said Rose, adding that this avoids the issue of violating a person's privacy.

Agencies said "targetability" is one of Webcasting's strengths, citing its capacity to reach teens and deliver a message to a specific individual.

According to Arbitron, people who use computers to listen to streaming audio represent a higher-end audience of early adopters who are otherwise light media (TV/radio) users.

Listening habits

And people listening on their computers in an office, at home or in a college dorm are more interactive and more apt to become involved with what the advertiser is offering, according to Arbitron.

But Webcasting's negatives still present obstacles to station sales reps who do call on the agencies. Twenty percent of respondents in the agency survey said that low-penetration is a significant weakness of Webcasting.

Others pointed to technical problems such as bandwidth and the poor reception quality.

A director of brand strategy at a New York interactive agency said that user disappointment due to built-up expectations of what the medium can deliver right now is another weakness.

Many Websurfers are preconditioned to think of streaming audio as high quality.

In "The Buying Power of Streamies," a report Arbitron released in February, the company found that only 36 percent of "streamies" said that listening to radio stations over the Internet was "very easy."

More than half of advertisers agreed that Webcasting is a new medium and not an extension of broadcasting. At the same time, 64 percent said that measurement of the Webcast audience should be easily compared to broadcast estimates.

The Arbitron report said that "streamies" are "worth their weight in gold" to advertisers and that advertisers are "buying the upscale story."

What kind of media universe will evolve on the Internet?

The convergence of old and new media ultimately will result in different degrees of hybridization. Rose said the technical capacity of terrestrial stations that Webcast to use targeted Internet-only spot insertions may provide an important additional revenue stream.

Flexibility

"Traditional broadcasters, whether TV or radio, as they look into the crystal ball are asking themselves, 'How can I use this medium to enhance my present business model while attracting more revenue?' The issue is whether broadcasters are going to be flexible enough to complement their business models and make some money at the same time. Some will and some won't."

Part of the new universe already has been defined by the rapid rise in the number of stations and the effect on consumer choice. San Francisco-based brsmedia.com counts about 3500 sources of Webcast content.

"Right now, broadcasters are used to competing with a handful of competitors," said Rose. "That's going to change."

Webcasting ads reach people who make more money and who spend more time and money online.

based on interviews with more than 100 senior advertising agency executives conducted from January through March of this year.

Arbitron posed questions to both traditional and "interactive" agencies as well as to buying services in major cities across the country.

"It's the first report for the other customer — the buying people," said Rose.

Most agencies spend small amounts

cent of the interactive agencies questioned were using Webcasting.

Cold calls

Internet-only Webcasters are nearly twice as likely to have called at an agency than radio stations that stream. Even so, less than half of all agencies said they had been approached by any Webcaster selling ad time.

"The agencies we spoke to under-

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WEB WATCH

'E-Tail' Ripple to Hit Radio?

Carl Lindemann

Web Watch is a roundup of all things radio and Web. Send your news and tips to LD@imaspub.com

No Easter Bunny in the Forrester — After "e-tail" investors turned tail in April, \$2 trillion of paper value evaporated into cyberspace.

One cause of the sell-off? The release of **Forrester Research** report, "The Demise of the 'Dot-Com' Retailers," on the eve of the near-panic that swept the **NASDAQ** on April 11. The report predicted the failure of many prominent online merchants.

For **Seema Williams**, senior analyst at Forrester, the anticipated problems with online retailers likely will have a major ripple effect on traditional media sales.



Seema Williams

"Many e-tailers have overkilled on the TV front — just look at Super Bowl ads. Radio

and print have been a bit more effective for those reluctant to lay out those kinds of dollars."

The sweep of sell-offs did not just hit the high-flying dot-coms. Technology firms like **AVID**, parent to the **Digidesign ProTool** product line, and **Sonic Foundry**, the audio processing software and multimedia production house, lost better than half their values.

Ken Minor, Sonic Foundry's CFO, said this is not as catastrophic as it sounds.

"The drop is from value created 30 days ago. We went from \$10 to \$130 in 160 days. We got a great lift from repositioning ourselves from being a software company to a multimedia service provider."

Online Advertising Doubles in '99 — While press, radio and TV may face a drop in dot-com ad dollars, spending for online ads more than doubled in 1999 over 1998, to **\$4.6 billion**. Fourth-quarter sales of \$1.7 billion nearly matched the previous year's total revenues of \$1.92 billion, according to **The Internet Advertising Bureau's** "Internet Advertising Revenue Report."



Rich LeFurgy

"Advertisers and marketers no longer ask why they should advertise online. Now, they ask how big a part of their budgets they should devote to online exposure," said Rich LeFurgy,

chair of the Internet Advertising Bureau.

"We are witnessing the rapid expansion of the Internet as an unparalleled advertising and marketing medium," said **Tom Hyland**, partner and New Media Group chair for **PricewaterhouseCoopers**, the company that conducts the study on an ongoing basis for the IAB.

"Utilizing revenue numbers on an inflation-adjusted basis, in this, its fifth year, the Internet, with \$4.6 billion in ad revenue has surpassed the \$3.7 billion for television in its first five years."

With dot-com ads down and online ads

up, we may be getting a taste of the media marketplace in, say, 2010. Imagine a time when broadcaster/Webcasters throw in the terrestrial ads to sweeten the deal for an online ad campaign.

BCDF to Set Broadband Standards — One of the major bottlenecks to a broadband future is the hodgepodge of "standards" for high-speed data services.

Now, a consortium of communications and technology companies have come together to form the **Broadband Content Delivery Forum**. The forum's focus is to agree on a common reference architecture for delivery of dynamic content and speci-

fy new architecture components.

Another aim is to deliver a new, high-performance Internet by improving content delivery throughout today's network infrastructure.

BCDF members include **Alta Vista**, **AT&T Broadband**, **BBC**, **Bertelsmann**, **DSL Networks**, **Hewlett Packard**, **NBCi**, **Nortel Networks**, **Qwest**, **StarGuide Digital Networks** and **Sun Microsystems**.

"The delivery of dynamic content and the end-user experience has been hindered by today's Internet, which is currently optimized for 56 kbps," said **Anthony Alles**, president, IP Services,



Nortel Networks, which is a founding member of BCDF.

"Most end users, even with broadband access over DSL and cable, cannot experience the high-performance Internet for

See WEB WATCH, page 42 ▶

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Web No Substitute for Hands-On

► WHO GOES, continued from page 35 they're very important to us," Britner said.

Don Kerouac is chief market engineer at STARadio Corp. in Kankakee, Ill. He sees the direct connection between company expansion and reduced convention travel.



Don Kerouac

"It's iffy whether or not we'll get to go to the big conventions now because our group has just spent a lot of money purchasing stations and upgrading facilities."

Kerouac noted that engineers' con-

vention expenses are among the first items cut when budget crunches occur.

"Obviously the decision belongs to

There isn't a substitute for kicking the tires and getting your hands on a piece of gear.

— Greg Urbiel

management and it's their call, but engineers really need to see some of this new equipment firsthand if possible."

Consulting Engineer Tim Warner spends part of his time working for Wilkins Communication Inc. in Spartanburg, S.C. He planned to attend the NAB2000 in Las Vegas even though he had to pay his own way.

"I'm on the digital audio broadcasting subcommittee of NRSC (the National Radio Systems Committee)

and that's what (was) the attraction for me," said Warner.

Ongoing education

Warner believes that many station groups leave ongoing education up to their contract engineers.

"Companies no longer see it as a corporate responsibility. In larger markets, many stations have staff that may be shared across several stations, and conventions are a paid expense. In smaller markets, usually the managers go but not the engineers," said Warner.

One goal that groups realize from the increase in contract engineers is cost savings, but what is the downside?

"In some companies, management is not able to adequately assess new equipment purchases," Warner said.

"I'm not talking about our company here, because Wilkins does very well. But some managers get excited about a piece of equipment that is later found out only to do one or two things well. If an engineer had been to the convention to ask the right questions, the result might have been different."

Urbiel said, "I wonder if the shows will be able to survive in their present form with all the constant cost-cutting. The Web is great for keeping up with



Ralph Hogan

things, but there doesn't seem to be a substitute for kicking the tires and getting your hands on the front panel of a piece of gear."

"In the days of cart machines there weren't a lot of changes in the business. You could come back 10 years later and things would be the same," said Kerouac. "Now you go a short time and you're out of touch. Things are changing dramatically every day."

■ ■ ■

Should radio employees pay their own way to conventions? Does your employer cover the cost? Tell us about it via e-mail to radioworld@imaspub.com

Big Latino Market News

► WEB WATCH, continued from page 41 value-added services such as voice, video and interactive media," he said.



David Steigelfest

"Ultimately, it serves everyone's interests if the rules of the game, in this case the standards and protocols for the delivery of broadband content, are established up front," said David Steigelfest, VP of e-Commerce, StarGuide Digital Networks Inc.

"This will set the stage for a healthy competitive environment, allowing the focus to remain on enhancing the end-user experience."

Alles was to serve as interim chairman of the group until the BCDF's initial meeting. The Forum's Web site is located at www.bcdforum.org

BroadcastURBAN to Bridge "Digital Divide"

BroadcastAMERICA continues to add content. Now, with the launch of BroadcastURBAN.com, they have also committed up to \$25 million to Webcast hundreds of R & B, jazz, hip-hop, gospel and other urban format radio and TV stations.

The National Association of Black Owned Broadcasters (NABOB) has endorsed BroadcastURBAN.com and BroadcastAMERICA.com for this project. BroadcastURBAN.com is a joint venture formed earlier this year between BroadcastAMERICA.com and the Urban Broadcast Network.

The funds will be used to provide up to 125 NABOB member stations with the technology, licenses, fees,

equipment and technical support to Webcast content. For this, the stations will promote their new Web sites and BroadcastURBAN.com on the air.

"This is an unprecedented opportunity," said James L. Winston, executive director and general counsel of NABOB. "We want to ensure that our more than 200 member stations will not be left behind in the digital revolution."

"We are connecting urban radio to the future," said Jesse Wineberry, CEO of BroadcastURBAN.com and a former ABC News Executive.

John Brier, president and founder of BroadcastAMERICA.com, said the commitment goes beyond technology. "We provide training on how to harness the Net and leverage the millions of listeners already online on the BroadcastAMERICA.com family. We need to narrow the 'digital divide' the president and others have spoken about. What better way to do it than through music?"

At Web Watch we note that this isn't exactly the same issue President Clinton has addressed. Having urban content online is not the same as providing access for African-Americans without the financial wherewithal to buy home PC's.

So, for now, this solution to the "digital divide" remains in the realm of "Field of Dreams." If you build it, they will come.

New Online Real Estate? — The shortage of dot-com addresses will finally be addressed by the Internet Corporation for Assigned Names and Numbers (ICANN).

ICANN, in charge of managing the WEB WATCH, continued on page 43 ►

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► **WEB WATCH**, continued from page 42 infrastructure for Internet addresses, has the power to establish new top-level domains — like .com, .net and .org.

And the ICANN committee has recommended the creation of “generic top-level domain names” including “shop” for retailers and “banc” for banking institutions.

A Dot Beyond Clear Channel — On June 1, selected AMFM stations, including those in the New York market, will push the new dot-cc top level domain.



David Sams and Spot

Listeners will be directed to the **Gospot.cc** site (as opposed to **ClearChannel's Spot.cc**) to register domain names.

“The different address is to help track sales between organizations,” said **David Sams**, the entrepreneur behind the venture and chair and CEO of SamsDirect Internet.

Hispanic Content Streams Online — **Global Media Corp.** signed an agreement to provide e-commerce and streaming solutions to bring many of Lotus Communications 26 Spanish content radio stations online in April. The agreement makes Global Media the exclusive provider of such services for three years.

Paul Sullivan, vice president of sales and marketing at Global Media, sees this as an enhancement to existing efforts to reach this market.



Paul Sullivan

And what a market it is: according to the Strategy Research Corporation, the U.S. Hispanic market doubled over the last two decades to 34 million people. Webcasting offers additional opportunities, with nearly 6 million Internet users in Latin America.

“The Spanish content element of the Lotus stations allows for the targeted delivery of a highly desirable market to advertisers,” Sullivan said.

More Latino Market News — **WebRadio.com** has announced it would begin Webcasting Sacramento, Calif., station **KHZZ(FM)** “**Z Mega Hits**,” an urban oldies station from **Z-Spanish Media Radio Network**.

Additional Z-Spanish stations may be added to WebRadio's roster of affiliates, according to President **Hamid Kohan**.

WebRadio is owned by **GEO Interactive Media Group** and **Westwood One**. Z-Spanish Media Corp. owns and operates 33 radio stations in 13 markets across the United States.

WarpRadio reached another landmark — more than doubling the number of affiliated station in the first quarter of 2000 to 235-plus.

“We have contracted over 100 additional stations in the last 60 days, who are mainly independent radio stations,” said **Denise Sutton**, WarpRadio's CEO.

The secret of her success?

“We didn't achieve this by gimmicks,

giving away free broadcasting, or by offering free equipment. As radio broadcasters who know what radio stations need to be competitive, the quality of our service stands on its own merits,” said Sutton.

Moving on Up — **Rick Mandler** has been named vice president of **GO Local and Broadcasting**.

Mandler will be responsible for the development and management of the Internet efforts of the ABC owned television and radio stations across the country and **ABC Radio Networks**. (See “ABC's Internet King: Rick Mandler, *RW*, Feb. 16, 2000.)

He also will be in charge of localizing **GO.com's** Internet businesses.

The “Unwired” Future — Till now, the Internet has been mostly a “wired” media. Tethered to phone lines, ISDN, DSL or other high-speed connections, it has not posed any direct competition to radio's traditional markets — in-car listening and the like. But the wireless Web is coming — perhaps sooner than expected.

UK-based **Virgin Mobile** has announced a deal with **Samsung** to launch the first portable phone with an integrated MP3 player.

Sir Richard Branson, chairman of Virgin Mobile, sees this as the next step towards a wireless Internet.

“Why carry a player and a separate mobile when you can have both in one small digital device? Why carry a CD or cassette player, when you can transport music electronically?” he said.

The new hybrid phone will not receive Webcast streams. But that is only a matter of time.

“With the record companies and artists making moves to sell their music over the Internet, we see a great future for digital music download technology,” he said. “We have plans to let people buy music and have it downloaded straight to their phone in our stores. And in the future it will be possible to buy and download music over the air, using the mobile network itself.”

The phones will be available in the U.K. this summer and will cost around \$470. In time, PDAs, cell phones, pagers and whatever else will be in all-in-one Web-connected wristwatch devices — or even “implantables.”

Eventually, Gen Y members may be dismayed to discover their offspring opting for implants instead of piercings.

“Love Bug” Bites — Radio managers are still figuring out how to protect themselves better after the “Love Bug” computer virus swept through millions of computers last month.

The infection apparently started in the Pacific region and spread around the globe through **Microsoft's “Outlook”** e-mail program.

Those unfortunate enough to click on the attached “love-letter” file found key files deleted from their system as well as all JPEG image files and MP3 audio files destroyed. Worse, the bug spread like wildfire by sending itself to every address listed in the victim's e-mail directory.

At **Harris Corp.** headquarters in Melbourne, Fla., hundreds of infected e-mails bounced around the e-mail system before the company officially opened for business the day the virus launched. The virus was quickly contained at Harris, the parent company of the broadcast supplier, but **Tom Hausman**, director of public relations at Harris, said it took a few days and some file rebuilding to completely recover.

“We had 50 to 60 ‘love bug’ messages

the first day of the bug, but we deconstructed the virus quickly and added an antidote to our virus scan which seemed to work pretty well,” Hausman said.

How many of the 8,000 Harris worldwide computers were affected was unclear at press time.

For **Andrew Rosenberg**, director of engineering at **Westwindmedia.com**, a production, marketing and distribution provider for Internet and broadcasters, prevention was key to minimizing the impact.

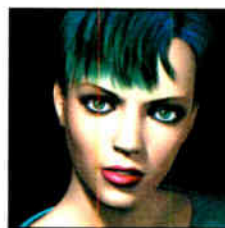
“We were affected by the ‘bug,’ but it was contained before it could do any damage. This was due to systems and education put in place by our technology team. Being in both the Internet and radio industries, we have protocols in place to handle these type of situations,” Rosenberg said.

The less sophisticated are likely to have experienced a “crash” course in dealing with viruses.

What lessons can be learned from the bug for *Web Watch* readers? Some of us may have been lulled into complacency by the lack of problems caused by Y2K. If so, the “Love Bug” has renewed respect for the downside of our increasingly automated workplace. The streamlining of operations the technology affords needs to be paired with a growing commitment to the engineers who maintain and protect these systems. Those who don't think so are likely to have some hard lessons ahead.

And finally ... a major barrier broken — **Ananova** marks the first time a cyber-soul has ventured before the cameras.

Ananova is the announcer-entity created by the interactive division of the **British Press Association**. Billed as the “world's first virtual newscaster,” Ananova and other cybercasters may make on-air talent obsolete.



Ananova

Of course, legions of human announcers have been unwittingly preparing to compete with such computerized competition by subsisting on virtual paychecks.

STATION SERVICES

Nosé to Focus on Digital Audio Solutions

NeoSonic Industries President Kevin Nosé recently announced that his firm's new consulting practice will focus on development and implementation of digital audio solutions.



NeoSonic products will range from hardware design to DSP software and embedded Web appliance technology.

Nosé and his brother Ken have worked in hardware and software applications for more than 12 years.

They helped create Telos Systems' Audioactive Web-based audio delivery systems and the Omnia family of processors.

For more information contact Kevin Nose (216) 295-0853 in Ohio or visit www.neosonic-industries.com

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PROMO POWER

The Big Name Cometh — Prepare!

Mark Lapidus

The star artist arrived on the air without any pre-promotion. One minute the disk jockey was playing a song, the next, Mr. Big Name was chatting with him. The program director didn't want to tell the audience about the visit, because he wasn't certain that it would happen until the star walked in the door.

And because they were in a rush, the celebrity did a boring 10-minute interview that sounded more like a monologue and then left as quickly as he came.

If you've been in radio for any length of time, this has no doubt happened to the most out of rare star moments. First, a reality check for the short-

Take time to consider the promotion angles of every star appearance.

you. Not only is the situation preventable, there are many ways to make form star interview: Please consider that your audience expects you to have

the star on the air a lot more than you do! This means that while you may be amazed that Phil Collins is in your studio, they aren't.

You are so closely related to your music product that it seems natural to most listeners that *the big name* is on your airwaves.

Because they are not overwhelmed by the sheer star power of their presence, your listener actually wants to be entertained.

When you think about this fact, you may actually turn down some interviews based on entertainment value.

Um ... Yoko Ono?

I once heard a DJ arguing with a PD about not firing another DJ because that jock was the only one who could get regular interviews with Yoko Ono.

The PD rightly found this debate pretty amusing! So, how do you make a dull star interview shine? Record it. Taping an interview and delaying it by even an hour or two allows you (or a producer) to take the very best pieces and assemble them with just the right amount of talk and music (and not "B" cuts that are selected by the star artist or the DJ).

See PROMO, page 45 ▶

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Sample Big Name Visit Checklist

- Have three unusual items for the star to autograph. (If they need encouragement, tell 'em it's for charity.) (Okay ... you got me ... if you tell 'em it's for charity, it really should be.) Try to tie these to the artist in some fashion. It could be easy as one of the items being an instrument they play. If you can't think of anything unusual, ask them to sign a lyric sheet you've purchased of their music at a store — or — better yet — have them pen a few lines of a hit song and have them sign it.
- Have three or four station promos or IDs ready for them to record. Don't forget the holidays — "Hi ... this is Elton John. Happy Holidays from me, Bernie and Soft Rock 102.9."
- Assign somebody — perhaps the station Webmaster — to shoot photos for your station Web site and any press.
- Ask for a recipe for a celebrity cookbook.
- If you're able to delay airing the interview for a few days (maybe you did it via satellite), have them record a few lines for the interview pre-promote: "Hi, this is Alan Jackson. Listen to Mark Marks ask me some really personal and stupid questions tomorrow afternoon at 5:30 on 96.5. The Country Cow."
- If you know they're going to play live, see if you can get the rights to use the song on a future station CD or at least on the station Web site.
- While in town, will they let you present a CD signing at a local record store or an unplugged appearance somewhere for a select group of listeners?

— Mark Lapidus



Harlan Ellison

Photo by Chris Cuffaro

NPR Launches Radio Dramas

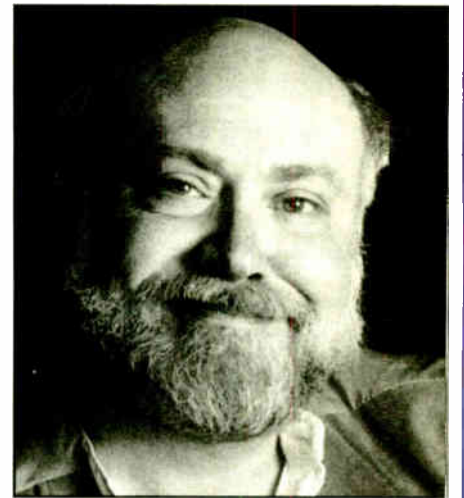
National Public Radio has fired off a new, 26-hour-long radio drama series, "Beyond 2000." The series began in April and will run through October.

The series looks beyond the present to the future and its social and technological possibilities. Robin Williams, Richard Dreyfuss and Charles Durning are among the 75 actors who will star in the dramas. Each of the 26 episodes is hosted by the author Harlan Ellison and are based on the works of Rudyard Kipling, H.G. Wells, Ray Bradbury, Mark Twain and Jack London.



NPR partnered with Yuri Rasovsky's "Hollywood Theater of the Ear" to produce the series. "Beyond 2000" is made possible by a grant from the National Endowment for the Arts.

— Laura Dely



Yuri Rasovsky

► PROMO, continued from page 44

I know what you're thinking — no artist will allow that! They want to be on the air live.

Try this angle: "We'd really like to tape the interview to save you a little bit of time and put you on our radio station longer. If we have you do the interview in two or three consecutive segments, you'll save 20 minutes and get that much more actual on-air time to boot."

A side benefit of taping interviews is that you have at least some time to pre-promote an interview knowing that it will be on the air at the exact time you say it will be on.

Another question worth asking really huge stars: "Do you have time to do two interviews?"

There are many ways to make the most out of rare star moments.

One for a short-form thing to be used in drive-time. The other perhaps as a guest DJ half-hour or hour when the star can play some of their favorite songs by other artists.

If an interview must absolutely be done live and you're 80-percent certain that the artist will show, go with the pre-promotion. Worst-case scenario, the artist looks bad because they didn't show up, and you snag another few quarter hours of listening.

Take time to consider the promotion angles of every star appearance. If nobody at the station has a lot of experience doing this, put together a checklist of what needs to happen before, during and after Mr. Big Name graces you with his entourage.

One other thing to consider: Have you arranged for proper security? If you've told the world that Elvis isn't really gone and that he's on your station at 3:30 p.m., some sicko may show up in your lobby with more than just a smile.

Do More, Spend Less

"Scott Studios Saves My Stations \$45,000 per Year"

Doug Lane, owner and GM of WWDL (FM), WICK (AM) and WYCK (AM), Scranton and Wilkes Barre, PA says he "saves more than \$45,000 per year with Scott Studios' Voice Trax automation. While the investment was major for a small family company like ours, *the pay back was fast and real.* And the savings are year after year after year.

"Unless we are running evening baseball or Friday night high school football, we close the building at 6PM and operate unattended until 5:30 the next morning.

"We use several independent announcers to record Voice Trax for us, along with our regular staff. Even me! We operate both live assist and automation."

Normally, each announcer records a fresh show every day. Scott's exclusive Voice/Music Synchronizer guarantees every song plays only with the correct voice track. If a jock gets too busy and doesn't do their show in time, Scott's unique Voice Trax System automatically airs evergreen standbys that sound right! Doug says, "No one but Scott Studios has this great fail-safe feature. Scott Studios' System provides a separate specific generic Voice Trax for every track for every hour and every day of the week in case someone can't track their show in time."

Scott's Voice Trax recorder is the industry's easiest to use: most tasks are done with just one button. The mouse and keyboard are seldom touched. Voice Trax take only seconds per cut to record. Scott's AutoPost makes announcers sound better and minimizes Voice Trax re-cuts. Experienced jocks don't waste time checking their work because they hear their voice and surrounding music and spots in context while recording.



Doug Lane, Owner and GM, WWDL, WICK and WYCK, Wilkes-Barre and Scranton, PA
Doug's stations have used Scott Studios' Voice Trax systems for many years.



The Scott System is radio's most user-friendly. You get instant airplay or audition of any song simply by spelling a few letters of its title or artist. You see when songs played last and when they'll play next. You also get voice tracking while listening to music in context, hot keys, automatic recording and graphic waveform editing and scrub of phone calls, all in one computer!

a compressed price) and a week of Scott School training of your whole staff at your station. You get Cart Walls for instant requests, a phone recorder with waveform and audible scrub editing, the ability to record Voice Trax in your air studio while listening to your music in context in headphones, title and artist displays for your website, time announce and Cat. 5 audio wiring for fast installation. Scott's SS32 System can feed different spots to webcasts or second stations, run satellite formats and ABC's LocalMax. Scott Studios offers optional auto-transfers of spots and Voice Trax to distant stations over Internet or WAN, wire capture and newsroom editors, unattended school closing reports and 24/7 live support via toll-free cell phones.

Scott Studios' unequalled money-saving features mean more U.S. stations use Scott than any other digital air studio systems (5,500 workstations in 2,250 U.S. Stations and nine of the top ten groups). See our web site and toll-free phone at the right.

See Scott's NAB Radio Booth R4093 and Video Booth L2506 at the LVCC.

Stations can lock the door and go home with confidence. Scott has exclusive watchdog circuits that make our systems more self-healing and reliable than others. Scott predicts many problems before they occur, usually as soon as logs are done. Scott also pages people who can make last minute adjustments off-site by modem (if needed).

After a year of trouble-free operation, Doug Lane says, "It was fun to get five calls at the studio over the Holidays from out of town PD's and GM's wanting to speak with me because they heard me 'on the air'. Guess what? I wasn't even there! They were amazed at our Voice Trax and Scott's accurate Time Checks too. Actually, they were 'very impressed'!

Doug is now installing Scott's automated temperature announcer. He says, "Scott's features are great. The savings are even better! I wouldn't want to run my stations without Scott Systems!"

Scott Systems are delivered with your music library pre-dubbed, plus time-saving CD rippers that digitally transfer music to hard drive in seconds, no-dub instant LAN spot uploads from Sonic Foundry multi-track production, MPEG and uncompressed digital audio (at

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To: The Broadcast Community

From: G. Scott Benton
President
Commercial Communication Associates, Inc.

Dear Friends,

I am pleased to announce the new ownership and management of CCA by Commercial Communication Associates, Inc.

Commercial Communication Associates, Inc. was formed in a concerted effort between myself and a group of private investors. This new company was formed for the purpose of purchasing the assets of CCA Electronics, Inc. The purchase was finalized on the 24th of March 2000.

Commercial Communication Associates, Inc. is in no way affiliated with any other transmitter manufacturing company. We are privately owned and we operate as a stand alone business.

Our new management team was selected to reorganize the company from the ground up. The entire team is comprised of previous CCA employees. Our employees have a combined experience of more than 200 years. I would like to take this opportunity to introduce them to you. Many of you will recognize some of our names from the past.

President- Scott Benton, CFO- Connie Fultz, Dir. of Test- Jerry Meier, Customer Service Manager- Tim Parrott, Materials Manager- Bob Todd, Production Manager- Van Nguyen, I.T. Manager- Irena Posyvaylo, Documentation Manager- Alan Ashford, Office Manager- Dorothy Saffels, FM Test Engineer- Lee Langley, AM/SW Test Engineer- Vernon Boyce.

Every member of our team is committed to manufacturing the highest quality products in our industry. We are dedicated to complete customer satisfaction and to operating our business in an honest and ethical manner. We are focused on continuous controlled growth in both our business and product offerings. We will deliver the highest level of customer support in our industry. We will provide our customers the greatest value for their broadcasting dollar.

I wish to personally thank those of you who have been calling with words of congratulations and encouragement. It's great to be back!

Thank you,
G. Scott Benton
President
Commercial Communication Associates, Inc.



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See Page 48

Radio World

Resource for Radio Production and Recording

June 7, 2000

PRODUCER PROFILE

JAM Makes Jingles All the Time

Ken R.

Most recording studios end up doing a bit of everything — a little demo for a rock band here or an industrial soundtrack there. At JAM Creative Productions in Dallas, the two huge studios and large staff are dedicated to one product: jingles.

JAM not only specializes in jingles, but to narrow it down, almost all of what is recorded there are radio station ID jingles. These are the six-second intensely produced sung cuts that blaze a station's image into the listener's minds.

When I was a kid ...

In the old days they sang call letters. Now they sing mostly nicknames, such as "Kiss," "Magic" or "Young Country 102." During its 25-plus years in the business, JAM has produced IDs for thousands of radio stations.

Jonathan M. Wolfert, president of JAM, describes his studio as "a technology museum." By that he does not mean that all his gear is old, he means that he has the best of the old and new.

The reason is syndication, in which the same instrumental tracks are used dozens of times for stations in different cities.

After hearing a demo CD of jingle styles, a station chooses one. Each time a new station orders a specific jingle package, the calls and slogans are changed, but the music tracks remain the same.

This allows stations in smaller markets to save money and to know what their package will sound like ahead of time. Of course, JAM records custom jingle packages every month to provide a steady stream of new product for syndication.

"The reason we keep the old equipment around isn't just sentiment," said Wolfert. "Because we are in the syndication business, we must always be able to play older

material. We must be back-compatible. The only alternative to that would be to copy everything we make every time the technology changes, which is not practical."

When a second, third or fourth station orders the same package, the engineers at JAM do not use the original master tape. They have an elaborate system of multi-track reduction mixes with the masters filed safely away. This lets them capture the same sound as the station heard on the demo, yet allows the flexibility to move a brass stab out of the way if needed.



Control Room 'B' features an MCI JH636 console

In 1987, JAM moved to its current location in Dallas with two customized studios, the acoustics for which were designed by Tom Hidley.

The larger "A" room generally is used for recording new music tracks and mixing custom packages. The "B" room usually is reserved for vocal work.

"People are amazed in this day of MIDI that we bring in live musicians and need a big room," said Wolfert. "If you want the sound of strings and saxes, the real thing sounds better, hands down, all the time."

JAM will often use 13-piece string sections consisting of eight violins, two violas, two cellos and a string bass. It has also been known to record four trumpets, four trombones, a sax, a flute and a French horn simultaneously.

In both rooms, the front third is carpeted. The rest is hardwood so reflections can be controlled. Vocalists are set up on the carpet; brass and strings on the wood.

JAM is known for its vocal sound, an anachronistic seven- or five-voice blend not typically heard in contemporary music.

One might ask why a big vocal group is used instead of soloists or duets, which are more representative of what's heard on the radio. The reason is history.

The jingle industry started in Dallas in the late 1940s growing directly from the big bands of Glenn Miller, Vaughn Monroe and Tommy Dorsey. Vocal groups have continued to be the rule in jingles.

There are production companies in other cities that produce less-traditional sounding cuts. But more jingles come out

See JAM, page 52 ▶

PRODUCT EVALUATION

R-1 Mic Is Engineered for Broadcasting

Bruce Rogow

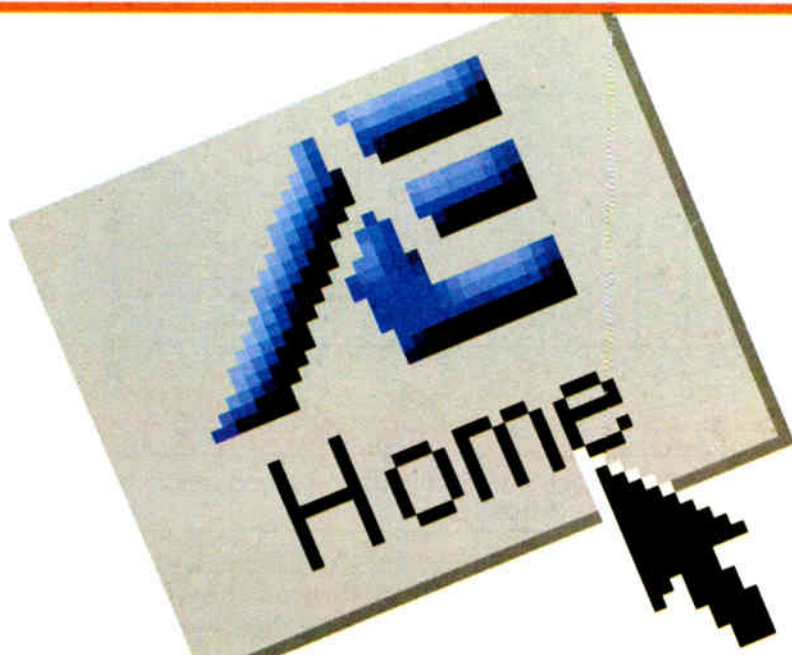
The Soundelux R-1 is the newest offering from a company that makes high-quality studio microphones.

While meeting the same professional standards as its more expensive siblings, the R-1 is directed to the broadcast environment as a high-quality, reasonably priced on-air mic.



Evaluating a microphone is different than a tape deck or transmitter. There are objective measurements, but in the final analysis, it mostly comes down to personal opinion — in this case, mine.

See SOUNDELUX, page 53 ▶

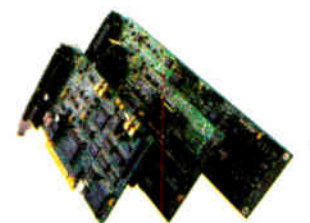


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PRODUCT EVALUATION

JBL LSR25P Disperses Loud Waves

Allen Baker

Like many station engineers, I do a lot of computer digital editing. I have been looking for a pair of workstation speakers that sound more accurate than the usual multimedia variety. It is hard to judge

Looking at the drivers, the woofer is a 5.25-inch ported unit made of tempered paper with a butyl rubber surround.

According to the data sheet, "The motor structure incorporates symmetrical field geometry with an integral shorting ring for maximum linearity."

A pair of bridged class A-B monolithic power amps drives the woofer and tweeter with 100 W and 50 W continuous power, respectively. The claimed amplifier THD is less than 0.1 percent into the rated impedance.

Remarkably heavy and dense, the die-cast aluminum monitor measures only 6.8 by 10.6 by 9.5 inches and weighs 17 pounds. The cabinet has a silver powder-coated finish with a sculpted, futuristic look. Thanks to its metal grille and tweeter bar, the LSR25P is quite rugged.



The JBL LSR25

Front and back controls

On the front of the speaker is an on/off switch, a power/overload LED, a level control with 26 dB range and the woofer ports. These ports are contoured to prevent turbulence, resulting in clean lows at high levels.

speaker placement near a surface, such as a console. Two more switches boost or cut the highs above 2.3 kHz by 1.5 dB.

I found the JBL LSR25P intuitive to set up. Built-in mounting points allow either vertical or horizontal orientation.

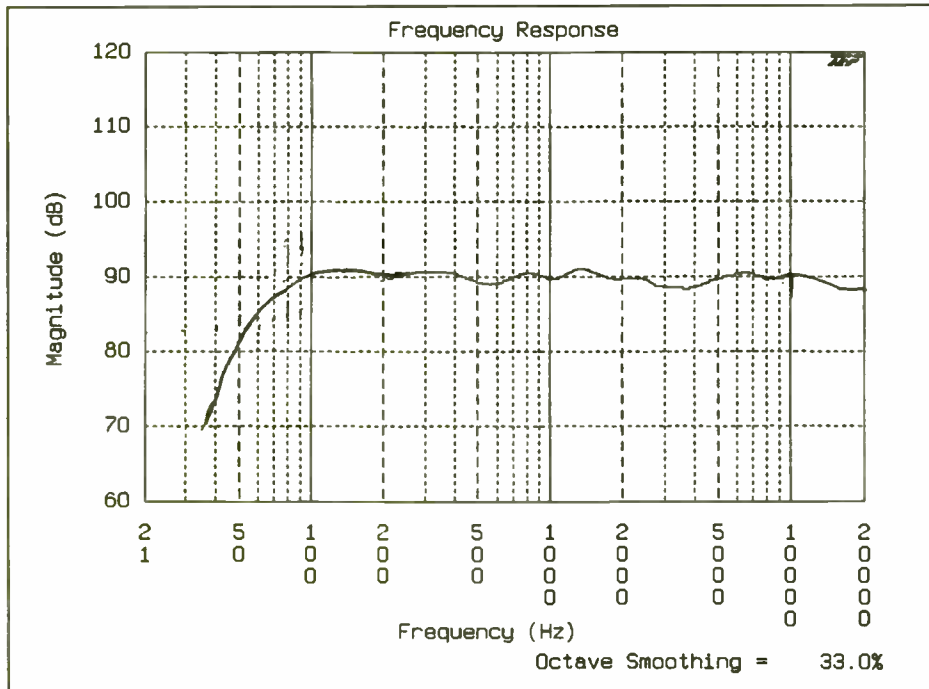


Fig. 1: Anechoic frequency response of the JBL LSR25

tone quality, effects and levels when using speakers of questionable quality.

At \$958 per pair retail, the JBL LSR25P answers that problem. This professional workstation monitor is accurate, yet compact. A pair of these fits beside a computer monitor screen and provides amazingly good sound.

A two-way biamplified system, the LSR25P is a member of the JBL Linear Spatial Reference (LSR) line of speakers. These are designed for broad dispersion, minimal off-axis coloration and stable stereo imaging within the entire listening field.

The woofer's high excursion lets it play loud. A cast aluminum basket aids in heat dissipation for low-power compression.

Two-way design

The tweeter, it is a one-inch metal-dome unit with a damped Titanium-composite diaphragm, mounted in an elliptical oblate spheroidal waveguide. (Whew!)

Dispersion of the waveguide is said to be 50 degrees vertical by 100 degrees horizontal. In both drivers, magnetic shielding is included to prevent image distortion in monitor screens.

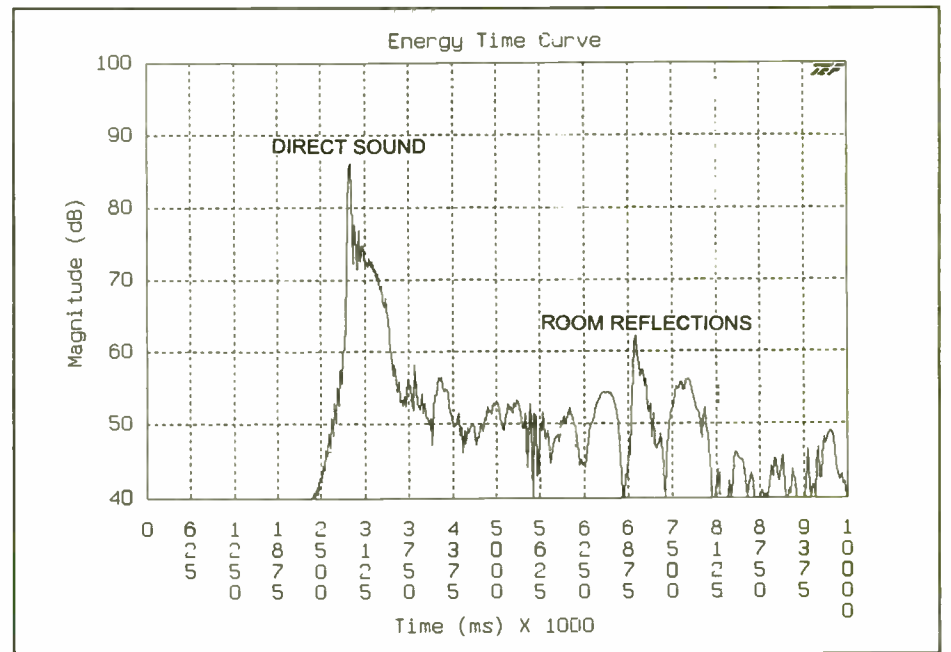


Fig. 2: Energy Time Curve correlates with transient response

The back of the cabinet houses an AC cord connector, XLR and RCA input jacks (+4 dBu and -10 dBV), DIP switches for tone control and the amplifier heat sink.

but vertical is recommended. I liked the convenient RCA and XLR connectors.

On the other hand, the DIP switches are sunken in a deep recess that makes them hard to activate. At least they can-

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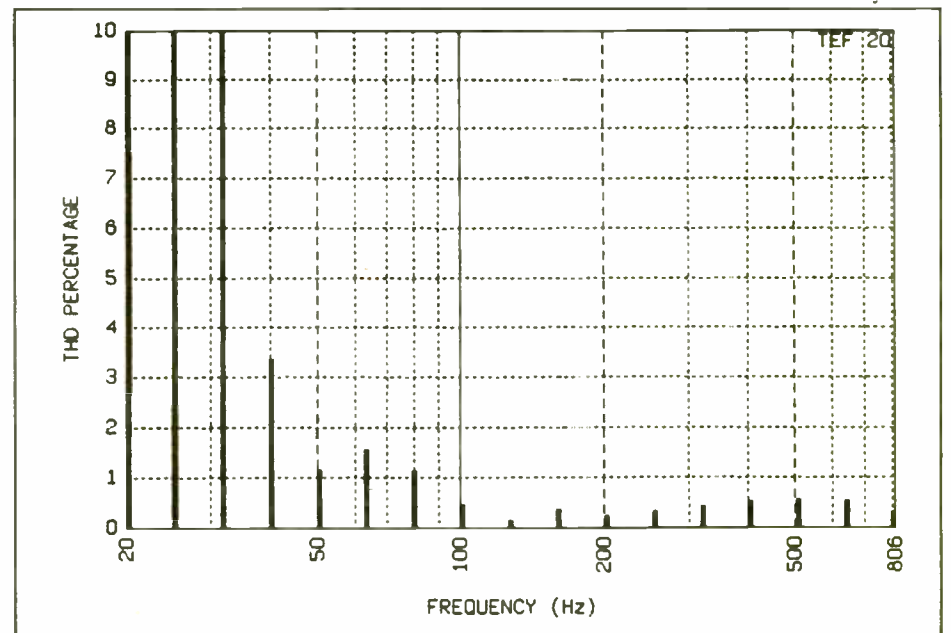


Fig. 3: Total harmonic distortion vs. frequency @ 90db SPL @ 1 meter

Of the four DIP switches, one sets a high-pass filter to 40 Hz or 80 Hz for use with a subwoofer. Another switch reduces the lows to compensate for

not be switched accidentally. JBL rates the frequency response as 70 Hz to 20 kHz +1 to-2 dB. With the user See JBL, page 49

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► JBL, continued from page 48
controls set to default, the low-end response is 3 dB down at 65 Hz and 6 dB down at 56 Hz. Crossover is at 2.3 kHz.

Listening tests

It is important to place the LSR25P at ear height as JBL recommends.

When I first tried the speakers, I placed them on the table flanking my computer monitor. It sounded "bassy" because the table surface boosted the lows and sounded dull because I was listening off-axis. Setting the tone switches to "boundary compensation" and "high boost" helped.

The LSR25Ps sounded much more accurate when I raised them on short stands. That was the setup for the listening tests. I placed the speakers 10 inches above the computer desk surface, 2.5 feet from the nearest wall and 1.5 inches either side of my monitor screen. I switched on the boundary compensation and left the high end flat.

Here are my impressions of various instruments played through the JBL LSR25Ps:

Drums were full and clear with good attack. Cymbals and percussion were clean, crisp and defined. Sax had a good balance between warmth and edge that was realistic.

Piano was open, natural and full-bodied. Acoustic guitar was clear, crisp and natural, not tizzy. Electric guitar sounded "meaty" with plenty of bite. Bass was full, tight and slightly puffy in the midbass. The deep notes were weak but a sub-woofer could help. Vocals were natural and realistic — sibilant if the vocals were recorded that way. Orchestra was transparent with natural timbres, not harsh.

Overall, the JBL LSR25P sounds unusually clear and smooth. It has razor-sharp imaging and low fatigue. The speaker plays extremely loud for a small unit with more than enough volume for digital editing use. It is easy to hear reverb graininess and placement and to separate the timbres of instruments in a complex arrangement.

Thanks to shielding, proximity of the LSR25P to the computer monitor causes no distortion to the on-screen image. Except for the deep bass, the LSR25P is in the same league with any top-notch nearfield monitor.

In the lab

Measurements of the JBL LSR25P are impressive. Figure 1 shows the anechoic frequency response with the mic halfway between the woofer and tweeter edges. It is remarkably flat, deviating only +1 to -2 dB from 75 Hz to 20 kHz. Although the speaker is compact, the low end is flat at 100 Hz and rolls off below that.

Not shown is the response at 30-degrees off-axis. It is unusually smooth and is down only 1.5 to 2 dB from 2 kHz to 15 kHz. Clearly the LSR technology is doing its job.

I also measured the effect of the DIP switches, not shown. The Boundary switch, when enabled, drops the bass 3 dB from 40 Hz to 150 Hz. The 80 Hz highpass works as described, as do the high-frequency boost and cut switches.

With the speaker next to my computer monitor, raised on stands to ear height, the response showed a 6 dB rise at 160 Hz, even with the boundary switch engaged. This can create a warm, puffy bass sound as noted in the listening test.

The energy time curve shown in Figure 2 is exemplary. Note the sharp-

ness of the direct-sound spike. No cabinet vibrations are happening here. This result indicates that the LSR25P should have fine resolution of detail and transients.

3.2 percent at 40 Hz. Low distortion means low listening fatigue.

The JBL LSR25P is flat, loud, and clean, yet is compact enough to use with a digital workstation. With these moni-

It is important to place the LSR25P at ear height as JBL recommends.

Finally, Figure 3 shows the total harmonic distortion vs. frequency with 90 dB SPL at one meter. It is amazingly good for such a small speaker, well below audibility from 50 Hz up, and only


tors you can trust what you hear as you make EQ and level changes. You can hear tiny glitches that most other speakers would gloss over. Editing with the JBL LSR25P is a joy.

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DIGITAL DOMAIN

New HHB MD — Life After ATRAC

Mel Lambert

Anybody who has been following these columns for the past decade will know my feelings — pros and cons — about digital audio data compression.

There are various schemes available to the broadcast industry, including Audio Processing Technology's apt-X100, Dolby Laboratory's AC-3, Sony Corp.'s ATRAC, various implementations of MPEG/MP-3 and other viable alternatives.

My vote goes to the X100, primarily because of APT's low-impact 4:1 data compression ratio and ability to accommodate multiple encode/decode generations.

Until recently, my least favorite was Sony's proprietary ATRAC, or Adaptive Transform Acoustic Coding system, used in MiniDisc and (a little-known fact) in SDDS 5.1- and 7.1-channel movie soundtrack formats.

I have cause to re-evaluate my opinion about ATRAC.

But I have had cause to re-evaluate my opinion. It seems that Sony has been listening to our reservations and revisited the complex algorithm used in the MiniDisc format.

The current generation of MD recorders that utilize the latest ATRAC

Release 4.5 recording algorithm sound remarkable, and the random-access media has many advantages.

This will be evident from brief exposure to the new HHB PortaDisc portable MD recorder. Described as the result of a collaboration between the UK-based company and leading sound recordists, PortaDisc offers the advantages of the MD format, including random access, simple-to-implement editing and low-cost media.



The new PortaDisc comprises a robust, compact and portable package with intuitive user controls. A balanced mic input is featured with switchable phantom power and stereo peak limiting.

Of specific interest to radio journalists, reporters and location recordists will be the unit's USB interface, which can be used for real-time transfer of data files to a laptop editing system, for example.

Basic editing functions also are available on the unit and can be accessed via a series of software-controlled menus.

A handy memory buffer ensures glitch-free recording, and a special six-second "pre-buffer" ensures that the user never misses the start of a take; the machine is always recording ahead of the time you actually hit the "record" button.

An autostart/cut function with adjustable threshold will be useful in automated recording applications. Additional features including automatic gain control, one-touch recording and lockable record level controls.

Functions

Up to 80 minutes of stereo recording or 160 minutes of mono is available. A time/date stamp function is provided as part of the MD format.

Power can be supplied from AA-size alkalines or rechargeable NiMH (nickel-metal-hydride) batteries; around four hours of operation should be possible from a single charge. PortaDisc ships with a universal 100-240V charger.

Other features include balanced XLR mic/line inputs, RCA phono line outputs, 1/4-inch head-

phone jack plus coaxial and optical S/P DIF digital ports.

The unit's user menu is straightforward and logical in layout with information displayed via a large, illuminated LCD screen that offers a wide viewing angle.

Four main menu headings are provided. Display shows disc information, number of tracks, track names, track times, remaining disc time, and signal levels graphically and numerically.

Features

Input shows status of input source, attenuation, bass roll-off, limiter and phantom power; Set Up monitors three factory pre-sets: mic, line and digital, plus five user pre-sets; and System functions include mono/stereo record, track increment controls, pre-record buffer on/off, headphone monitor selection, LCD screen contrast and date format.

Physically, the PortaDisc recorder is solid and sturdily built. It should be capable of withstanding a hard life on the road. The unit's heavy-duty MD drive is housed in a shockproof case and fitted with a large, illuminated display and a built-in monitor loudspeaker.

HHB's MD media supposedly was developed specifically for professional audio use. The media exhibits block error rates 10 times lower than some consumer media.

In use, all of the PortaDisc's user controls are located where you would expect to find them and are not too small. Most of us have reasonably large and often clumsy prehensile digits.

Various comments gathered during the recent NAB convention should result in a minor redesign of the ganged level controls before the unit starts shipping in late summer.

HHB's PortaDisc comes with eight AA-size NiMH batteries, AC adaptor/charger, soft case, carrying strap, MD80 MiniDisc and user manual.

For more information contact HHB in California at (310) 319-1111 or visit the company Web site at www.hhbusa.com

PRODUCT EVALUATION

Fast Edit Supports Direct-X

Read G. Burgan

It seems only yesterday that I reviewed Fast Eddie version 3.36 from Minnetonka Audio Software (RW, Nov. 29, 1995). At that time, I found FE to be good, inexpensive, entry-level software. The only weakness I noted was in its basic tools.

Since then, Fast Eddie changed names to Fast EdDIT, then finally to Fast Edit version 4.0.12. I wanted to find out what was new, so I fired up the computer and took it for a test drive.



John Schur, president of Minnetonka Audio, plays with Fast Edit

The main window still uses the familiar two separate display windows — the bottom for play only and the top for modifying the sound file. However, sandwiched in between the two displays is a new addition: a transport bar.

This bar includes a clipboard window, transport/time display, list of active plug-ins and an information window. It is helpful to have the transport controls — play, stop, pause, fast-forward, rewind and record — in the middle of the screen.

Speed of editing and ease of use have been FE's forte from the beginning, and the current version continues that tradition. Even on a 15-minute sound file, FE still makes a cut faster than the blink of an eye. The layout and controls are still intuitive and easy to learn. Numerous keyboard shortcuts add to the ease of use.

Like most two-track editors, a production using multiple segments — voiceover, music and sound effects — is accomplished by layering one sound file on another. FE has four clipboards and each is accessible right from the main screen.

Cut, paste, mix and fade are fast and easy operations, making FE a good choice for basic digital audio editing.

Direct-X support

Support for Direct-X plug-ins is a real plus. It means the software is no longer a "dead end." Entry-level software often is limited to the tools that come with it. If you want more, you have to buy new software and go through another learning curve.

FE uses Direct-X plug-ins differently
See FAST EDIT, page 55 ▶

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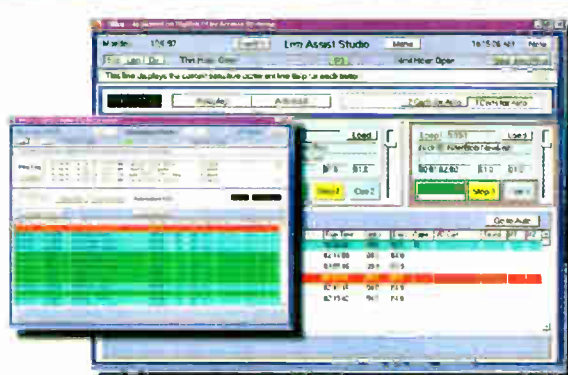
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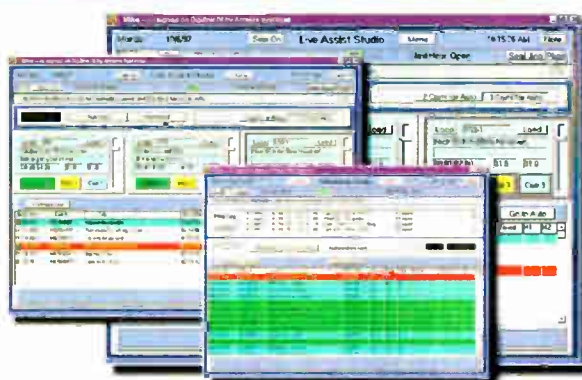
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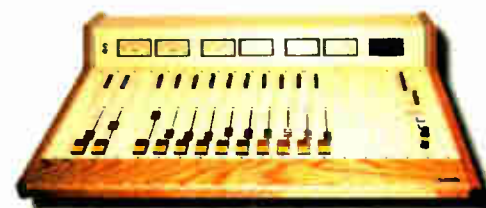
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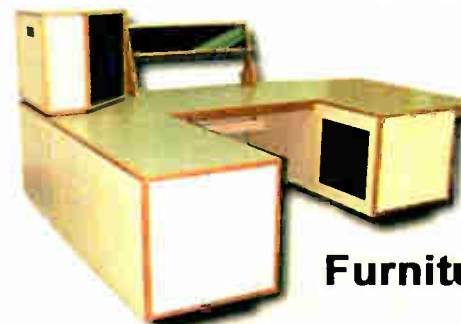
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► JAM, continued from page 47 of Dallas today than anywhere else, most of them featuring a blended vocal sound.

According to Wolfert, program directors like the big vocal sound because it stands out from the rest of the music on the air.

"Putting solos in the jingles would be like saying 'Hey, I have a great recording of the ocean here. Let's go down to the beach and I'll play it for you.'"

A seven-voice group is recorded using four mics. Three Neumann TLM 170s are used; one for the lead female, one for the two other females and three guys share a mic. The bass singer gets a Neumann U47.

Oddly enough, all four mics are combined through the board to one track on the

tape. Then another pass is made in which the singers perform the same chart onto a second and sometimes a third track. This process is called stacking.

During vocal recording, a dbx compressor usually is used on each mic. JAM also uses a dbx 900 rack, which holds many cards. A de-esser may be inserted after the



Studio 'B'

When recording the music, Neumann U 87s and U 47s often are used on brass with AKG 414s on occasion. The drum set is recorded using 10 or 12 mics. There's also a mic set close to the drummer's head.

"We learned years ago not to trust the overhead mics for that. The singers need to hear the tempo being established before the music track starts," said Wolfert.

JAM usually records the bass through a Countryman DI. Guitar is sometimes taken through a box or the amp may be miked — sometimes it's a combination of both.

"When we're doing acoustic piano, we sometimes use an electronic keyboard during the session and overdub a real grand piano later," said Wolfert. JAM records a Kawai piano with two Neumann KM84s.



Studio 'A'

mic pre, depending on the singer. Some EQ is used during recording to brighten, as intelligibility is essential.

"I get asked if we have a magic box that gives us our sound," said Wolfert. "What it really comes down to is the combination of talent in the room, the writing, the production, the recording. The magic box is on our shoulders — it's our experience.

"We don't rely completely on compressors for vocals because they are dumb. By that, I mean a compressor doesn't understand that a low note won't pop out as brightly as a higher one, so we compensate with constant fingering on the faders dur-

ing vocal sessions. It changes almost syllable by syllable," said Wolfert.

JAM records vocals dry, adding reverb and effects during the mixing process.

JAM prides itself on having a consistent staff of key people.

"Brian Hamilton, CE, is a 20-year veteran at JAM. Mark Holland helped with the design and layout of the studios, and he's been with JAM for 24 years," said Wolfert.

The JAM engineers mix to a Sonic Solutions system.

"It gives us great quality and lets us do neat edits. If there's something problematic with the cut, we may need to perform some surgery," said Wolfert.

JAM uses an Adam Smith timecode generator, which can sync to a 3/4-inch video deck, a Studer 1/4-inch machine or a 24-track analog machine when SMPTE is recorded. Although Wolfert claims to be an analog guy when it comes to sound, the studio just upgraded from a Harrison MR-4 analog board to a Euphonix System 5

digital console.

"Our old board didn't have the inputs, sends or returns we needed. We just outgrew it," said Wolfert. "But there used to be something in between the million-dollar consoles and the low end for studios like us. Now we have to commit to spending a lot of money to get the features we want."

Wolfert noted that he is a recent convert to an all-digital system.

"It's basically a computer that masquerades as a board. Because of that, everything can be recalled. We get into projects that take days to complete and this allows us to switch gears quickly without taking a studio off-line for a week at a time."

Wolfert tries to be realistic about equipment purchases, only picking up those pieces that will help the product.

"No one will pay us a nickel more for one of our jingles because of what we used to make it, and that's not true of rental studios. All that matters is the end result. It has to make us money by making us more efficient," said Wolfert.

He points out that unlike many traditional recording studios, "everything we record goes on the air. Our stuff has been heard by more people on more stations than many of the so-called hits. The hits get aired for a few weeks, then disappear. The jingles keep going," Wolfert said.

"You can buy all the same equipment we have and that doesn't mean you can do what we do," said Wolfert. "The equipment is an important tool to help you make what's in your head. But the level of excellence you're willing to accept, the amount of time you want to spend and how obsessive you are willing to be, those are the qualities that make great jingles."

■ ■ ■

Ken R. is a former broadcaster and jingle producer who now writes full time. He is also licensed to sell collections of vintage PAMS jingles on CD.

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- Adams Smith System 2600 time code synchronizer
- Symetrix TI-101 phone patch
- Technics SL-P500 CD player
- Yamaha C200 cassette machine
- Sony VO-5600 3/4-inch video machine
- Teac MV-620 VHS machine
- Proton 602M video monitor
- Kenoshita-Hidley custom monitor speakers powered by Hafler amplifiers
- Auratone monitors powered by a Crown D60
- Sonic Solutions DAW

Studio B Equipment

- Studio B contains mostly the same stuff, just less of it
- MCI JH-636 recording console with 36 mono inputs and 24 outputs
- Klark Teknik DN780 reverb
- Alesis QuadraVerb 2 effects processor
- DigiTech TSR-24S effects processor
- Eventide Instant Phaser
- Two DynaMite compressor/gates
- Four dbx 903 compressor/limiters and two dbx 902 de-essers
- dbx noise reduction (for all analog tracks, all machines)
- EMT Gold Foil reverb
- Sony/MCI JH-24 analog 24 track
- Studer A810 analog two-track
- Panasonic SV3700 DAT machine
- Symetrix TI-101 phone patch
- CDQ Prima 220 ISDN codec
- Yamaha CDC-98 CD player
- Yamaha C300 cassette machine
- Kenoshita-Hidley custom monitor speakers powered by Hafler amplifiers
- Auratone monitors powered by a Crown D60
- Sonic Solutions DAW

Soundelux R-1 Mic for Radio

► **SOUNDELUX**, continued from page 47

Because I repair equipment rather than use it for a living, I have chosen a different approach to this evaluation. I will give the specs and my own impressions about the Soundelux R-1 from a broadcasting engineer's perspective.

Evaluation

I also asked some of the experienced announcers at KPBS-FM in San Diego, which is where I work, for their impressions.

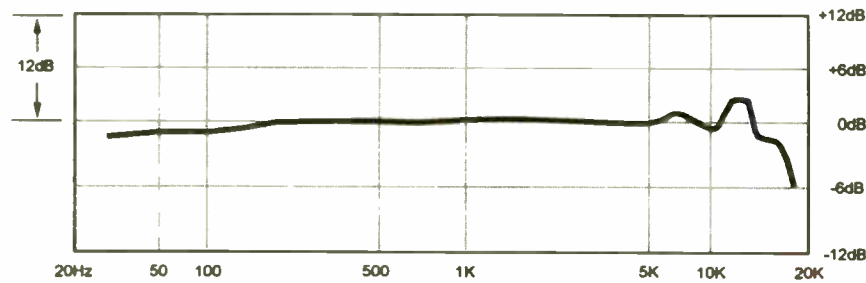
The Soundelux R-1 is a side-address cardioid condenser with a 1-inch diaphragm composed of gold on a 6-micron thick layer of mylar.

The internal circuit is a transformerless FET design with no switches for low cut or pattern change. Frequency range is from 20 Hz to 18 kHz and is mostly flat until you get to about 7 kHz, where there is a 1 to 2 dB bump and again a 3 dB bump

and a bit louder as well. The Sennheiser also has background noise he noticed every time the 4032 were potted up and that the R-1 was noticeably quieter.

Ubaldo said, "A quieter mic lets me

In a conversation with David Bock, senior vice president for Soundelux, he said that the R-1 was tested extensively in a radio station environment and it has an internal pop filter that can be adjusted.



The frequency response of the R-1 mic

concentrate on what I'm supposed to be saying, rather than whether I'm making too much noise coming in."

On the other side, he noticed it was a

The KPBS-FM broadcast booth, with copy stands and computer screens all competing for space in front of the announcer, places a constraint on microphone positioning.

The Sennheiser 4032, as a handheld front address style microphone, presents a small, unobtrusive object in that landscape. If our announcers had been accustomed to a side-address microphone, they might have had a better time with it.

The R-1 probably will find a more suitable home in front of announcers who are more familiar with its side-address style or in a recording studio where its high quality and virtually noiseless sound would excel.

The final test was with recording of string instruments. The most appealing

Product Capsule:

Soundelux R-1 Microphone

Thumbs Up

- ✓ Clear, rich sound
- ✓ Extremely low self-noise
- ✓ High-quality construction
- ✓ Excellent for acoustic instruments and soft voices
- ✓ Reasonable price

Thumbs Down

- ✓ Announcers with strong projection pop Ps
- ✓ Mic needed additional space

For more information, contact Soundelux in California at (323) 464-9601 or check out the Web site at www.soundelux.com/mics



Maureen Cavanaugh, KPBS-FM 'Morning Edition' host, works with the Soundelux R-1.

around 12 kHz to 14 kHz. This is represented in the frequency response graph.

The R-1 amplifier circuit delivers high output with low noise. The mic only requires 1.3 mA at 48 V.

It weighs just under a pound and can stand up to 126 dB dynamic range. It is available in silver only and can be mounted with a \$68 optional metal shock mount.

At KPBS, we produce live spot news, four talk shows and host news and information programming from our master control. Eight on-air announcers tested the R-1. Opinions varied widely.

little more prone to popping Ps depending on the position of the mic. I value Fred's opinion because he is also a jazz musician and composer with a trained ear.

Maureen Cavanaugh, KPBS-FM "Morning Edition" host, spent several mornings using the R-1. Maureen has a clear, sultry voice and my impression was that the mic made her sound great.

Her impression of mic was quite different. Maureen agreed that the R-1 was better than the Sennheiser 4032 at picking up the details of enunciation and it has less background hiss. However, Maureen said, "I can't say that I'm

The R-1 works well in the broadcast booth with those announcers who have quieter voices.

Fred Ubaldo Jr., master control operator and weekend host, found that the R-1 held several advantages. He liked the wider pick-up pattern than the more frequently used Sennheiser 4032 that is in the studio. The R-1 made it easier to read copy, change carts and other responsibilities to which master control operators must attend and still get good sound.

He also felt that he sounded "fuller"

sounding any better to myself or any worse, for that matter."

Four other announcers had impressions that seemed to show a pattern. The R-1 works well in the broadcast booth with announcers who have quieter voices. It brings out a richness and clarity. With announcers who have strong projection, the R-1 tended to pop Ps and drive the audio processor into compression.

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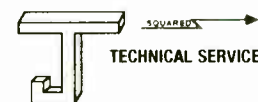
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Yo Eddie! Upgrade to Fast Edit

▶ **FAST EDIT**, continued from page 50 than other software I have used. It does not include a preview mode. When selecting a plug-in, it immediately becomes functional. FE chains the plug-ins together in the order selected and you hear the final result.

The order can be changed in which the plug-ins are applied. Also the parameters of the plug-in can change by double-clicking on it. Changes are heard in real time while the sound file is playing.

This allows the user to evaluate the overall effect of all the plug-ins at once. When satisfied with the final result, simply select the "Apply all plug-ins to file" command.

How many plug-ins can be chained together and listened to in real time depends on how much CPU power is under the hood of the computer.

It took a while to get used to this procedure, but once I did, I liked it.

Interface

I did have some problems with the plug-in interface. For instance, I cannot display all 40-plus of my Direct-X plug-ins.

According to Jim Weber, software engineer at Minnetonka, this is a scrolling problem with Windows95. The

needs of most users.

Other features

FE now supports long file names and up to 96-kHz, 32-bit audio.

FE has retained the original sparse complement of tools including mix, fade, manual crossfade, reverse, gearshift, EQ,

increased by the number of times that the Gearshift tool is added to the plug-in menu.

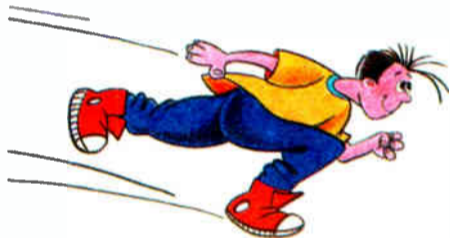
The online help manual is now in HTML format. When you click for help, the Web browser activates. It is an efficient way to scroll through the manual, but it lacks provision for a help index.



Fast Edit main screen

gain and normalize. Gearshift shifts the pitch of the sound file up or down 10 percent. EQ provides for a single application of bass and/or treble shelving.

"Scrub" is a feature that was in the earlier Fast EdDIT and made it to the current program. In the Scrub mode, FE zooms in around the area where the cur-



next version will provide a second list of Direct-X plug-ins to accommodate those that do not fit in the first list.

Also, some plug-ins had new quirks. I was not able to save any presets for the Click/Crackle Removal plug-in from Sonic Foundry. I could not access the "Save Noise Print" function of the SF Noise Reduction plug-in, rendering it useless.

Again, Weber told me that Minnetonka is working with SF to resolve this problem.

Nonetheless, the Direct-X plug-in feature is an important addition to FE that ensures the software can accommodate

The EQ, gain and gearshift also appear as Direct-X plug-ins. Therefore, more than one copy of these plug-ins can be chained together.

For example, the EQ can have different shelving frequencies and slopes for each of the EQ copies. Similarly, by chaining together the Gearshift tool, the maximum pitch variation can be

sor is placed. Then, by pressing the right mouse button and dragging the cursor, you can hear the sound file to locate a particular spot. The sound file plays at the speed the mouse is dragged.

Like the original version, FE contains two bonus programs — Sound Catalog and Playlist Editor. Each of these stand-alone programs has the same version

Product Capsule: Minnetonka's Fast Edit V.4.0.12

Thumbs Up

- ✓ Easy to use
- ✓ Support for Direct-X plug-ins
- ✓ Supports up to 32 bit/96 kHz
- ✓ Two bonus programs

Thumbs Down

- ✓ Spartan tools
- ✓ Not all plug-ins worked correctly

For more information, contact the company in Minnesota at (612) 449-6481, or check out the Web site at www.minnetonkaaudio.com

number and date as the original versions.

Sound Catalog is an instant-playback program for sound effects, jingles or comedy audio bites. It fills the screen with a series of buttons and any particular one can be selected by clicking on it. An on-air DJ can have fun with this.

Playlist Editor can string together a series of sound files and select the order and timeframe it will play in relation to each other. By combining music, spots and weather, this program can be used to create a rudimentary digital automation system.

End product

In the end, Minnetonka Audio Software has managed to expand the versatility of its original software by incorporating Direct-X capability, while maintaining the original ease of use and speed of editing that characterized the original version.

For a retail price of \$199, Fast Edit continues to be good entry-level software. Those who need more power will be able to add it without having to buy a whole new editing suite. Owners of earlier versions may upgrade for \$99.

FE can be purchased from the Minnetonka Web site, but it cannot be downloaded. Instead, Minnetonka ships a disk and manual.

Read Burgan is a free-lance writer and a former public radio station manager. Reach him at (906) 296-0652 or via e-mail at rgb@bresnanlink.net

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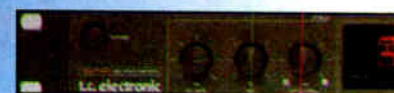


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USER REPORT

Omnia.fm Gets Big Air for K-Rock

*Cutting Edge Omnia.fm Helps WXRK(FM)
Reach Core Listeners in the Big Apple*

by Steve Kingston
Program Director
WXRK(FM)

NEW YORK This city has more music stations than any market in the country.

There's too much at stake in the over-radioed No. 1 radio market in the country, as well as too many choices for the listener. And since New Yorkers are notoriously an impatient bunch by nature, if you don't grab them in the first five seconds, you lose their interest — maybe forever.

Developing a signature sound allows us the flexibility to create texture that is unique to WXRK(FM), much like our programming.

One decision that's been easy for me is what kind of processor to use to get the sound I need. With the reputation of Frank Foti and Cutting Edge in creating the competitive punch of hot stations in major markets, it was a no-brainer. I went with Omnia.fm.

Golden ear

Frank Foti is known for owning the best ears in the business. He's fought and won the processing wars in New York, having been the architect of Z100's sound at its inception.

And he's working with WXRK Chief Engineer Richie Herby to craft a sound that's uniquely K-Rock, New York.

Herby said of Omnia.fm, "With its easy to handle interface, the Omnia will allow you to get up and running in minutes. The fat round bottom blows away the competition hands down, while its well-defined top end allows the vocals and announcer to cut right through. Let's

cut to the chase, it's the first box ever made that will get the PD off your back!"

Building a musical position after Howard Stern is essential for the success of WXRK, and this "audio weaponry" is a great addition to our arsenal.



Cutting Edge Omnia

The supplier says six of the top 10 most-listened-to stations in the United States use Omnia.fm. K-Rock, New York, is on that list, although each of us in these markets can work with the advanced features of Omnia to get a unique identity, which is part of the artistry of processing for a station like K-Rock.

Like most PDs, my needs go beyond loudness — not that that isn't important.

Consolidation may have rendered the loudness issues moot in some markets, but our listeners still punch up the volume and, in fact, a lot of the new music today seems to demand it for the full effect. With Omnia we come through with enough muscle to grab that attention

that I said was so critical.

Yet with many alternative groups, there are subtleties that have to come through. There's a much greater emphasis on the music in our format than in some others and you also have quieter artists where the voice and lyrics are important, too. Omnia gives us the loudness but it doesn't grunge up the

highs or the bass. During vocals you notice the difference.

One other goal of mine is to avoid listener fatigue. Our listeners tend to stay with us longer, either while commuting, getting stuck in New York traffic, on Walkmans or even at work. Heavily processed stations playing music that has already been "crunched" can turn listeners away. This is especially true of males 18-34, which is our target demo.

Omnia's clipper and composite filter and its distortion control won't let that happen.

There are plenty of features that I like. One is that it's digital, so it's clear and precise, yet gives the fullness and depth

of analog.

Omnia is user-friendly for easy adjustments. The front LCD screen shows a graph for AGC, broadband or multiband and lets me see the limiter in action.

There are a lot of factory presets designed into Omnia but it allows us to create and save user presets. And upgrades are easy and cost-efficient with a PC card.

I don't want to give all our secrets away, but Omnia also has plug-in modules to further customize our sound. There's one for a hot, in-your-face station sound and others for softer formats. What it boils down to are a lot of flavors and combinations so no two stations, even with similar formats in the same market, have to sound alike.

Digital world

It makes sense to me to be using an all-digital processor like Omnia, since radio today is a digital world. With Omnia's digital (AES/EBU) inputs and outputs I don't need to worry about putting another digital box into the chain. With the analog and dual composite outputs, there's no worry about a seamless integration with other equipment. Plus Omnia is designed to work with IBOC DAB when it finally gets here — if it ever does.

One other concern about digital is the fact that as listeners' ears have gotten more in tune to hearing digital quality from CDs, they are less forgiving of any sound that doesn't live up to their expectations. Once again I have to credit Cutting Edge.

There was a time when processing a station like K-Rock was a big tradeoff: You could sound loud or you could sound clean, but you had to choose one or the other. Today, thanks to Omnia, that's not a choice I have to make.

For more information contact Cutting Edge in Ohio at (216) 241-3343, fax (216) 241-4103 or visit the Web site at www.nogrunge.com

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USER REPORT

Getting Online With WebCaster

Martindale Finds the Inovonics Processor a Nice Fit to Stream Radio Station KVYN(FM)

by Michael Martindale
Chief Engineer
Moss Entertainment Corp.
KVON(AM)/KVYN(FM)

NAPA, Calif. I must admit, when we decided to Webcast KVON(AM) and KVYN(FM), I was not ready for all of the shortcomings of the Internet. Not having Webcast before, I had a lot to learn and have learned a lot.

One thing I learned is that conven-

tional forms of audio processing simply do not apply in the "cyber environment."

Aliasing, bandwidth restrictions, phase delay, etc. all took their toll on the audio. In the beginning, I used a simple compressor/limiter with somewhat grim results.

Then I added equalization, which actually compounded most problems. I came to the conclusion that I needed something that would address the shortcomings of the Internet without drain-

ing my budget.

A friend mentioned to me that **Inovonics** had a new Internet audio processor called the WebCaster and offered to have one sent to me on a trial basis.

I have had good luck with other Inovonics products, so I had a WebCaster sent.

When the WebCaster arrived, it looked curiously similar to the Inovonics 235 Tri-Band AM Audio Processor — and well, that's because it is, kind of.

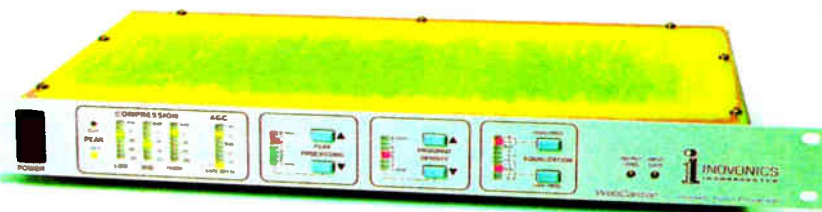
with five settings ranging from -6 dB to +6 dB.

After tinkering with the WebCaster for about a week, I landed on a combination of settings upon which we all agreed. I listened to the WebCaster on computers with poor speakers and on computers with good speakers (well, as good as computer speakers can get).

Acceptable audio

Even on low streaming rates of 16 or 11 kbps, the audio is acceptable. At rates of 16 kbps or above the audio sounds relatively even. Needless to say, I was pleased with the results, but the real proof is in the statistics.

One nice thing about Webcasting, you can keep track of listener habits.



Inovonics WebCaster

The WebCaster is a 1RU unit and lacks the telltale asymmetry potentiometer common to AM processors. Other differences are internal. It has a fast peak limiter and a modified pre-emphasis curve more suited for the Internet.

The WebCaster is a mono unit with balanced I/Os, is user-friendly and simple to set up.

Being a mono unit was a plus because, when streaming stereo, the phase delay between channels can be annoying. I fed the WebCaster a mono-mix from a distribution amplifier. Audio output to the audio card is between -18 and -10.

The WebCaster has six controls on the front panel that allow set up of the I/O levels, peak processing, program density and equalization.

In addition, it has a peak clipping indicator and bar graph meters showing the three bands of compression, AGC and the selected settings for the individual processing settings.

On the back is a switch that allows local control via the front panel, remote computer control via the RS232 port (software is provided) and a "Proof" position.

Phasing in the sound

I suppose opinions on how to set up audio processing are like belly buttons — everybody has one. The Inovonics WebCaster can be set to sound natural and open, very dense and loud, or just about anywhere in between.

Both the peak processing and program density controls have eight levels of settings selected by a pair of up/down buttons. The peak processing control determines how much gain reduction and peak clipping will be used and the program density controls the release time and interaction of the tri-band compressor determining if it will act like a single-band or multi-band compressor.

As the controls are increased beyond a certain point, the WebCaster becomes aggressive. It has two equalization controls, one for low frequencies and one for high frequencies, each

Before installing the WebCaster, the average listening time was less than five minutes. After having the WebCaster in place for a month, the average listening time went up to over 20 minutes.

For us at KVYN, the WebCaster was a smart choice and we are pleased with the results.

Like to give us a listen?

Visit us at on the Web at www.kvyn.com or www.broadcastmusic.com and look for KVYN listed under contemporary/top 40.

For information contact Inovonics at (800) 733-0552, fax (831) 458-0554 or visit www.inovon.com

TECH UPDATE

SBS Delivers Processor Combo

The MaXiM by sbs is a deviation limiter and processor designed to give maximum loudness with full regulatory compliance.

It features two interactive time constants: a fast limiter catches short term high level peaks, such as microphone popping, while the long release time limiter provides protection against longer overloads, such as a music track played at high level.

The MPX5 is a stereo encoder with digital waveform synthesis, DSP FIR audio filtering and overshoot compensation. The MPX5 also features dual outputs and an RDS/SCA input and is easy to set up in the field.

Current versions of the MaXiM and MPX5 were designed for use together, implementation as stand-alone units and for use in a processor chain. The pair can be set up to be transparent to any other audio processing unit or can handle the processing itself.

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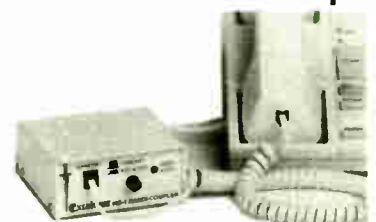
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USER REPORT

Optimod Returns Music to This AM

Illinois Station Competes in Music Programming With Orban Audio Processor in Air Chain

by David Brown
Station Manager
WITY(AM)

DANVILLE, III. Is it possible for an AM station to compete with FM stations in a music format?

The technical engineering answer, of course, is no. We all know that AM cuts off at a certain frequency, disallowing the full, clear musical sound offered by FM signals. That's one reason music programming has migrated almost entirely to FM, while AM stations have found their niche with news/talk formats.

But technical parameters don't always tell the whole story.

Here at WITY(AM), which broadcasts Westwood One's adult standards format, we have found that the right processor set in the right processing mode enables us to achieve a natural, open sound that can rival FM sound.

It helps, it must be admitted, that so many FM stations over-process, trading dynamic range for loudness in the competition among themselves.

Optimal processing

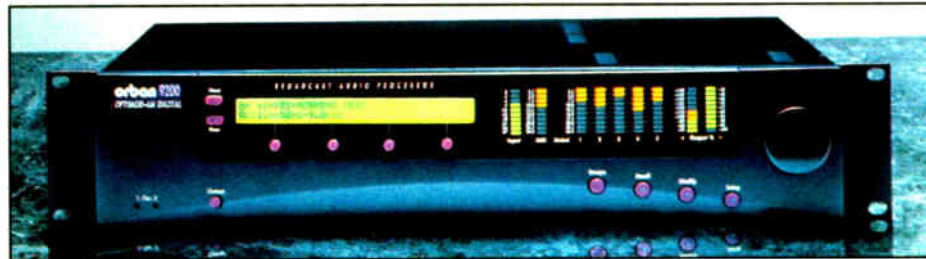
The right processor for WITY is Orban's Optimod 9200, which we installed about two and a half years ago (replacing an Optimod 9000 analog processor). In doing so, we wanted to improve the overall sound of the station. We wanted to sound exactly like what we're doing — playing CDs.

I have been a great fan of Orban products ever since encountering an Optimod 8000A-FM processor at the first station I worked at in the mid-1970s.

The 9200 is the first fully digital processor designed specifically for AM radio and, in choosing it for WITY's first all-digital processor, I expected a major

improvement toward a cleaner, more transparent sound. In fact, the 9200 has surpassed my expectations.

The 9200 arrived with 11 factory presets for music formats as well as



Orban Optimod 9200

news/talk and sports. We use the "fine arts" preset, modifying it a bit to suit our needs, which was easy to do.

We customized the high and low frequencies and added a tad of EQ. Mostly, we used less compression and clipping. Later, we added a little bit heavier processing at night to cover sky-wave interference.

Day or night, the improvement in our sound has been remarkable, an improvement that went beyond the usual digital clean up of the on-air sound.

We immediately began hearing from listeners and even from other broadcasters about our upgraded sound. Some of them actually said we sounded better than some of the FM stations in our area (which are, no doubt, over-processing).

I can't think of another piece of equipment that has had that kind of impact in my experience.

And that is not just a subjective call. We know our listenership has increased tremendously. Many businesses, such as doctors' and dentists' offices, that typically play FM stations for music, have begun playing our station.

Listener feedback also tells us we've

been picking up listeners in the Champaign and Urbana market. We attribute the jump in listenership entirely to our improved on-air sound.

Intangible features

The Optimod 9200 has other features that make it a winner.

The processor is stable and consistent. We've had nearly three years of "burn time" with the 9200 and haven't had a single iota of trouble.

The unit is user-friendly. Once you look at the manual, it's easy to modify it and then leave it alone.

If you have any problems or questions, you'll discover just how great the Orban support team is. Our Orban rep has been both cooperative and knowledgeable engineering-wise. He's gone beyond the call of duty.

Since we installed the 9200 at WITY, we have seen our audience share and revenues improve considerably. That's why I can't recommend the Optimod 9200 highly enough to any AM station considering an upgrade or complete facility makeover, regardless of format.

David Brown can be contacted at wity@soltec.net

For information contact Orban in California at (510) 351-3500, fax (510) 351-0500 or visit www.orban.com

USER REPORT

Aphex Delivers Big Sound for Salem

by Mark Pallock
Chief Engineer
KKLA-FM
Salem Communications

LOS ANGELES I have been under contract to maintain several Salem owned-and-operated stations for almost 30 years. During that time I have earned the trust of Salem ownership.

listening on his new Bose car audio system and was very upset at the way the radio station sounded. It was very tubby and bassy for our talk format.

I spent several days tweaking and adjusting to try to get the midrange and high-end grit out of the audio. The tubbiness of the bass could only be reduced by completely rolling off the low end.



Mark Pallock with the Aphex 2020

Management allows the engineers run the technical end of their respective stations. Working with this company is pretty much an engineer's dream, but when we relocated our transmitter site to the Mount Wilson antenna farm, it turned into a nightmare when I installed a new model of on-air processor from a popular supplier.

When we updated our site, I had budgeted for a new audio processor as well. It seemed a safe choice.

I worked with the factory for several days in setting it up and it was indeed very loud. Two days after the new installation was on the air, I got a call from the owner of the station who was

The best that could be said was that it was "just okay." At one point I put the old processor back in the air. There had to be a better solution.

I had noticed ads for the Aphex 2020 in *Radio World* and, having good experience with Aphex products, decided to try it.

I called Aphex for a loaner and first installed it temporarily at our sister station KDAR(FM) in Oxnard, Calif. I got some tips on setting up the unit from Aphex tech support.

The first thing I noticed when it went on the air was how clean it was, especially the high end, even with the

See APHEX, page 63 ▶

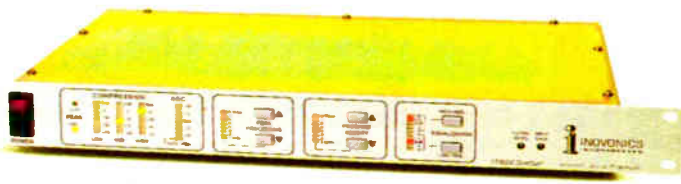
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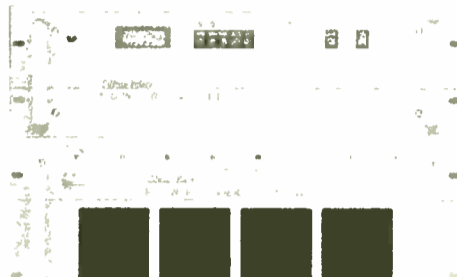
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USER REPORT

The Poseidon Sound Adventure

CE Rowles Finds Smooth Sailing with a Processor From Nicom, a Recent Entry to the U.S.

by James Rowles
Chief Engineer
KRAJ(FM)/KLOA-FM/KEDD(FM)

RIDGECREST, Calif. "Time for a new audio processor," said Bob Addelman, the owner of KRAJ(FM).

After having used the best equipment in analog audio processing, it is time to once again compare products. Analog processors each have a sound of their own. But now digital has arrived and changes the way processing is thought of and heard.

When I was given the go-ahead for a new audio processor, I knew how we wanted the station to sound, but the budget and the sound seemed removed from each other. Big sound and small price seemed to be at opposite ends of the spectrum.

A new kid with a box

I found that Nicom had just introduced a digital processor and it seemed to fit. The new processor, the Poseidon, has a list price of less than \$3,800.

Nicom may be an unfamiliar name to many. Based in National City, Calif., it was started by Franco Piagentini and Carlo Rustichelli.

Piagentini started Nicom USA in 1998. Using his 25 years of experience working in the broadcast engineering industry in Italy, Nicom began manufacturing antennas and accessories in the United States.



Nicom Poseidon

Augmenting the antenna division, Nicom gradually introduced a line of transmitters, amplifiers, translators and STL systems, including a new digital audio processor and a multi-purpose eight-channel mixer, digital exciter, and DSP-based composite aural STL system.

The Poseidon, which we purchased, features five bands of equalization, optional digital input and output (AES/EBU and S/PDIF). The options include a Webcasting card, a digital enhancer for stereo sound and a digital stereo generator.

The Poseidon has two serial RS232 ports, 30 pre-programmed equalization curves and 10 personal EQ curves. It is

easy to upgrade to Windows 98/NT Software for direct control or control via satellite if preferred.

In one rack space, you have control of all parameters, programmable bass enhancer, limiter, compressor and clipper. The audio quality is astonishing: Clean and loud, without sounding compressed — very transparent.

If a CD can be enhanced to a higher

Ph.D. to work with the Poseidon. No such luck. Just turn the shuttle to the item you wish to modify and choose it by pressing Enter. It's as simple as that.

If it is not what is wanted, select Esc or Quit. After you have modified it again, press Enter to confirm. There is also a "trashcan" to dump changes and return settings back to the way they were.

The display references show the first five meters by name and operating range. The super bass-level parameter sets the level of the bass enhancer effect. This super bass type sets the type of bass (disco soft bass, club long bass and tight hard bass).

While the bass-level parameters set the threshold of the bass compressor, Mid Level 1 parameter sets the level of the threshold of the mid-bass compressor. Mid Level 2 sets the level of the threshold of the mid-compressor.

Mid Level 3 sets the levels of the

Big Sound and small price seemed to be at opposite ends of the spectrum.

level of maximum expression, the Poseidon is the tool that does it effortlessly and easily. I used the unit's own default setup for days before going to my EQ curve.

The multifunctional display on the front panel shows status selected, using the shuttle to select and also to execute the command. At a glance, you can see the input settings, the presets and the function menus by scrolling the main menu.

The stereo enhancer can create a 3D effect. Varying the effect level defines a stronger stereophonic effect. The effect depth defines the varied delay and the effect band defines the band depth. This parameter can have four values.

It may sound as if you will need a

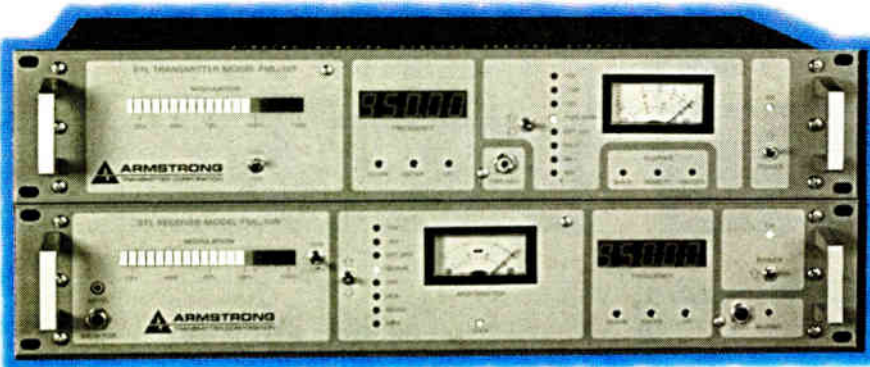
threshold of the mid-high compressor. The wide density parameter sets the compression level on the entire band. The brilliance parameter set the high-frequency limiter level.

As for documentation, the manual is easy to read and it makes the Poseidon simple to operate. The ability to control so many parameters so easily makes the Poseidon a winner.

James Rowles is a contract engineer/consultant for five local stations in the California area and doesn't ever plan to retire.

For more information contact Nicom in California at (619) 477-6298, fax (619) 477-6296 or visit the Web site at www.nicomusa.com

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TECH UPDATE

TransLanTech Spans Processing Chain

TransLanTech Sound's Ariane is a four-band audio processor designed to be an all-purpose dynamic range corrector, suitable for studio mastering, dubbing stations, Internet, TV and radio broadcasting. It occupies one rack unit.



Its RMS-based design enables the station to handle audio from multiple sources and output it within a user-specified range. For example, when the Ariane is used in a radio station audio processing chain, it could replace older-style processors, such as Texars or wide-band AGCs, which traditionally have been used for preprocessing.

This use prevents stress to a radio station's STL or main audio processor when handling raw audio direct from a mixing console.

TransLanTech Sound will offer pre-production evaluations in coming months before full production later this year.

For more information contact TransLanTech Sound in New Jersey at (973) 785-3938, fax (973) 785-0022 or visit the Web site at www.translantech.com

2020 Gives Visionary Sound

► APHEX, continued from page 60
brightness really cranked.

The second thing I noticed was that this station was now louder and cleaner than our Los Angeles station KKLA-FM. In my experience, loud and clean had been mutually exclusive. Whenever I adjusted other processors, there was always a big price to pay somewhere.

Even being loud, I was able to achieve a natural-sounding spectral balance. The low end was incredibly deep, tight and big.

Caution: Monitor with a wide response playback system during set-up. You can get tremendous low end without affecting mid and high frequencies and it is easy to go too far.

The mids are clear and present. The high end is open, even "airy," without any edginess.

The 2020 is a combination leveler, four-band compressor and split-band peak limiter. The units we have include the optional high-frequency limiter and the stereo generator. Each has several parameters that are clear in their effects once you understand the Aphex jargon. (Sticky window?)

If you like to make in-depth adjustments, I suggest reading the manual — twice. I did not take time to analyze each section separately. I was able to make some minor adjustments to one of the factory presets and have left that setting for over a year at both stations.

Making voices happy

The on-air talents noticed the quality improvement on their own voices immediately. I simply made the choice of the higher-quality processing over consistent mediocrity.

I have also assisted in the audio processing at the head of our streaming audio sites. We had Aphex Compellers driving a digital Webcasting processor.

We found that the Compellers alone produced a much better sound by maintaining a proper level and also keeping the dynamic feel of the programs.

This is a new area for us and we are still learning the best way to process audio that will be heavily bit-rate reduced and played at background levels on computer speakers.

The goals for processing for FM, however, are much better known. Clean, loud, balanced high-quality audio, natural-sounding voices and evocative music, with no off-putting artifacts.

Enhanced coverage is just the icing on the cake. The FM 2020 has made our announce staff, sales staff and most important, my boss happy. And it is one less headache for a busy engineer.

For more information contact Aphex Systems in California at (818) 767-2929, fax (818) 767-2641 or visit the Web site at www.aphexsys.com

USER REPORT

Sounding Out the Millennium

*Clear Channel Orlando
Ushers in the
Millennium by CRL*

by **Dave Chambers**
Chief Engineer
Clear Channel Broadcasting,
Orlando, Fla.

ORLANDO, Fla. You know you are in trouble when your station PD comes into your office, sits down, smiles broadly and wants to discuss "processing theory."

Returning the smile, you sit back and listen to him or her describe how they want to get the station to the "next level," which really means, "We had a bad book and I'm desperately looking for a solution."

What usually follows is a run out to the transmitter site at midnight and a few hours of adjustments with the PD on the other end of a phone line trying to direct your efforts while sipping his latte.

Your task is clear and the PD's needs are simple: Give my station a "signature sound" that is as loud or louder than all other stations in town.

An overeager PD can't completely destroy a week's worth of listening and tweaking.

The reality of this is that you need to make the PD happy while not distorting your audio into a crunchy compressed wad of indistinguishable tones.

Late last year Jay Brentlinger, president of CRL, approached me and wanted us to demo his new Millennium digital audio processor. I was hesitant but our director of programming was all for experimenting with a new sound, so we agreed to play.



Dave Chambers at Clear Channel, Orlando, with the CRL Millennium

Jay came to our studio the following week with the Millennium painted fire-engine red. After racking it up, I realized it looked as out of place as Charlton Heston at a gun-control rally.

Jay told me the company paints these

assortment of presets covering the basic radio formats. Our station under test was an oldies format so we started with their "pre-1964" preset and began tweaking.

The comprehensive menu system is well structured and intuitive. After a little more than an hour, we had a sound that our PD was liked. The audio was crunch-free.

The Millennium has powerful features.

It has a metering tab that brings up a simple oscilloscope display viewable in either Y-T or X-Y formats. This is useful when you suspect something is distorting the audio waveform.

The security tab allows you to set two different levels of access for users, and can be programmed with up to eight passwords. This way an over-eager PD can't completely destroy a week's worth of listening and tweaking. The 16 programmable presets also help to prevent losing any work.

A help feature with basic assistance is available by pressing the "?" displayed

See CRL, page 64 ►

units in any color the customer wants and will color match if necessary.

We began setting levels and running tones. That's when I was struck by how easy the unit was to operate. The Millennium not only has a standard "wheel" control, it also has a large touch-screen display. Its menus are arranged in a tabbed folder format that makes it user-friendly.

This unit came preloaded with an

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TECH UPDATES

Broadcast Tech
Modifies Ultramod

Broadcast Technology has released the update of the Hnat-Hindes Ultramod.

The Ultramod FM incorporates the clean split-band compressor-limiter of the original Ultramod along with the ultra-transparent stereo generator. Low-pass filters have been added along with an input AGC to ensure that the levels into the compressor-expander are consistent.



The bass enhance allows the Ultramod FM to be tailored to any format with the adjustment of one control. Broadcast Technology's "Smart Clipper" increases the loudness of the audio without creating excessive distortion.

Distortion typically is less than 0.2 percent at any compression level with noise no more than 70 dB. The Smart Clipper looks at the audio and determines if clipping or limiting is appropriate.

The composite processor adds loudness and is adjustable from 0 to more than 3 dB. The Ultramod FM provides two composite outputs, a pilot output and an SCA input.

For more information contact Broadcast Technology in Colorado at (719) 336-3902, fax (719) 336-9473 or visit the company Web site at www.broadcasttech.com

Radio's Most Wanted

PROFILE: Terry Baun, CPBE

Vice-President and Director of Engineering
Cumulus Broadcasting, Inc.
Radio World reader for more than 20 years

Favorite piece of equipment: Anything that continues to provide service well beyond its warranty period with a minimum of broken switches, knobs and software upgrades.

Least favorite piece of equipment: Anything that ships with a "Preliminary" manual or requires more than one factory "mod kit."

Favorite place to listen to the radio: In the automobile, because I now understand that it contains the only receiver by which program directors and consultants can judge the performance of any radio station. To heck with \$25,000 worth of test equipment!

Favorite format: I enjoy oldies - both from the 19th century and the 20th.

Hobbies: Computers, high-end audio & collecting (Conecord-era transistor radios, tuning fork Accutron watches).

Pets: Two cats, Buster and RF (Radio Frequency). RF was found abandoned at a transmitter site, natch.

Proudest moment professionally: Fighting local bureaucracy and citizen opposition to re-erecting a fallen transmission tower in time to meet a deadline for a station transfer. What a lesson in both civics and politics!

Proudest moment personally: Working with the SBE as a board member and officer to initiate a meaningful strategic planning initiative to help move the organization forward and improve member services. As Chairman of the SBE Certification Committee, I am very proud of the efforts SBE has made and continues to make in setting achievable standards by which our industry can judge engineering competencies.

Favorite Radio World columns: I enjoy Paul McLane's "Earwaxes" column because it often gives insight into technology issues bubbling just below the surface. And, because I'm dealing with more than 45 market managers throughout Cumulus Broadcasting, the "GM Journal" is a must-read.

Reads RW because: It is the most genuinely useful of the industry technical publications I receive. There is always something that speaks to issues that our Cumulus engineering team is working on.



Terry Baun, standing in front of the Ron Rackley designed duplexer which allows Cumulus' SRW Tallahassee AM (WHTT) to successfully duplex with another SRW station only 80kHz away. (Great bandwidth!)

Here at Radio World, we strive to deliver the information that helps you, our readers, deliver the goods that make you the most wanted people in the industry. We salute you all, and thank you for reading Radio World.

Tell us why YOU read RadioWorld!

Send your answers to the above questions and anything else you'd like to share to: hhorris@imaspub.com, or fax us at 703-998-2966 attn: H.Harris. Include your contact information, and we'll get back to you.

TC Has M-One Processor

The M-One Dual Effects Processor is a general-purpose dual-engine broadcast studio processor offering TC Electronic algorithms including enhanced reverbs based on all new research, plus delay, dynamics, pitch and classic Golden Ratio chorus and tremolo.



There are 25 algorithms, which can be controlled through a user interface. Both 100 ROM preset and 100 user RAM preset locations are provided. The M-One hardware consists of 24-bit A/D and D/A converters with 24-bit internal processing driven by a DSP engine. Quarter-inch analog I/O connectors and S/PDIF digital I/O connector are included with the M-One.

The system has a retail price of \$699.

For information contact TC Electronic at (805) 373-1828, fax (805) 379-2648 or visit the Web site www.tcelectronic.com

IDT Gets Cool
With DVP @ FM

The DVP (Digital Virtual Processor) @ FM processor is a platform that incorporates room for expansion. The processor comes installed with 10 DSPs working in clusters and can house up to 66 DSPs.

The processor is designed to become the hub of a transmission system. Currently, IDT argues, users who want to add effects, enhance the audio or add a coder must to add an appliance to the rack. The DVP @ FM integrates appliances into the processor by software download.

The DVP uses FFT (Fast Fourier Transform), which enables the system to process on one point (one APP) and utilize no band processing. The unit also features 96 kHz 24-bit processing.

IDT has developed two plug-ins for the unit: the Stereo Boost @ FM1 and the RDS encoder @ FM1. Both of these plug-ins will be available on the IDT Web site.

The Stereo Boost @ FM1 can be integrated directly into the DVP and the plug-in is mono compatible. The retail price for the plug-in is \$1,008.

The RDS encoder @ FM1 is a basic, static RDS encoder with the advantage of being incorporated directly onto the host platform of the DVP.

The RDS encoder has a list price of \$504.

The DVP @ FM processor was a winner of Radio World's "Cool Stuff" Award at NAB2000.

For more information contact IDT in France at (33) 472-18-19-20, fax (33) 472-18-19-21 or visit the Web site at www.idt-fr.com

CRL Brings Millennium
To Clear Channel

► CRL, continued from page 63

in the upper right-hand corner of the screen. This provides some basic guidance on whatever operator control is selected.

ed (20-bit, 110 dB optional) and that its 8X over-sampling gives it superior dynamic range.

This digital processor is built with the station's engineer in mind. It is ver-

This digital processor is built
with the station's engineer in mind.

Our unit is flexible and came standard with two analog inputs, four sub carrier inputs, two composite outputs and two analog outputs. This unit features digital ins and outs that are selectable between asynchronous AES/EBU and optical connectors.

CRL's Web site describes how the Millennium is based on a 32-bit floating-point DSP processor, that it boasts a fifth-order 18-bit A/D converter with a dynamic range of 107 dB A-weight-

satile and well designed, which means the learning curve is short and sweet.

I highly recommend these processors. We started out with one demo and now have a Millennium on each of our four FMs.

Reach Dave Chambers by e-mail to davechambers@ccorlando.com

For more information contact Circuit Research Labs in Arizona at (800) 535-7648, fax (602) 438-8227 or visit the Web site at www.crlsystems.com

Radio World

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AMPLIFIERS WANT TO SELL

Ramko XL AS-10; ATI distribution amps (3), BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

ANTENNAS/ TOWERS/CABLES WANT TO SELL

6 Bay CP, low power, 1 kW, 95.7 MHz, \$600. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

ERI G5CPM-7C 7 bay antenna on 99.3 MHz, \$3000; Cablewave 150' of 3" helix w/connectors, \$1000. B Campbell, Dove Media Inc, 1740 No First St, Abilene TX 79603. 915-673-5289.

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Andrew 1/2" connectors, new, \$20; Andrew 87-R, 1-5/8" connectors, \$125 ea. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp, PA 16066. 724-776-5204.

Transmitters, Antennas, STL Systems superiorbroadcast.com

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Phone 800/279-3326 Fax 800/644-5958

Cellwave, air-dielectric, 7" coaxial cable, 3 rolls, w/female "N" connectors attached, as is, you ship, BO. Mike Seaver, KHQA, 301 S 36th St, Quincy IL 62301. 217-222-6200.

ER Johnson antenna switches #145-102-13, 40 amps, used, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp, PA 16066. 724-776-5204.

Various Jenning vacuum capacitors, fixed & variable, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp, PA 16066. 724-776-5204.

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WANT TO BUY

3 Bay antenna for 104.3 MHz. John Andrist, KOMW, POB 151, Omak WA 98841. 509-826-0100.

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Roland DM-800 multi track recorder w/Dif-800 digital interface, BO. David Fisher, WGOW, 821 Pineville Rd, Chattanooga TN 37405. 423-756-6141.

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Fidelipac Dynamax CTR112 stereo, single play cart machines (5), \$800 ea, plus shipping, has fast forward, in almost new cond. Brian Lord, Lord Bdctg Co, 3824 SW Myrtle St, Seattle WA 98126.

ITC 99B RPU's (2) & (8) Delta's, play units, 1 triple deck, (3) RP series mono, oldies on cart, cart rack, \$200 ea +shpg. Bob O'Neal, WPYX, 800 New London Rd #4200, Latham NY 12110. 518-785-9065.

ITC-Delta stereo players (several), \$500 ea; ITC SP w/SWA cards, \$100; Fidelipac CTR-12 stereo players, \$275 ea; Fidelipac CTR10 R/P, \$300; ITC 99B R/P, Elsa, Black case, \$1100; ITC Omega, mono PB, \$100. Joe Sands, Sports Fan Radio Network, 1455 E Tropicana #250, Las Vegas NV 89119. 702-595-2281.

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Autogram AC-6 6 channel w/rotary pots, \$1000. KKSU/KRKN, 416 East Main St, Ottumwa IA 52501. 515-684-5563.

McCurdy SS7500 (2) 10 channel w/tons of inputs, Penny & Giles slide pots from classical station, \$2500 ea; Gates Executives (2) solid state, 10 channel, \$1300 ea/\$2000 for both; Gates stereo Statesman-solid state 5 channel, \$550. Brian, WNGN, Box 36 The Kings Road, Buskirk NY 12028.

Autogram-Rockwell IC10, 10 pot stereo, gd cond but needs cue module, prefer buyer to pick up, but will ship @ extra charge, \$1400. Howard Espravnik, Magnum Comm, 915 Hwy 109 North, Gallatin TN 37066. 615-452-3983 eves/weekend.

Collins IC-6 in very gd cond, serviced regularly, \$500/BO; Collins IC-8 in very gd cond, serviced regularly, \$800/BO. Tom Tabback, KAZM, POB 1525, Sedona AZ 86339. 520-282-4154.

Autogram 20 mixer stereo console. Continental Communications. 800-664-4497.

Soundcraft 600, 24x8, \$3900; JL Cooper 16 trk automation, \$1200. W Gunn, 760-320-0728.

WANT TO BUY

BE 4550A, 4 or 5 channel stereo audio console, old/used, BE, Sparta, Russco, ATI or equivalent. Shawn Zurbrick, LSR Radio Dallas, 9202 Millwood Dr, Rowlett TX 75088. 214-293-7420.

Shure M67 &/or M675 audio mixer. Larry Walk, WKTX, 2415 Karen Ct, Youngstown OH 44511. 330-799-4505.

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Orban Optimod 8000; CRL MBL 100 AM processor; CBS Audimax 3; Tapco 2200 EQ, BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

Symetrix SX208 stereo compressor/limiter, \$175 incl shpg. John Felz, Music of Your Life, 4605 Lankershim Blvd #702, N Hollywood CA 91602. 310-546-6451.

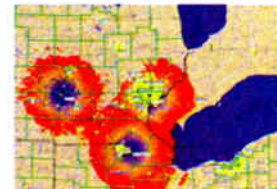
CBS Volumax, \$400/ea; mint Urei 1176LN, black, \$2300; 1176LN silver, \$1800; 1176 original blue/silver transformer l/o, \$2300. W Gunn, 760-320-0728.

WANT TO BUY

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WANT TO BUY

RCA 77DX & 44BX, will pay \$500 to \$1000. Larry Drago, WELI, POB 85, Hamden CT 06514. 203-230-5255.

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Otari MX5050BQ2, 1/4" 4 trk, \$1000. KKS/KRKN, 416 East Main St, Ottumwa IA 52501. 515-684-5563.

Tascam 32 r-r, 1/4" 10" reels w/remote, like new in original box w/21 reels of Ampex 456 tape, \$500 +u-ship; Fostex A2 r-r, 1/4", 7" reels w/remote, in original box, \$250 +u-ship. Jerry Fletcher, Trionic Sound, 220 Coral Ct, Williamsburg OH 45176. 513-724-3553.

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Dolby Digital

Dear RW.

In his letter "Processing Suggestion" in the March 15 issue, David Sproul describes a system in which the audio processing would be applied in the receiver, and not at the transmitter as is common now.

I have some good news for Mr. Sproul. Dolby Digital (AC-3) is the multichannel audio system chosen for Standard and High-Definition TV standards in the United States (ATSC) and abroad (DVB), Direct Broadcast Satellite (DBS), Digital Cable and DVD.

Currently, there are more than 42 million products that contain Dolby Digital decoders in use worldwide. Part of the Dolby Digital technology is almost exactly what Mr. Sproul suggests.

The Dolby Digital encoder creates control words called metadata, or data about the audio data, some of which are used by the decoder to control the dynamic range of the decoded program.

Although the audio processor is still at the transmitter, it does nothing to the audio, but rather generates a control bit-stream that is passed on to the consumer decoders. The default in every decoder is to apply what the broadcaster has created, but a consumer has the ability to partially apply, or totally ignore this dynamic range information.

With the Dolby Digital system, a consumer can decide when to apply dynamic range processing and how much to apply. As new digital delivery systems promise a drastic increase in dynamic range capability, it must still be controlled in certain environments.

Classical music is a good example of a format that can take full advantage of this improvement. However a 90 dB or greater dynamic range that may be fine for home listening, is potentially dangerous in a car! With Dolby Digital, a home listener can hear the audio with full dynamic range, while simultaneously a listener in a car can have a controlled dynamic range.

I invite readers to visit www.dolby.com Many issues having to do with broadcast audio are covered in detail, along with descriptions of other features in the Dolby Digital system.

I also invite people in the radio industry to think beyond two channels. All of the above-mentioned delivery systems have the ability to deliver 5.1 channels of audio to consumers.

Certainly news need not be more than

stereo, but multichannel music is quickly gaining popularity. I am hopeful radio will be able to provide the listening enjoyment consumers increasingly are expecting and getting from DVD, DTV, DBS and others.

Tim Carroll
Product Manager
Professional Audio
Dolby Laboratories Inc.
San Francisco

Eureka no solution

Dear RW.

Regarding the cover article about global DAB in the March 15 issue:

Everything in the first three paragraphs is factual. Nevertheless, it leaves the reader with the clear sense that the rest of the world is moving on while we in the United States are stuck in a rut.

Proof that Eureka works across a broad spectrum of propagation paths requires something more than being able to pick up the Eureka signal five miles from the CN tower. After all, the CN tower is taller than the Sears Building in Chicago, and Toronto is flat.

How would Eureka work in the canyons of Huntingdon, W. Va., or the canyons of Wall Street? How well does Eureka work in a mobile environment?

Eureka works fine — as long as you can get the signal. But there is the problem. To find sufficient bandwidth, you have to go to near-microwave frequencies, which have a near line-of-site ("optical") propagation path.

You can't get satellite-delivered Eureka in downtown Boston because the "look angle" is too low. And what happens if you get stuck in traffic under an overpass and you can't see the satellite?

On the other hand, you can't afford to build all of the terrestrial cells (repeaters) it would take to give an earth-based delivery system. Planting a cell every five miles between Washington, D.C., and Richmond, Va., starts to get expensive.

Just because someone can plop a receiver on a stationary desk in a metropolitan area and make it deliver "great audio" is a long way from having a system that will consistently deliver great audio in the mobile environment — the lifeblood of U.S. broadcasting.

Glen Clark, P.E.
Consulting Engineer
Pittsburgh

Regulation:
A Net Loss

Radio managers must take a more active role in the debate over the future of the Internet.

Should the Internet be more regulated? Should e-commerce be taxed? How? Are community standards meaningless in an era when our audio and video streams can cut across thousands of communities?

These and other questions come to mind after listening to David Farber, chief technologist of the FCC, who likes to tell listeners, "Dream with us. And leave your lawyers at home."

Called by some the "godfather" of the Internet, Farber says looking at the future of the Net is like predicting the unpredictable.

He said increases in bandwidth will change the way wireless communications are used. With higher-speed access and an all-optical network envisioned, Farber says, these changes will be more of an opportunity than a challenge.

Some politicians have called for Net regulation and taxation. Farber, who testified in the Microsoft monopoly case and spoke at the recent NAB convention, says changes in the Net might induce even business people to ask for some regulations.

In any event it will be a sticky matter.

"No one has the desire to regulate the Internet. The process is too slow, and we're (the FCC) trying not to regulate it."

If regulation happens, network insecurity and privacy concerns probably would be among the first issues examined. But we would expect content regulation to follow quickly. And that's not a good thing.

Farber concludes his remarks by asking the audience to work with the FCC to implement new technologies.

With any luck the FCC will remain a bystander as the Internet continues to thrive. Regardless, radio people must participate in the debate. Contact your local politicians and share your views with them. In the next few years, the shape of the future may be decided.

— RW

Plan your remotes

Dear RW.

Mark Lapidus wrote recently in *Promo Power* about the importance of doing remote broadcasts correctly.

I've just finished working in a community radio station in Australia. It has at least one outside broadcast each day, and being their chief engineer on a voluntary basis, it was my task to set up and pack up each outside broadcast.

In the three years that I was working there, I soon developed shortcuts, such as building a rack with everything you could need in it, including a mixer. Everything just plugs into a patch panel on the front.

In this environment, things may have worked out technically, but more than likely the talent was nowhere near ready to cope with it. Either they were great on air while neglecting the venue, or great with the audience and neglecting on air.

The station did broadcasts from shopping centers, cinemas and nightclubs. The nightclub broadcasts were terrible, structured as shows promoting the club before the club actually opened, then broadcasting everything that came out of the DJ's mixer. This is not to mention problems with phase, or a different type of connec-

tion each week from unreliable clubs.

The sound during the promotional show was so dead, the jock may as well have been in the studio.

Instead of boosting background noise, I bought a cheap reverb unit, and pumped the talent into that, and sent its output plus the clean feed down the ISDN from the studio over the PA speakers so that it at least sounded like an outside broadcast.

I'm with you with keeping remote broadcasts around, but they should be done properly, or not at all.

Simon Butcher
Managing Director
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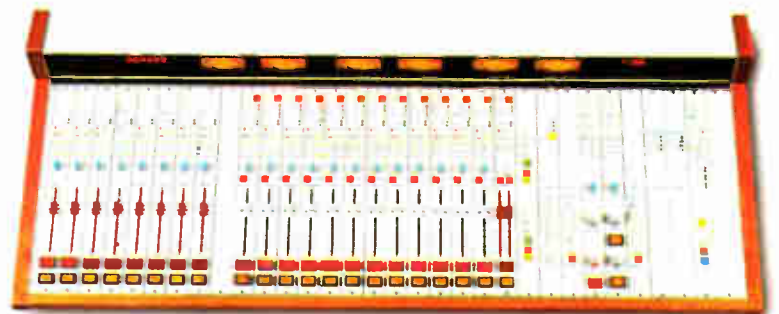


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