

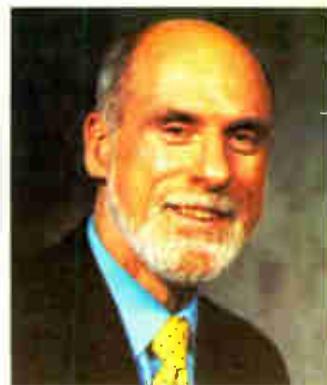
\*\*\*\*\*3-DIGIT 857  
 S117298 D08 0103  
 TOM MILLER 713  
 ASST CHIEF ENGINEER  
 KTZR  
 2033 S AUGUSTA PL  
 TUCSON AZ 85710 7905

**Infinity Quits NAB**  
 CBS pulls membership in dispute  
 over TV ownership caps.

**Net Architect**  
 Vinton Cerf talks about the challenges  
 faced by radio online.

Page 2

Page 33



# Radio World®

The Newspaper for Radio Managers and Engineers

April 25, 2001

**INSIDE**

**ENGINEERING**

▼ EAS may be in full swing, but that hasn't stopped planners from trying to make it better. In-depth coverage.

Pages 1, 5, 7, 8

**GM JOURNAL**

▼ What's happening in the \$600 million Chicago radio market.

Page 23

**STUDIO SESSIONS**



▼ Tom Vernon visits with some old friends you might recognize.

Page 41

**MORE GOODIES**

▼ We dole out an Audix CX-211 condenser mic. Sweet!

Page 4



NewsBytes Now  
 Every Business Day  
 at [www.rwonline.com](http://www.rwonline.com)

**Our Man of Steel Helps**  
 a Bahamian Station Expand Coverage in Paradise.  
 Page 15

## EAS Users Eye Patent Fight, DAB

*NWS 'Perfect Paul' Voice May Sound Better By the End of the Year; EAS Leaders Remain Leery of Patent Dispute*

by Randy J. Stine

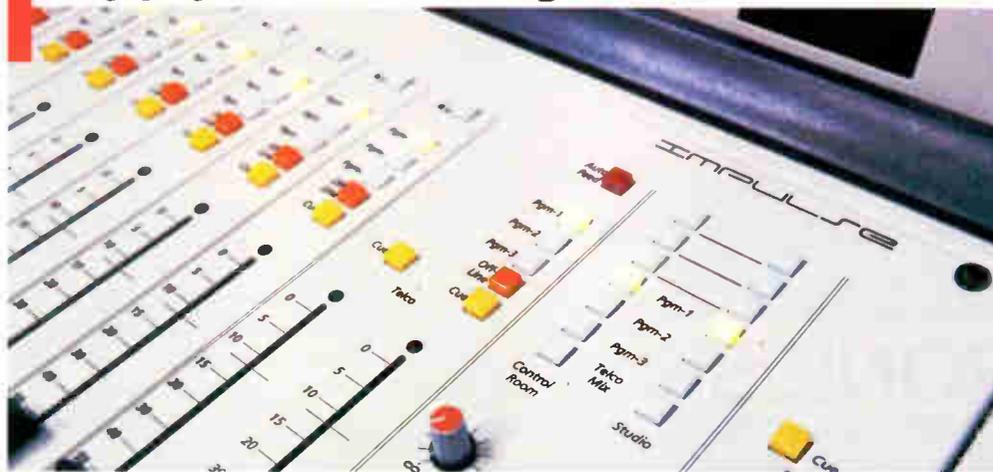
**WASHINGTON** This may be the year Perfect Paul, the not-so-perfect computer-generated voice of the National Oceanic and Atmospheric Administration's Weather Radio, regains a human touch.

The National Weather Service hopes to begin converting weather offices to a concatenated system, one that uses a human speaking voice with words reassembled by computer, later this year. NWS officials said audio samples from vendors hoping to supply the new system should be available sometime this spring.

Emergency Alert System planners have worked with NOAA to seek improvements to Perfect Paul. They also will explore the wave of new wireless technology and how the result could be an alert system that can reach more people in less time.

Attendees of the EAS National Advisory  
 See EAS FUTURE, page 3 ▶

**Why pay extra for analog?**



Transition to digital on your timetable with the new Harris **Impulse Digital Console by Pacific Research & Engineering**. It can accept either analog or digital inputs and reconfigure from analog to digital easily — right in your studio. You can get the benefits of a digital console for less than the cost of most analog consoles. To find out more, call us today. Or, feel free to act on **Impulse**.

next level solutions  
**HARRIS**

1-800-622-0022 • [www.harris.com](http://www.harris.com)

# ◆ NEWSWATCH ◆

## CBS/Infinity Quit NAB

by Leslie Stimson

**WASHINGTON** CBS Television and Infinity Broadcasting pulled more than 180 radio and 35 TV stations out of NAB membership this month in a dispute over broadcast ownership regulation. This leaves Disney/ABC as the last of the traditional broadcast networks that still belongs to NAB.

In a resignation letter sent by CBS executives to NAB President and Chief Executive Officer Eddie Fritts, CBS stat-

ed it is "convinced that the NAB no longer fully represents the best interests of free over-the-air television and radio."

The practical effect of the pullout at the station level was unclear at press time. CBS/Infinity spokesman Dana McClintock said it was too soon to spell out what the resignation means for employees at CBS and Infinity stations, i.e., whether NAB convention travel, speaking engagements and membership on technical standards committees would change.

Infinity was radio's top-earning group in 2000, with estimated gross revenues of \$1.9 billion, compared with \$1.39 billion for No. 2 Clear Channel, according to preliminary figures from BIA Research. Estimated rev-

enues for CBS TV were \$1.6 billion.

What sparked the sudden resignation is the same issue that drove the Fox and NBC networks out of NAB membership more than two years ago: NAB's commitment to the FCC's 35 percent national ownership cap for TV stations. The cap limits one group's coverage to 35 percent of the 100 million TV homes. Network affiliates want to keep the cap to limit the networks' market power. CBS wants that limit raised but the NAB TV board voted in early April voted to reaffirm the cap where it stands.

This "was the straw that broke the camel's back," for CBS, said spokesman Dana McClintock.

"We want deregulation," said McClintock, "and they're not fighting for that anymore."

NAB spokesman Dennis Wharton said, "It is regrettable when any member leaves the association." Neither CBS nor NAB would divulge how much in membership dues NAB will lose due to the pullout.

In a statement released by CBS and Infinity after the resignation, the networks stated, "For some time we have called for the elimination of the national (TV) broadcast ownership cap as well as other outmoded regulatory constraints on broadcasters. We are optimistic that through either the courts or the FCC, that reasonable goal may soon be achieved. CBS and Infinity will continue to work with others in the industry to make sure free over-the-air television and radio stand on an even footing with their competitors for both the good of the business and for the public we serve. It has now become clear that we cannot remain with an organization that is actively working against those objectives."

CBS and Infinity pointed to their successful efforts to deregulate radio. But executives Leslie Moonves and Farid Suleman, president and chief executive officers of CBS Television and Infinity Broadcasting, respectively, wrote in their letter that broadcast ownership deregulation cannot be

See NEWSWATCH, page 3 ▶

## WHEN LIGHTNING STRIKES...



It's GOOD to  
be MODULAR!

This new AUDITRONICS CONSOLE is DIGITAL so you can keep your signals pristine. It's MODULAR, making support a breeze. And it's serial controlled, making it AUTOMATION FRIENDLY. It has all the features you'd expect from our bigger consoles but it's priced to save you money. CONTACT WHEATSTONE - THE CONSOLE COMPANY

**AUDITRONICS**

tel 252-638-7000 / fax 252-635-4857  
copyright © 2000 by Wheatstone Corporation

www.auditronics.com / sales@wheatstone.com

## Index

### FEATURES

- SBE & EAS: A View From Here**  
by Clay Freinwald 8
- Cart Guys Keep the Format Alive**  
by Scott Fybush 10
- BSI, BSW Strike Distribution Deal**  
by Paul J. McLane 12
- Splash FM Reaches Out in Islands**  
by Troy Conner 15
- Workbench: Keep the Console  
Bulbs Burning**  
by John Bisset 21

### GM JOURNAL

- MarketWatch: Chicago Radio in  
State of Flux**  
by Tim Jones 23
- Retail Tops Radio Advertising List** 30

### INTERNET RADIO

- Vinton Cerf, Architect of the Web**  
by Carl Lindemann 33
- Internet Radio News: Fear and  
Loathing: Net Radio Stymied**  
by Carl Lindemann 33
- Clear Channel Enters Net Ratings**  
by Laura Dely 34

### STUDIO SESSIONS

- Stroll Down Radio's Memory Lane**  
by Tom Vernon 41
- GEM Burns Tape with TurboTrax**  
by Read G. Burgan 41
- Lending a Hand in the Grease Pit**  
by Alan R. Peterson 44

### OPINION

54

# EAS Future

► Continued from page 1

Committee meeting in late February also discussed whether additional EAS event codes are needed for radio and TV stations going digital.

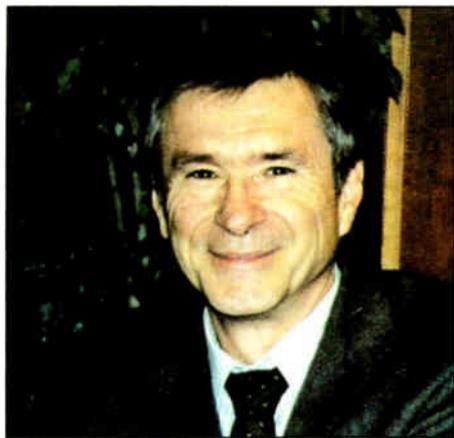
NOAA Weather Radio implemented Perfect Paul with the promise of relaying weather warnings almost instantaneously by an automated system. The system is part of the Console Replacement System the NWS undertook beginning in 1997. Some broadcasters find the NWS' synthesized voice used for weather alerts hard to understand.

## 'Im-perfect Paul'

Many weather offices have stopped using Perfect Paul for weather warnings and funding needed to replace the system has been unavailable until this year, NWS officials said.

Joanne Swanson, NWS meteorologist and voice-evaluation team leader, said the

process to determine the new system started in March of this year when the NWS issued a Request for Proposal soliciting bids from vendors to provide a concatenated system.



Frank Lucia

Swanson said that, in her opinion, "No computer voice-generated system in existence today could satisfy the NWS requirements for audio quality."

The NWS will most likely select from several technologies of concatenated models, including canonical phoneme models, which can be logically concatenated in order to create templates for different words, Swanson said.

In other words, the NWS is trying to make the computer-generated voice sound less automated.

"We should have audio samples available by the end of April. We will then assemble a listener panel of EAS people and broadcasters to listen to the samples and decide the route to pursue. Of course, cost is also a consideration," Swanson said.

Audio samples will be available for the general public to download from the NWS Web site at [www.nws.noaa.gov](http://www.nws.noaa.gov)

Swanson said the NWS would use comments posted on the Web site and form focus groups to determine public opinion on which system is easiest to understand.

"Our job will be to improve the automated system and speech system for the entire NOAA Weather Radio system, and not just for emergency warnings. We want as much input from different sources as possible," she said. "Some of our methods may be a little unscientific, but I think including more opinions is good."

The NWS expects a quick conversion once a concatenated system is chosen, possibly by this December. The NWS hopes to have 121 offices after the latest round of modernization is complete by mid-2002.

With the NWS' Perfect Paul project moving forward, EAS officials will next look for ways to make the current EAS system more efficient.

Richard Rudman, chairman of the National Advisory Committee and the Los Angeles County local emergency committee, said one goal of the NAC is to increase the level of EAS participation by local emergency management agencies. The committee hopes to see more local agencies purchase EAS equipment to originate messages themselves via wireless links to Local Primary broadcast stations.

## Proper implementation

"We are reaching out to local emergency management to get them involved with EAS. Since broadcasters essentially

See EAS FUTURE, page 6 ►

## Corrections

The March 30 story "AM Antenna Tests Suffer Setbacks" referred incorrectly to the founding of EH Antenna Systems and the design of that antenna as joint efforts. Ted Hart developed the antenna and founded the company.

Hart states, "Bob Zimmerman was brought on in the summer of 2000 to assist in the development of the EH antenna due to his background in physics ... He is no longer with the company."

Also, the EH antenna does not use small discs; rather, it uses a bi-cone configuration for the AM band.

The March 14 issue omitted a photo credit for Linda Harris of KFWB(AM), Los Angeles. Harris took the photos of Richard Rudman on pages 3 and 8.

## NEWSWATCH

► NEWSWATCH, continued from page 2 approached in a piecemeal fashion, "selecting for elimination those that directly help one's own company while supporting those that hamstring a competitor.

"The effort to prop up the national television cap is a classic case of this selective approach."

A day after the resignation, ABC parent Walt Disney said it would remain an NAB member "and work from within the organization with the twin goals of restoring broadcast-industry unity and embracing consistent and principled deregulation of broadcast ownership rules."

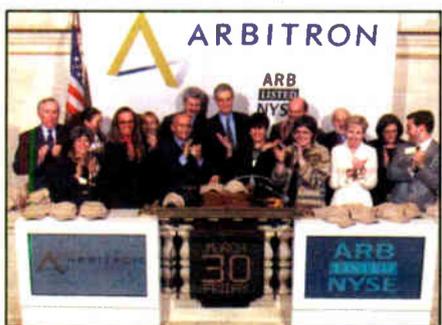
At presstime, a federal appeals court gave Viacom/CBS a stay pending court review of the ownership cap. McClintock could not comment on whether CBS/Infinity might form a competing association with Fox and NBC.

## Arbitron Now Public

**NEW YORK** As Arbitron went public in April, its largest subscriber, Clear Channel Communications Inc., indicated it might cut back what it buys from the ratings service.

Clear Channel says it doesn't plan to subscribe to Arbitron's surveys in 130 markets; yet it has signed an extension with Arbitron for 68 markets, according to published accounts. Talks between the companies continued at press time.

Clear Channel now owns stations in more than 1,000 markets. If a new deal isn't reached with Clear Channel, Arbitron's 2002 revenue would be down by about \$14 million, according to the Wall Street Journal.



Arbitron began trading on the New York Stock Exchange as an independent company April 2 using the symbol "ARB." Pictured are several Arbitron executives. President/CEO Stephen Morris, center, is shown ringing the closing bell on March 30.

On the first day of trading, the stock opened at \$23.80 and closed at \$23.26.

After nearly four decades as a division of Ceridian Corp., both companies split when Ceridian completed a tax-free, reverse spin-off of Arbitron.

Morris said being a separate, independent company would place Arbitron in a better position to focus on radio stations, ad agencies and advertiser customers. It plans to expand its audience measurement services with its Portable People Meter and Webcast services.

## C-5 Customers Moved to GE-8

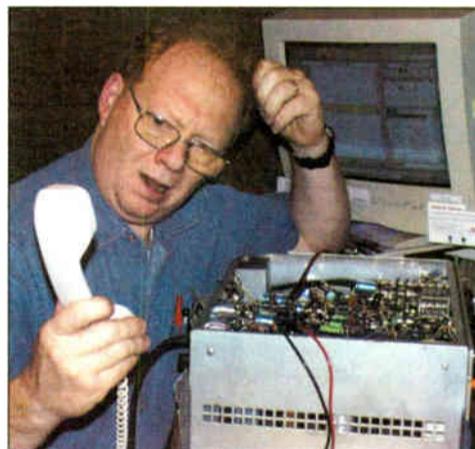
**PRINCETON, N.J.** A new satellite is serving many of the nation's radio stations. GE Americom retired Satcom-5 after nearly a decade of service in March. C-5 customers were transferred to the replacement satellite, the GE-8. Some of the radio customers include ABC Radio Networks, Disney and Deutsche Welle.

"GE-8 (Aurora III) was designed to provide improved performance flexibility and redundancy over its predecessor, C-5 (Aurora II)," stated Ron Capozzi, lead engineer on the GE-8 satellite program. Our customers, AT&T Alascom and the radio programmers, are getting a superior spacecraft."

The GE-8 is a C-band satellite, located at 139 degrees west longitude and covers all 50 states and the Caribbean. The spacecraft has 24 36-MHz transponders.

## SBE Moves

**INDIANAPOLIS** The SBE national offices are in a new location: 9247 N. Meridian St., Suite 305, Indianapolis, IN 46260, phone (317) 846-9000, fax (317) 846-9120.



**PULLING  
YOUR HAIR  
OUT OVER  
VOICEMAIL!!**

## CALL S.C.M.S., INC.

- ✓ 25 Years of Personal Service (1976-2001)
- ✓ Experienced Staff
- ✓ Competitive Prices for over 600 Quality Manufacturers of New Equipment
- ✓ Huge Stock of Rebuilt RF and Audio Gear
- ✓ Extensive Rental Fleet (RF, Codecs, Test Equipment, Audio, and More)
- ✓ Trade-Ins Welcomed
- ✓ Turnkey RF and Studio Installations Planning and Design.
- ✓ Custom Studio Furniture

**YOU-KNOW-WE-KNOW-RADIO**

**800-438-6040 - [www.scmsinc.com](http://www.scmsinc.com) - Pineville, N.C.  
FAX: 704-889-4540 e-mail: [sales@scmsinc.com](mailto:sales@scmsinc.com)**

# Just Add a Pair of Tin Cans

Musings, moanings and etchings about the world of radio ...

Infinity Broadcasting and CBS Television resigned from the NAB this month, saying the association "no longer fully represents the best interests of free over-the-air television and radio."

While CBS and Infinity cited the dispute over national TV ownership caps, the impact spills over into radio. Infinity employees, how are you affected? Tell us about it at [radioworld@imaspub.com](mailto:radioworld@imaspub.com)

★ ★ ★

I saw recently that the National Religious Broadcasters will have Dr. Laura Schlessinger as its featured speaker at the association's annual media breakfast this week during NAB2001.

In its announcement, NRB President Brandt Gustavson stated, "We invited Dr. Laura to speak ... to share her struggles as a high-profile broadcaster on the front line of a battle for free speech and religious expression. As you know, various special interest groups have attacked her because of her religious views. We support her because we believe that in many ways, her fight is our fight. If the forces that seek to silence her are successful, their next targets will be Christian radio and television."

NRB commended her for her "strong stand for the role of religion, the Ten Commandments and encouraging millions of Americans to do the right thing." Just last year, NRB presented Dr. Laura with its Chairman's Award.

I disagree strongly with much of what Dr. Laura says; I firmly support her right to say it. Your thoughts?

★ ★ ★

Separately, we learned recently that Dr. Gustavson has been diagnosed with cancer of the liver and pancreas. The NRB chairman released the news in a memo to the membership and described the association's staff as "in a state of shock."

Gustavson has been president since

1990. He is a former executive of Trans World Radio and Moody Bible Institute. The thoughts and best wishes of all at Radio World are with him.

★ ★ ★

It has become fashionable in some circles to bash in-band, on-channel DAB research and even to imply that it might be best to give up on IBOC. I disagree.

We have a responsibility as participants in the radio industry constantly to seek new and better ways of serving our listeners and our licensees. If the pioneering spirit that launched our industry early in the last century can still be found in radio today, most likely we will find it in the lab and test facilities of engineers trying to find ways to better ourselves — whether it's an improved way to distribute audio programming, or new profitable applications of sending data over our airways and Internet streams.

Which is not to say I'm flat-out convinced IBOC is indeed the next great thing. We've been hearing promises for too many years (a decade, to be precise); we've had too many hopeful predictions delayed and seen too many troubling problems during the DTV transition, not to be skeptical.

So call me an agnostic, rather than an atheist, on IBOC. As they say in Missouri, "Show me."

But don't stop *trying*, for crying out loud. We can't afford to stand still.

★ ★ ★

What radio station would be complete without this neat item from SystemsStore? I quote verbatim from the supplier's Web site:

"Gadco RETROLUX Transducer Passive Audio Cable: Just in time for April, our friends at Gadco have come up with a major breakthrough in electro-acoustic technology.

"This new energy-saving cable requires no amplification and is already a big hit in California. Utilizing a user-provided transducer at each end, RETROLUX cable passes audio like your grandfather used to hear! To our knowledge, it has not been on the air yet, but we have been having pretty good suc-

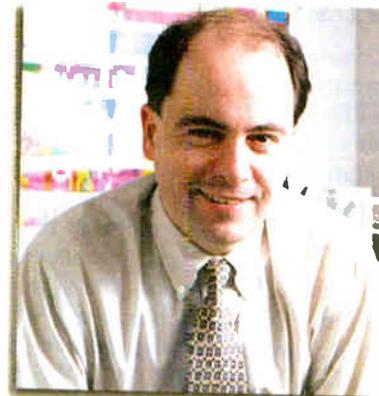


Gadco RETROLUX

cess with it around the shop. (It does not pass video very well, but we are working hard to remedy that).

\*Note: Requires minimum end-to-end tension of 500 lbs., with no bends.

## From the Editor



Paul J. McLane

bundling or cable ties. Order 1,000 feet now. Be the first in your market to 'air' this cable! Product Code: 59772-b. Price: \$299."

Before you rush to place your order, note that this item appeared on April 1, from the same folks that brought you a one-pin XLR connector last year.

You can see the company's more traditional offerings, too, by visiting [www.systemsstore.com](http://www.systemsstore.com)

We've given away almost \$25,000 worth of radio equipment so far in our 25th Anniversary Silver Sweepstakes, celebrating the founding of IMAS Publishing in 1976; and there's lots more to come.

Our latest winner is Tom Schulze, vice president of engineering for Vmi in Riverside, Mo. He qualified for our random drawing by signing up at [www.rwonline.com](http://www.rwonline.com), and you can too.



Tom, who told me he enjoys our articles about the CFA and EH antennas and other RF technology, wins a CX-211 cardioid condenser microphone from Audix. This fine mic has a one-inch gold vapor diaphragm, bass roll-off, 10 dB pad, rugged brass housing, steel mesh grill screen and Audix trademark black satin finish. It runs on phantom power of 48 to 52 volts. Suggested retail price: \$649.

The CX-211 includes a mic stand adapter and foam windscreen. Thanks to our friends at Audix for this week's prize.

In the past four months, we've also given away a spectrum analyzer, RPU transmitter, digital phone hybrid, IBOC filter system, headphone amp and mic arm package. If we keep this up, we'll give away a whole darn radio station.

Hey, now there's an idea ...



if your transmitter  
is here....



and you are here...

You're just a phone call away with  
the ARC-16 Remote Control System

"Burk Technology's technical support is second to none. They are there when you need them with a fast response to questions. The Burk ARC-16 remote control is ideal for unattended operation. Their products are very user friendly for both the operator and engineer. I'd recommend them to anyone."

Mike O'Shea, WUSF  
Tampa, FL

"Buy the company,  
not just the box..."

**BURK**  
TECHNOLOGY

Phone: 1-800-255-8090 Email: [sales@burk.com](mailto:sales@burk.com)  
[www.burk.com](http://www.burk.com)

GUEST COMMENTARY

# EBS to EAS — Analog to Digital

by Frank Lucia

The Emergency Alert System that broadcasters know today has evolved through many changes over the years.

On Nov. 10, 1994, the FCC established the Emergency Alert System to replace the Emergency Broadcast System. The commission's action culminated a five-year effort that included several Notices of Inquiry, Notices of Proposed Rule Making, field tests and demonstrations of alerting techniques.

In a sense, the replacement process was a repeat of events that happened when EBS replaced CONELRAD in the 1960s. Back then, the National Industry Advisory Committee explored several alerting techniques, including some rudimentary digital techniques. NIAC finally recommended that the commission adopt the EBS two-tone attention signal, even though the signal contained no coded information that would identify the contents of the audio message following the signal.

## Two-tone signal

EBS worked well as long as broadcast station personnel heard the message or tape-recorded it after being alerted by their EBS equipment. Then they could pass the message to their audiences. All the states and U.S. territories, with the help of volunteer

EBS state chairs, developed EBS plans that contained procedures that allowed state and local officials to enter the system and disseminate emergency information to the public.

In the 1980s, it became evident that soon broadcast stations would be operating unattended. Also, cable systems were beginning to capture a large share of the viewing public. The federal government saw these factors as limiting the success of EBS.

Any expansion of EBS into cable would be very difficult because cable system head-ends were almost always unattended. These events led the FCC to begin a proceeding to investigate new alerting systems.

At about the same time, the National Weather Service was investigating new signal alerting techniques for its NOAA Weather Radio (NWR) system. NWR was using a single-tone, 1050 Hz attention signal that de-muted NWR consumer receivers.

But there were limits with this system. For example, when NWS personnel wanted to alert the public in only one county over NWR, all NWR receivers within range of the NWR transmitter would be de-muted, even those receivers not in the affected county.

To correct this, NWS eventually adopted a system called Specific Area Messaging Encoding. SAME uses a coded digital signal that is transmitted over NWR using Audio Frequency Shift Keying.

Elements that are coded include the originator of the message, the event, the location(s) of the event and the valid time period of the message. NWS retained the 1050 Hz signal as an alerting signal after the transmission of the digital signal.

Also, the existing NWR consumer receivers would still work. With their new system ready to go into deployment, NWS personnel were anxious to participate in the FCC field tests to display SAME.

## Expanded code structure

Eventually, the FCC decided to use the SAME signaling technique for the new EAS. But the code structure of SAME needed to be expanded to include new elements that were necessary for the system to operate properly in the broadcast and cable environments. Elements added were the exact time in Universal Coordinated Time that a message was transmitted by a SAME/EAS encoder and the identification of the NWR transmitter, broadcast station or cable system transmitting or re-transmitting a message. NWS agreed to add these new elements to SAME so that the two systems would be compatible.

This is how EAS came into existence and made the leap from analog to digital. EAS equipment can be programmed by broadcast and cable personnel to store selected incoming EAS messages and re-transmit them immediately or on a delayed basis, all automatically, with or without attendant person-

nel. The old EBS plans were updated in record time to reflect the capabilities of the EAS equipment. The volunteer work of the EAS state chairs made this possible.

Soon, county-level emergency managers were finding out that they could purchase EAS equipment and interface with the EAS equipment at broadcast stations and cable systems. All that was needed was a communications link to get their messages to the participating broadcasters and cable operators. Also, EAS manufacturers have been upgrading their equipment to make it more user-friendly, including the use of Windows-based software to develop and store canned emergency messages for immediate release.

## Amber Plan

EAS is working fine based on reports received from broadcasters and cable operators. Case in point is the use of EAS to get missing children returned under the Amber Plan, developed in Dallas-Fort Worth and now used in Houston, Oklahoma and Arkansas. The plan is under consideration for use in several other states and cities; it works well because of the automatic storage and forwarding of EAS messages.

This is about where things stand today, but who knows what other avenues may arise to get EAS emergency warnings to the public.

*Lucia recently retired from the FCC as special adviser for EAS. Reach him via e-mail at elyerly@starpower.net*

*RW welcomes other points of view and encourages you to tell your experiences with EAS — what works, what can be improved and how. Send your opinions to radioworld@imaspub.com*

## Powell Ponders Ownership Regs

**WASHINGTON** Should the FCC still have a role in determining what's in the public interest when it reviews broadcast transactions?

New Chairman Michael Powell believes it does. Speaking with reporters earlier this month, he said that although the Department of Justice reviews broadcast transactions too, the DOJ doesn't consider ownership diversity.

tour overlap method. Powell said such a change may limit ownership concentration in a market, but that doesn't automatically mean more diversity.

On the topic of low-power FM, Powell said the FCC is soliciting bids for an independent entity to conduct the field tests to determine if LPFMs cause interference to existing stations if third-adjacent channel protections were dropped or relaxed.



Michael Powell

Photo by Leslie Stimson

"How to do that effectively is what I struggle with," he said. Determining what's in the public interest as far as diversity is "easy to say, harder to do," he said.

The question comes as the FCC reviews the prohibition against owning a TV station and newspaper in the same market, and to redefine what constitutes a radio market for determining compliance with ownership rules.

Powell is skeptical of the cross-ownership prohibition and questions its relevance in an age when media are combining.

The commission has proposed narrowing the definition of a radio market to an "Arbitron-like" measure such as Arbitron's Radio Metro rather than the current con-

It's not clear what happens if the tests do show interference, he said, whether Congress would become involved or not. According to language Congress passed last year, the FCC needs congressional authority to change the channel protections in the LPFM rules. No mention of necessary congressional authority was made in the commission's recent order incorporating lawmakers' changes to its LPFM rules.

He expects the testing period to take more than a year.

LPFMs can still be licensed in the meantime, he said.

—Leslie Stimson

Radio Systems'

# Lowest

Pick up some today!

# Prices

# Ever

!

Radio Systems  
has lowered the prices on all  
studio consoles, timers, distribution  
amplifiers —  
even their new digital hybrid.

Call your distributor  
or Radio Systems today!

601 Heron Drive, Bridgeport, New Jersey 08014  
(856) 467-8000 voice, (856) 467-3044 fax  
www.radiosystems.com

# EAS Future

► Continued from page 3

built EAS, we have to go to the program originators and make sure they understand what we built and that EAS meets their needs. The involvement of FEMA (Federal Emergency Management Agency) will also be important," Rudman said. "FEMA is very active in researching advanced warning systems."

Proper implementation of EAS relies on the combined efforts of local emergency management and broadcasters. Rudman said, and the training of on-air personnel at broadcast stations is a key element to future EAS planning.

also be the responsibility of, surely, the news director, program director, station manager. We all need to take seriously the contribution the EAS system has for the communities we serve."

(See related articles, pages 3, 5, 7 and 8.)

Another EAS issue still to be resolved is the patent dispute with Quad Dimension Inc. ("EAS Could Cost You More Money," RW, Feb. 14.) Quad believes its patent for "Storm Alert for Emergencies" is the basis for the Emergency Alert System. A re-examination by the Patent and Trademark Office in 2000 allowed the majority of Quad's claims. At press time, Quad was appealing the findings of the second re-examination. As a

of the patent controversy.

"We are very concerned with where this case goes. It seems as if Quad is trying to patent the very idea of broadcasting warnings. How far they get is anyone's guess," said Rudman.

FCC Chairman Michael Powell made supportive remarks regarding the contribution of the NAC at the February meeting.

"We are especially pleased to have your public service because it plays a critical role for us. There will be many challenges on the horizon for both the committee and commission. I know (FCC) has at least one rule making issue that involves EAS that we'll be dealing with. More important are the many technology challenges in the next few years that will present both opportunities and challenges," Powell said.

Rudman said the committee looks forward to working with the new chairman.

"I think it was significant that he took time early in his appointment to address the NAC meeting," he said.

The 25 members of the NAC meet once a year to make appointments and to set an agenda. Al Kenyon, vice president of projects and technology for Clear Channel Communications, is vice chair. New appointments to the committee this year include Herb White, NWS dissemination services program manager, and Constance Perrett, administrator of the Los Angeles County Office of Emergency Management.

FCC officials said earlier this year that all 50 states had filed EAS plans with the commission. There are 132 local EAS plans covering most of the major metropolitan areas.



Photo by Marty Hadfield

From Left: Entercom's Marty Hadfield, Vice President, Engineering; John Price, Assistant to the Vice President of Engineering; Wendy Castro, Administrative Assistant; and Clay Freinwald, Senior Facilities Engineer

Just last year, human error at a radio station in Michigan caused the broadcast of a false Emergency Action Notification ("When EAS Goes Bad," RW, Sept. 27, 2000). The false EAS seized the audio from approximately a dozen Michigan radio stations and triggered on-screen scrawls at several television stations and cable systems.

Clay Freinwald, chairman of the SBE/EAS committee and Washington State EAS committee, said training is especially important since EAS is not something board operators use every day. "If you don't understand the EAS box and what it is capable of, sometimes it can be viewed with disdain," he said.

Local EAS leadership is often lacking when it comes to training, according to Freinwald.

"This is not only an engineering issue and shouldn't become the sole responsibility of the station engineer. It should

result, confirmation of the allowed claims will be delayed.

QDI spokesman Daric Laughlin said, "The appeal of two claims will delay issuance of a second certificate of re-examination."

### Patent claims

He said the majority of claims have been indicated allowable and would become enforceable when the second reexamination certificate issues.

The two claims in question cover several issues, including the timing of QDI's development of their SAFE technology. QDI received the original patent in 1992.

According to a company press release, "QDI will earnestly begin an aggressive program to license and assert its past and present rights." In early 1999, Quad sent notices to nearly 1,500 broadcasters asking them to sign license agreements.

The NWS and EAS officials are wary

## FCC Acts on SBE, NWS Proposals

**WASHINGTON** FCC staffers are studying public comments submitted about proposed changes to the commission's Part 11 EAS rules.

Some EAS experts speculate that an order codifying the changes could be in place by the end of the year.

The NWS and SBE filed petitions with the FCC asking for further rule makings in 1997 and 1998. The NWS has added revisions since.

The SBE petition seeks an extension of the relay window for Required Monthly Tests from the current 15 minutes to one hour to help minimize on-air disruptions.

SBE also wants a reduction in the required modulation level of EAS codes from 80 percent to 50 percent of full-channel modulation limits.

Richard Rudman, chairman of the National Advisory Committee and the Los Angeles County local emergency committee, said the FCC seems amenable to both requests.

"After more than three years, the FCC is giving us the opportunity to make adjustments and correct problems with EAS," Rudman said.

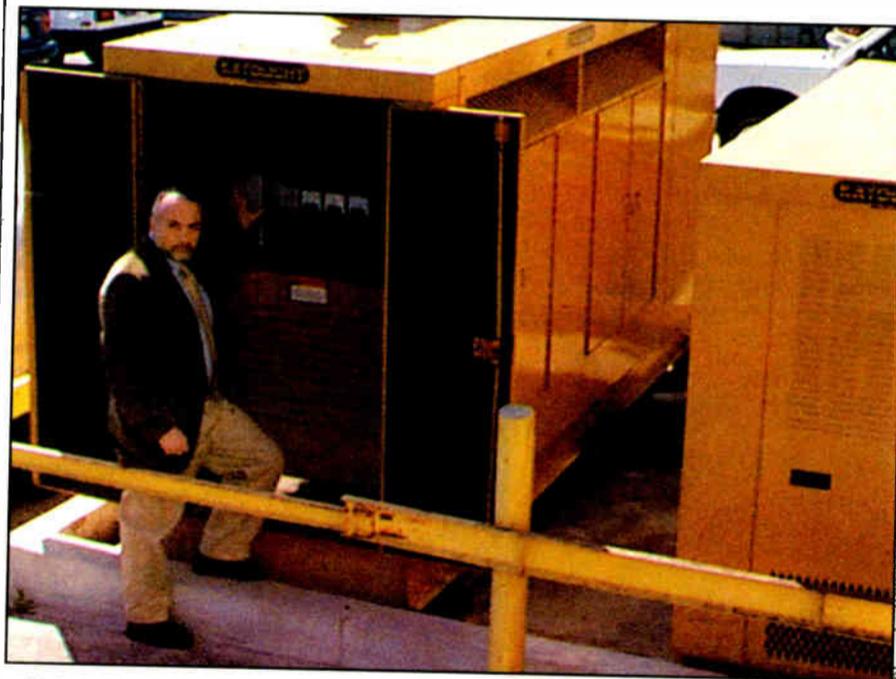


Photo by KFVB's Brady Winchell

Richard Rudman stands in front of one of KFVB's emergency generators that served the AM station well even before the Northridge earthquake.

Also proposed: amendments to the list of state and local EAS codes for emergency conditions.

Rudman said EAS leaders welcome the opportunity for further discussion of more-specific warning codes.

"This process will really be a synthesis of what EAS can do. We can get a lot more out of the system. There is a possibility of even a warning code in the menu for missing children," Rudman said.

The National Center for Missing and Exploited Children has been lobbying the FCC and EAS officials for the change. Rudman pointed to the Amber Plan in Texas as a good example of broadcasters using EAS for the good of a community. That plan uses EAS to find missing children.

Larry Estlack, State Emergency Communications Committee co-chair for Michigan, said there is a need for additional non-weather event codes.

"That will be very useful for local or state emergencies. We need the added versatility."

Comments for EB Docket # 01-66 are due June 11.

— Randy J. Stine

### Complex problems...

WE SPECIALIZE IN RELIABLE, COST EFFECTIVE PRODUCTS FOR YOUR BROADCAST RELATED NEEDS.

AFS-2 AUDIO FAILSAFE  
CAS-1 CON/AIR SWITCHER  
ACU-1 AUDIO CONTROL UNIT  
DAI-2 DIAL-UP AUDIO INTERFACE  
TTI-2 TIME-TEMP-ID DELIVERY SYSTEM  
MBC-1 MESSAGE BOARD CONTROLLER  
RFC-1/B REMOTE FACILITIES CONTROLLER  
TAS-1 TELEPHONE ANNOUNCEMENT SYSTEM

### Innovative solutions!

615 • 228 • 3500 (VOX)  
615 • 227 • 2367 (FAX)  
WWW.SINESYSTEMS.COM

Sine Systems, Inc.

# PDA's, 'E-Chip' in EAS Future?

by Randy J. Stine

New technology is high on the EAS National Advisory Committee's agenda in 2001. Richard Rudman, chairman of the NAC, said EAS leaders are keenly aware of sweeping changes in technology and the impact those advances could have upon EAS. Personal communication devices and the Internet could someday lend themselves to EAS.

Rudman said Personal Digital Assistants, including the Palm Pilot, are being studied as part of an advanced warning system.

## Pagers tested

"A lot of EAS is based on people tuning in to a broadcast station. The technology that is embedded in pagers and other wireless communication systems certainly carries with it some emergency warning capabilities. Those capabilities need to be explored," Rudman said.

Frank Lucia, the recently retired special EAS advisor for the Technical and Public Safety Division of the FCC Enforcement Bureau, said pagers were field-tested in 1993 with some success.

"The graphics and text read-out worked fine. Cell phones are another question. The cost of forwarding messages would be a consideration," Lucia said.

The wireless industry is welcome to participate in EAS, Lucia said. Industry representatives addressed the NAC meeting in Washington.

"If they want to help and volunteer they can. It's doubtful that the FCC would ever mandate them to do so. Phone companies were never required to be a part of the EBS, either," Lucia said.

Technology can also create more EAS headaches than it solves, said Rudman. Case in point: the FCC mandated the parental control V-Chip in television sets. All sets with picture screens of more than 13 inches manufactured since Jan. 1, 2000, have the V-Chip technology. This allows parents to block programming based upon its rating.

## V-Chip or E-Chip?

"It turns out that anything broadcast that's not encoded with a V-Chip rating is blocked. So, if an un-rated EAS message goes out, it could be blocked. We've heard of only a few problems so far. But as the penetration level of V-Chip-equipped sets goes up, it could become one," Rudman said.

The NAC continues to work with the Society of Cable Telecommunications Engineers on issues that affect the cable industry.

Rudman said he and the SBE remain in favor of the idea of an E-Chip. The E-Chip would be able to embed EAS proto-

cols in set-top boxes, television receivers and PDAs, allowing them to monitor one

questions for the FCC and NAC. Yet to be determined is how stations

**Technology that is embedded in ... wireless communication systems ... carries with it some emergency warning capabilities.**

— Richard Rudman

channel for EAS information.

Digital radio and TV raise further

in the digital realm would encode and decode EAS warnings.



Photo by Leslie Simson

IBiquity's Phillip Vanness holds a Hewlett-Packard Pocket PC displaying NYSE stock quotes using iBiquity's IBOC technology.

# All packed?

Yup.

**Envoy ISDN Studio – It's All You Need.**

15 kHz, low delay audio codec including built-in ISDN Terminal Adapter (and NT-1) with:

- 4 microphone channels (2 Mic/Line)
- Separate PA output
- Local cueing facility
- Ancillary data channel
- Contact closures
- Internal peak limiter and VU meter
- 3 individually adjustable headphone feeds
- Pre-stored ISDN profiles and dialing directory
- 3.5 pound, easy-to-use package

**To learn more about how the Envoy can simplify your ISDN remotes, call us today!**

Comrex Corporation, 65 Nonset Path, Acton, MA 01720  
 Tel: (800) 237-1776 Fax: (978) 635-0401 Fax-on-demand: (978) 264-9973 Email: info@comrex.com [www.comrex.com](http://www.comrex.com)

**News Updates Every Business Day**



<http://www.rwonline.com>

# SBE & EAS: A View From Here

Clay Freinwald

*RW regularly provides space for commentary from the Society of Broadcast Engineers as a service to the industry. The author of this edition is chairman of the SBE EAS Committee and Washington State SECC.*

It seems like a long time since the FCC announced that the Emergency Alert System would be replacing the old Emergency Broadcast Systems. But before I look ahead, let's do just a bit of looking back.

The primary goal of EAS is the same as that of EBS: provide a means for the president to address the country should an emergency situation arise.

## Basics

In its rule making, the FCC in its new Part 11 laid out how the system was to work to carry out the national-level mission. A message from the president would be delivered to the country via a network of high-powered Primary Entry Point, or PEP, AM stations, which would automatically relay it to the Local EAS Areas. This EAS message, called an Emergency Action Notification, or EAN, was to be received and relayed in each local EAS area by two sources to be called Local Primary facilities, or LPs, at the same time.

In most cases these LPs were broadcast stations. Each broadcast station and cable company was then to monitor these two LPs. Testing was prescribed: Required Monthly and Weekly Tests, called RMTs and RWTs.

And oh yes, we all had to purchase a piece of equipment that would enable the new system to operate.

The FCC pretty much quit at that point and, giving us minimal instructions, told us we were welcome to take it from there. It suggested that we work with NOAA, as well as state and local governments, and integrate them into the system utilizing the capabilities of new hardware that we now all had installed.

Just how we integrated these other entities into the system was again up to us. The FCC did, however, want to review the state-level plans.

Unfortunately, there were minimal instructions as to how to put together

these plans and systems. Some states simply warmed over their old EBS plans; others took a serious look at what was wrong with EBS and what EAS offered, and started with a clean sheet of paper.

The result is a checkerboard of functional and working systems mixed with those in need of help and revision. To be sure, there has been a lot of criticism of EAS from many areas.

What should we do now? I'd like to share a number of things with you based on my experiences.

## EAS is a checkerboard of functional and working systems mixed with those in need of help and revision.

It's very likely that your state or local EAS committee could use your help. To paraphrase Kennedy, "Ask not what EAS can do for you, but what you can do for EAS!"

If you are critical of the way EAS operates in your area, look in the mirror and ask yourself what you could or should be doing to make it better. Whether an EAS system is something we are proud of or not is determined by us. The point: get involved! Your state or local area's EAS plan and system are only as good as we all work to make them.

## Join up

The State Emergency Communications Committee, or SECC, sets the course for EAS matters on the state level. Local Area Emergency Communications Committee, or LAECCs, handle matters closer to home. These groups would love to have you participate. EAS at the state and local level is a partnership among various government entities, broadcasters and cable.

The SECC develops a state plan, which is approved by the FCC; that plan sets out rules governing how EAS is used at the state and local levels. These rules cannot replace nor be in opposition to those developed by the FCC; they aug-

ment them.

Here's how the process worked in the state of Washington:

1. The SECC was formed.
2. The SECC wrote the state plan.
3. The plan was submitted to the FCC for approval.
4. The approved plan became the guidebook for all uses of EAS beyond that mandated by the FCC's rules, i.e., how we use EAS for weather and state- and local-area messages.

5. The SECC divided the state into local EAS areas.

6. Local areas create LEACCs.

7. Each local area, with the help and support of the SECC, develops EAS procedures and policies, which become part of the draft local plan.

8. The local plan is submitted to and approved by the SECC.

9. All plans usually have provisions for approval by the government entities with which they are working.

When I travel around the country to conduct an EAS workshop, I plan on at least four hours. It's hard to convey EAS quickly. It's not rocket science, but visuals are handy. I use a lot of diagrams and flow charts to help make this all clear.

Having said that, there is a great misconception that EAS is somehow a "techy thing," something that engineers handle. In addition to the technical skills that engineers bring to EAS, we also need skills that general managers and news types can bring to the table. Just like a broadcast station, EAS requires various skill sets.

EAS is a cooperative effort between government entities and broadcast and cable systems. The SECCs and LAECCs should be made up of representatives from all sides. In areas where EAS is a



one-man show, not only does the task quickly overwhelm this person but the potential of EAS is diminished because many of its vital aspects are not represented.

At the state level, members should include state government emergency services, NOAA and FCC, as well as radio, TV, cable and the state broadcasters' association. At the local level, the committees should have representation from all local government entities that originate EAS messages, as well as radio, TV and cable.

In each case, I highly recommend that the committee name a broadcaster to lead the effort.

## Clear plans

State and local EAS plans are critical to the mission in that they codify just how the various systems function to make EAS viable. These plans are not static documents; they must accommodate changes and improvements. There is no such thing as a "perfect" EAS plan; each can be improved, and should be.

EAS messages come in four varieties. Your state plan should make clear just how these messages get from their sources (government entities) to their recipients (broadcast and cable).

It is important that all parties assume that every radio, TV and cable system is operating unattended; EAS plans should be written accordingly.

Other than the FCC requirement that everyone must relay EANs and RMTs, no broadcast station should be called upon to originate or relay any EAS message. Distribution of EAS messages should be handled totally by background channels. These channels can be Part 74 frequencies; however, the first place to look is existing government radio systems, for example a public works

See SBE NEWS, page 22 ▶

## To see what's new in RF you have to look at Bext

**Back on the air - from anywhere** Change frequency, change power, assign audio input and check operating status via remote PC from wherever you are, with Bext's new series of FM excitors. Software-based peace of mind, from the company that brought you the first frequency-agile excitors in 1985.

**Introducing the world's most powerful FM exciter** A carryable kilowatt in three rack spaces, with a revolutionary cool-running design ensuring a longer service life. The new XT 1000 makes an ideal backup, or a very reliable main transmitter.

**Small and powerful: 2 kW in 6 rack spaces** Bext introduced compact amplifiers back in the days when 250 watts came five feet high. Now we are announcing another breakthrough in compact design: the new FC 2000 ultra-compact two-kilowatt RF amplifier.

**Bext has more innovative choices than ever** from hot-pluggable solid state to cost-effective tube-type with up to 60 kW of output power. Call today for information or a quote, direct from Bext.

RF innovations for the broadcast world since 1985

619-239-8462 • FAX: 619-239-8474  
1045 Tenth Ave San Diego CA 92101 • USA  
mail@bext.com • www.bext.com



## Encore!

The Telos Zephyr is one tough act to follow. It revolutionized point-to-point audio by combining ISDN with MPEG coding, and quickly became the #1 selling codec worldwide — perhaps the most successful digital broadcast product ever. So what will we do for an encore?

Presenting Zephyr Xstream, with innovations like AAC (Advanced Audio Coding) for superior fidelity, a special low-delay mode, and an Ethernet port for IP audio streaming, remote control and easy software updates. There's also a rugged portable version with full-featured digital mixing.

And of course Zephyr Xstream includes everything else you'd expect from a Zephyr, like Layer-II and Layer-III coding, ISDN connectivity, a simple, friendly user interface, and bulletproof reliability.

Zephyr Xstream. Sometimes the sequel is even better than the original.

*Telos*  
www.zephyr.com



# Cart Guys Keep the Format Alive

Scott Fybush

Remember carts? Yeah, those big blue (or brown, or gray) rectangles filled with that old-fashioned stuff called tape? Splice finders, bulk erasers — they are all a thing of the past, right?

After all, a PC that costs less than a single cart machine can store hundreds of hours of audio, all accessible instantly, with no waits to re-cue or worries about tape tangling.

You'd be forgiven, then, if you thought the humble cart was as dead as that electrical transcription lathe over in the corner.

You'd also be wrong. Meet Jim Martin and his son James, aka "The Cart Guys" of Tucson, Ariz. — perhaps the last bastions of cart technology.

Ironically, Jim Martin doesn't even remember the days of triple-play

## Martin says he recently took an order for 18 cart machines from satellite broadcaster XM Satellite Radio.

Spotcasters. He worked in the construction business before entering the

cart business last year — yes, you read that right: 2000 — at the suggestion of his friend and RW contributor Barry Mishkind.

"It has been a huge undertaking," Martin said of the purchase, which closed last July. "Barry received an e-mail from a buddy of his at LPB, which had bought Fidelipac as a whole, and they wanted to spin off the cart business," he said. A trip to the LPB office in suburban Philadelphia followed.

"We ... took a look, and said, 'It looks good to us.'" Martin recalled.

### The last of carts?

So, at the end of last June, everything that remained of Fidelipac's cart business arrived in Tucson in the back of a big truck, leaving Martin as perhaps the only proprietor of America's cart industry at the dawn of the 21st century. Martin believes his is the only company left making new cart machines.

Why would anyone buy *into* the technology now? For the business, Jim Martin said.

"We have orders for carts going all over the world. We have some going to Sri Lanka right now."

Martin said large national broadcasters in many countries are reluctant to abandon proven cart technology to make the changeover to computers throughout their operations. The result, he said with pride, is that they still need his services.

"They said we'd only sell three cart machines a month," Martin said. In fact, Cart Guys has sold dozens of Dynamax-brand machines since production began in Tucson, and that's not even counting the carts themselves.

"We've sold several thousand carts, total; a few hundred a month," Martin said. Cart Guys' product line includes Fidelipac standbys such as the Model 300, Master Cart and Cobalt cartridges, in lengths from 10 seconds up to 7.5 minutes.

### Used machines

Next up for the Cart Guys: using their newfound expertise to take on the backlog of old cart machines still sitting in storage at stations around the world.

"We're starting a line of used cart machines which will be restored totally up to factory specs," Martin said. "We're also going to start a cart-rewinding service. We can totally rebuild a cart so it's good as new — new tape, new bearings."

The Martins also are taking cart machines for service, not to mention giving out plenty of advice to cart owners.

Jim Martin knows he stepped into a business that's long past its heyday, but he believes there's still plenty of business left for the Cart Guys.

"We're expecting that things will continue (at this pace) for at least five years," he said. "The message we're getting from some people is that they'll never go to computers, their stations are so small and they have so many carts on hand."

He also expects at least some business from the big guys.

"A lot of large-market stations still keep carts around as backup," he said.

Even the newest players on the

See CART GUYS, page 12 ▶

*Our address has changed*

*...our commitment is the same*



FM 30



FM 100



FM 250



FM 500

In keeping with an illustrious legacy, Crown Broadcast has begun adding a new chapter to the rich history of the Crown name. To meet the needs of broadcasters worldwide, Crown Broadcast has taken a proactive approach in researching and developing new technology.

We are committed to ushering in the Twenty-First Century with a range of technically innovative products designed to anticipate

the changing dynamics of world broadcasting, while keeping the heritage of rugged reliability that is Crown.

In the coming months, visit our website to see new ideas, new products, and new directions. Crown Broadcast is committed to keeping your investment paying off year after year.

Visit us at

[www.crownbroadcast.com](http://www.crownbroadcast.com)

*Look for new Crown Broadcast products and ideas in booth # 2663 at NAB*

Current Crown transmitter customers: Register your serial number and installation date at NAB. You will be entered in daily drawings for free transmitter upgrades, and the oldest operating Crown transmitter can win a special prize.

**crown**  
broadcast

Crown Broadcast  
25166 Leer Drive  
Elkhart, IN 46514-5425  
219-262-8900

A division of  
International Radio & Electronics Corp.

**ONLY AT BROADCAST SOFTWARE INTERNATIONAL.**

**MP3  
is not a  
professional  
audio format  
WRONG!**

*Broadcast Software International is the exclusive distributor for the new ASI 4344 and the ASI 4346 from AudioScience. Two cards that give you the power and freedom of MP3. Slow or stuttering sound is a thing of the past since the audio is processed on the card and not your PC's CPU. If you have been eager to ride the MP3 wave but didn't want to compromise audio quality, now you can have professional sound with the flexibility of MP3.*

*The world's first professional MP3 audio cards are capable of four simultaneous MP3 playbacks on a single audio card. Now you can have the transportability of the universally popular MP3 format combined with professional fidelity, balanced audio, and I/O interface.*

*No hassle. No software CODEC. Just professional quality sound. Call 888-BSIUSA1 or visit our website for more details.*



**www.bsiusa.com**  
**info@bsiusa.com**

**888-bsiusa1**  
**541-338-8588**

**Broadcast Software International**



## BUSINESS DIGEST

## BSI, BSW Strike Distribution Deal

**EUGENE, Ore.** U.S. radio managers who want to buy BSI software in the future will call the company's new exclusive distributor, BSW.

Broadcast Software International, a subsidiary of Cumulus Media, has contracted with Broadcast Supply Worldwide to be the sole outside domestic distributor of BSI software products, which include the WaveStation digital automation, WaveCart digital cart machine, Stinger audio player and Speedy CD-to-PC ripping.

Not long ago, BSI was selling its wares through approximately 20 U.S. distributors, but has gradually reduced the size of that dealer force. In choosing BSW, it discontinued arrangements with four

remaining U.S. dealers, according to President Ron Burley. BSI's international dealer relationships were not affected.

"BSW has a fantastic reputation in the industry," Burley said. "What we want to do is have a distributor that not only sells the products but is knowledgeable about them and how they interface to other products."

The factory will continue to offer products for sale direct to customers, but does not offer credit terms.

"We're cash-and-carry. BSW also has a very strong marketing presence. In our previous relationship with small distributors, they didn't really have a marketing presence," Burley said, adding that BSW also has the capability to "bundle" products.

With a dealer that can focus on the broadcast market, Burley said, BSI can also expand into other areas like consumer audio, sound reinforcement and background business audio markets.

Several automation suppliers have changed teams

in recent months. Enco Systems is now selling direct in the United States. Harris Corp., which had been selling Enco, announced an exclusive distribution deal with Computer Concepts, which itself is now part of Scott Studios.

The new relationship with BSI was suggested by BSW, which Burley found a bit ironic. He recalled presenting an early version of WaveStation to the BSW sales team in 1994, along with his co-developer Frank Klekner.

"They pretty much handed me my head on a platter, they just ripped it apart," he said. "I had to be very humble. They said, 'It needs to do this, and do this.'"

Even though BSW declined to represent the line at the time, Burley said, the dealer's commentary "helped us build a product that wasn't just a sequencer or a jukebox."

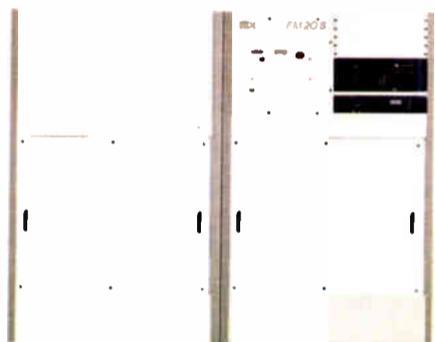
"It's great poetry. Six years ago we chose them; now they choose us."

— Paul J. McLane



FM-10S

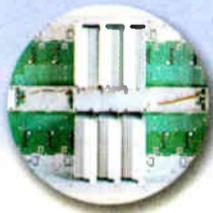
**Our FM-10S is cool but...**



FM-20S

**our FM-20S is way cool!**

### HOT-PLUGGABLE IPA/PAs



Go ahead and mess with it. PA modules can be removed while on the air without damaging the module or perceptible carrier interruption.

### MAXIMUM Power Control



Regardless of AC line voltage, RF drive level, or antennae loads as poor as 3 to 1 VSWR, our sophisticated proportional feedback system will keep you on the air.

### REDUNDANT Power Supplies



Four standard modular PA power supplies, (a fifth is optional) will keep you on the air, as long as one supply is online.

Among all solid state FM transmitters, our new FM-20S is the most innovative, most reliable, and easiest to service. From 10 to 20kW, the new FM-10S and 20S guarantee big performance at a great price. And they're engineered

to the same exacting standards that every Broadcast Electronics transmitter must meet. We wouldn't deliver anything less.

**Only one company delivers radio like this...**



Call **888-232-3268** for a complete list of specs and features, or see us at NAB 2001, Booth R2505 in Las Vegas.

[www.bdcast.com](http://www.bdcast.com)

©2001 Broadcast Electronics, Inc. The BE emblem, FX-50 and Predator are registered trademarks of Broadcast Electronics, Inc. - 301BER/RWD

## Cart Guys

► Continued from page 10

radio scene are turning to the Cart Guys: Martin says he recently took an order for 18 cart machines from satellite broadcaster XM Satellite Radio.

On the other end of the technology spectrum, Martin says he's depending on international business to keep business going for years to come.

"The word that we're getting back from the third world is that they're never going to go to computers" for on-air audio, he said.

Call them an anachronism; but Martin believes the Cart Guys are here to stay.

"Our plan is to stick with this," he said, "and to build it to a point where our family is kept in bread and milk."

The Cart Guys can be reached at (520) 327-4466 or on the Web at [www.cartguys.com](http://www.cartguys.com)

Scott Fybush will never forget dropping a whole stack of news carts in the hallway of Boston's WBZ(AM) radio with just a few seconds to air. 🌐

### The Last Audi-Cords

In researching Scott Fybush's story about the Cart Guys, we contacted the company that makes Audi-Cord cart machines to confirm that they were, in fact, still being manufactured.

"We have enough (parts) to build five more," said Steve Sabran, vice president of sales and marketing for ACC Electronix in Normal, Ill. When those are built and sold, he said, the company will make no more, thus bringing to an end one of the few remaining cart machine assembly lines.

ACC Electronix is owned by Andy Rector. In the early 1990s, Sabran said, the company moved its business focus to electronic contract manufacturing — assembling printed circuit boards for industrial clients.

The firm still services the cart machines it sold. Reach ACC at (309) 888-9990.

Innovation begins with a fresh look.  
How are we doing so far?

*Telos*

[www.telos-systems.com/smartsurface](http://www.telos-systems.com/smartsurface)



SmartSurface, Telos and the Telos logo are registered trademarks of TLS Corporation. Copyright 2001, TLS Corp.

World Radio History

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



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

"When faced with moving seven major radio stations into one consolidated facility, we suddenly realized the limitations of using a conventional analog approach," says Jan Chadwell, AM Chief Engineer, Clear Channel Denver. "KLOTZ provided the solution with their digital consoles and VADIS platform. We were able to consolidate the majority of the sources and destinations in one large master rack room."

"KLOTZ allowed us to achieve in eight months what would have taken us two years had we gone analog. Performance has been beyond anything we could have anticipated. The flexibility, ease of use, low maintenance, and great factory support have reinforced our decision. Thank you KLOTZ!"

World Radio History

 **KLOTZ**  

---

**DIGITAL**



5875 Peachtree Industrial Blvd.  
Suite 340  
Norcross, GA 30092  
Phone: 678-966-9900  
Fax: 678-966-9903  
[www.klotzdigital.com](http://www.klotzdigital.com)

# Splash FM Reaches Out in Islands

**Troy Conner**

*The author is the owner of Tower Maintenance Specialists. He writes about tower climbing for Radio World in his guise as our "Man of Steel."*

Over the last several years, I have corresponded by telephone with a gentleman in Spanish Wells, Bahamas. Spanish

Wells is a small community located on tiny St. George's Cay. It is a small "working" island just off the north tip of Eleuthera and about 50 miles from the city of Nassau.

Chris Forsythe, his wife Jane and son Timmy have created what they call the Bahamas' first truly independent radio station, "Splash 89.9 FM."

After battling for a number of years

with BaTelCo, the Bahamas Telephone Company, which is the equivalent of our FCC, the Forsythes obtained a license for a 3 kW FM station.

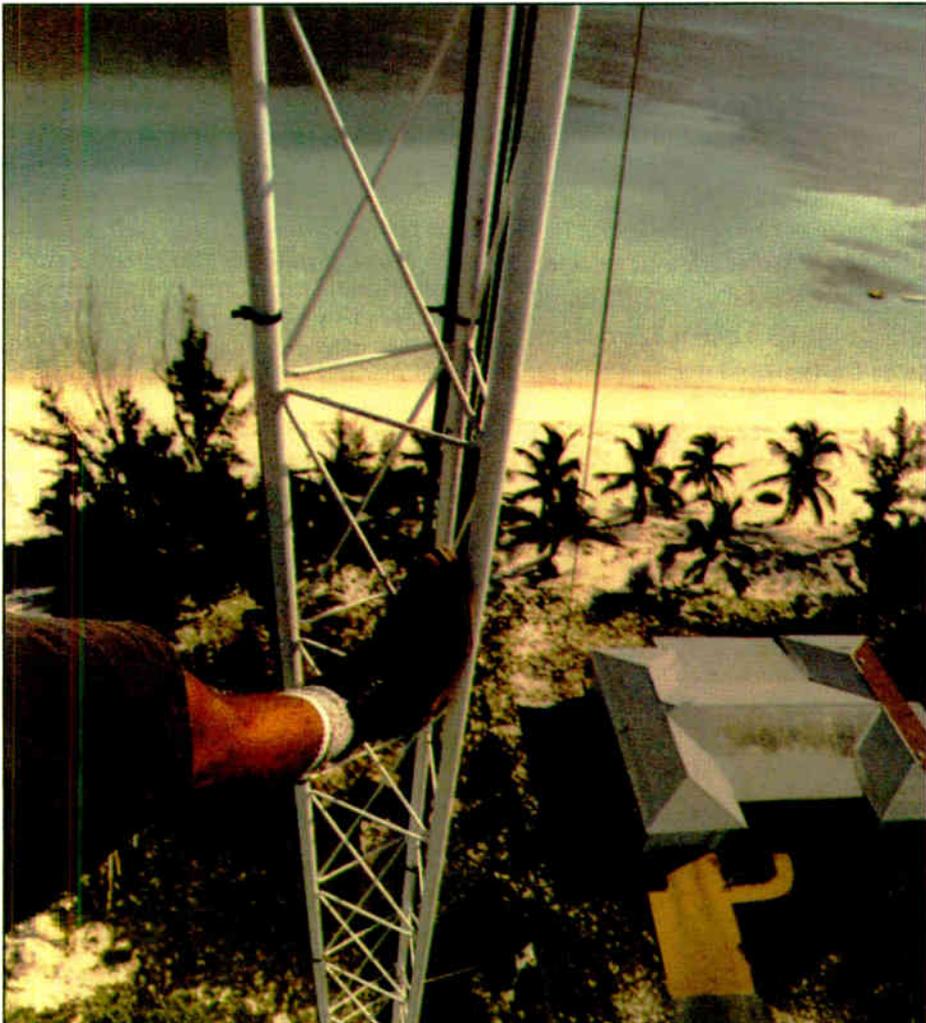
This proved to be only the beginning, as anyone who has been through this process can attest. Being somewhat isolated in the Bahamas meant that every single item needed to build the station had to be air-freighted or containerized in Miami for shipping by sea. Obviously, this added to the expense of the endeavor. Indeed, phone calls alone amounted to several thousand dollars.

### CD automation

Eventually, Mr. Forsythe's remarkable patience, plain old hard work and creative solutions to the many stumbling blocks along the way paid off. In order to really appreciate what he and his family have created, a visit to the station would be required.

The studio is not only immaculate but well-designed. In fact it looks better than many of the high-dollar station studios I visit stateside. By mixing professional, semi-pro and consumer equipment, Chris was able to create a nearly automated station affordably.

Recordable CD technology has enabled Splash FM to pre-mix days of music and commercials to be played sequentially by several linked consumer 300-disc changers. The other interesting aspect of the station is its format—more specifically its lack thereof. The music is



The Man of Steel suffering a tough day on the tower. Actually, being July, it was rather warm, but the scenery more than compensated for the temperature. As you can see, the ocean is but a stone's throw from the base of the tower.

a wonderful mix of rock and roll, pop, soca, reggae, country, oldies and hip-hop from the 1960s, '70s, '80s and '90s. I really enjoyed their casual mix of music.

In addition to building, equipping and wiring the studio, the Forsythes erected their own 125-foot tower, installed the initial antennas and hooked up the transmitter. While this sounds remarkable, it really just demonstrates the natural self-sufficiency shown by many native Bahamians.

When the station finally went on the air, informal propagation testing was begun. The community of Spanish Wells was covered easily, even using just the exciter. The island of Eleuthera presents more of a coverage challenge. Eleuthera is a long, thin, awkwardly shaped island that looks a bit like a backwards C. It is nearly 100 miles long by road, but

See STEEL, page 16 ▶

**RADIO FREQUENCY SYSTEMS**  
**RFS Broadcast**



### Total Systems Solutions for FM Radio



- Complete RF Systems for FM Radio
- Broadband or Single channel
- Feeders, rigid line, switching units, pressurization equipment
- Range of combiners from Starpoint through to Balanced
- Horizontal, vertical and circularly polarized applications

**RFS Broadcast**  
59 Dodge Ave  
North Haven CT, 06473

tel +1 203 239 3311  
fax +1 203 239 9260  
info@rfsbroadcast.com

## AM Improvement

**Model 235 - \$1800**

**MAKING 'GREAT-SOUNDING AM' POSSIBLE ONCE AGAIN**

A full-function, mono-AM processor featuring "gain-riding" AGC, 3-band compression and variable EQ, plus tight asymmetrical peak control combining fast limiting with variable-depth clipping. On-spec pre-emphasis and overshoot-compensated cutoff filtering assure strict NRSC compliance.

Front-panel controls and indicators make local operation a snap, and the built-in serial port with supplied software enables easy computer or modem remote control.

Contact your preferred supplier for a no-obligation demo at your station.

**Inovonics**  
1305 Fair Ave. • Santa Cruz, CA 95060  
TEL: (831) 458-0552 • FAX: (831) 458-0554  
www.inovon.com • e-mail: info@inovon.com

# Steel



► Continued from page 15 because of its strange shape, the effective length of the island is only about 75 miles tip to tip, as the crow flies.

## Freedom

Eleuthera took its name from the Eleutherian Adventurers, who fled religious persecution in Bermuda and England and were shipwrecked there in 1648 or 1649. The word itself invokes the Greek for "freedom."

Interestingly, that makes Eleuthera the oldest settlement in the Bahamas, and in fact, the first republic in the New World.

While Nassau was the main base of the pirates who preyed on the Caribbean,

the settlement of Spanish Wells became something of a retirement home for many of them when offered the choice of amnesty or the hangman.

After talking at length with the antenna experts in this country, Chris soon discovered that sending an FM signal 50 or more miles on 1,000 watts with his current transmitter was simply and theoretically impossible. Or was it?

I had been talking with Chris for about a year at this point. Some of what he was telling me that he was hearing made sense to me, and some of it I had to wonder about.

The one factor that most all of the RF engineers he spoke with failed to take into account was his location on an island less than 10 feet above sea level. Having grown up on and around boats, I knew that it was always possible to get more



The cool little Daewoo mobile studio has sliding doors on both sides and a hatchback. Using an ingenious antenna support pole and RPU system, Splash FM can do remotes from all over Spanish Wells.

**AudioTX Communicator Software ISDN and IP Network audio codec for Windows 98/NT/2000** ● Uses Standard Sound and ISDN cards  
 ● Connects to all other MPEG 2, MPEG 3 and G.722 codecs  
 ● Ideal for Studio or On-the-road use in a Laptop  
**Key Lock Version \$725, Dongle Version \$790**

# ISDN &

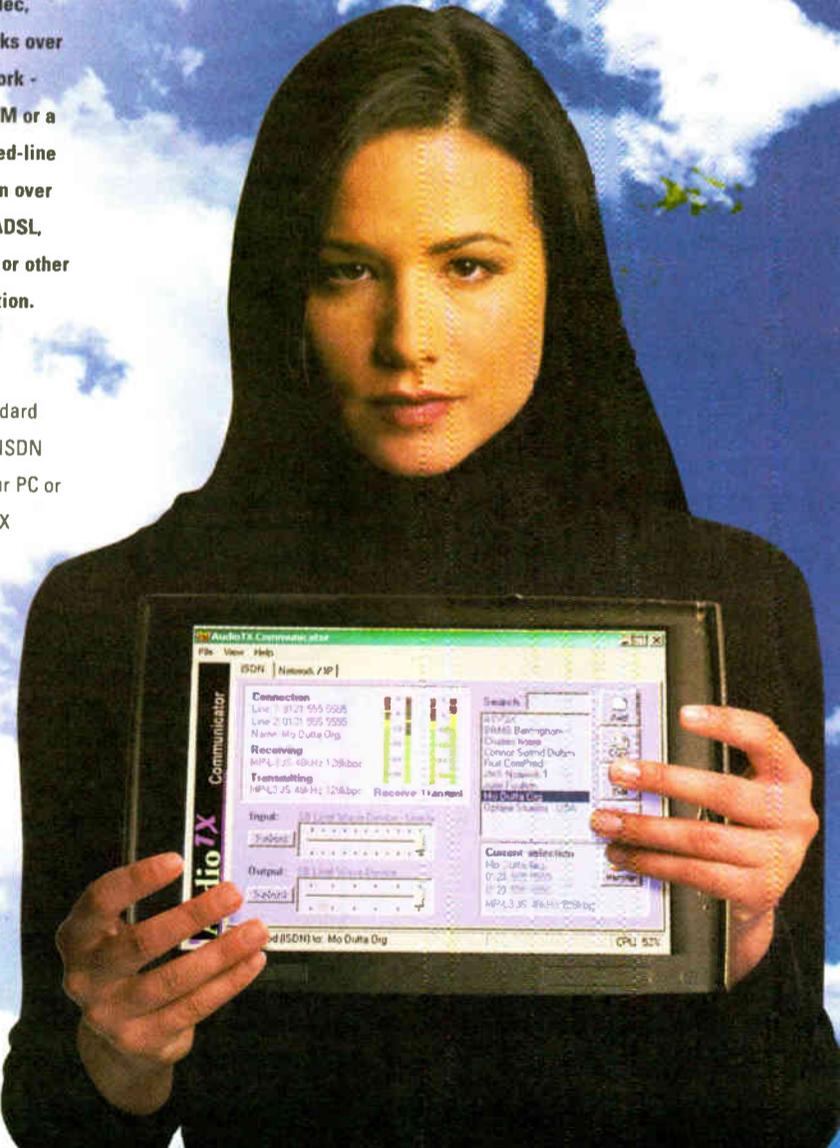
# IP PC AUDIO CODEC

AudioTX Communicator is big on audio quality, reliability and ease of use - but low on price.

As an ISDN codec, Communicator offers MPEG 2, MPEG 3 and G.722 coding plus G.711 telephony and connects in mono or stereo to all other MPEG 2, MPEG 3 and G.722 codecs for remote broadcast, STL, voice-over work, reporting and news-gathering.

As an IP-based codec, Communicator works over any IP-based network - from Ethernet to ATM or a Satellite link, Leased-line connections or even over the internet using ADSL, DSL, Cable Modem or other high speed connection.

All you need to get connected is a standard Sound card and an ISDN card installed in your PC or Laptop, plus AudioTX Communicator.



radio range over salt water than dry dirt. A couple of the engineers he consulted mentioned using stacked and phased arrays of yagis to increase gain effectively and indeed dramatically. It seemed to me that this was the logical approach to the dilemma of how to get more bang for his transmitter buck. Using increased gain, good grounding (literally in sea water) and a flat sea with no obstructions to scatter the wave front, I thought we could push his signal further than the RF naysayers predicted.

Chris contracted me to come down and install his new antenna system. I flew down from Atlanta by way of Miami on July 4.

## Welcome back

Having been both to Eleuthera and Spanish Wells nearly 20 years ago, I was struck by déjà vu as soon as I boarded the water taxi between the two islands. The ocean around the Bahamas is always stunning, but the waters near Spanish Wells are particularly clear and beautiful because the island is so far out into the Atlantic.

I must mention at this point that I really hate suffering through jobs like this. In a day and a half, we removed the two existing six-element yagis. Then we installed two new five-element yagis for the Nassau azimuth and a matched pair pointed down Eleuthera. Next I spent the remainder of the afternoon installing the power divider and sealing connectors on all of the jumpers.

Of course, at this point one of the two mated transmitters decided to take a dive. So we pulled the unit, opened it up and found a broken solder joint. Patting ourselves on the back, we reinstalled the heavy little bugger, only to discover it was still acting up.

After numerous expensive phone calls and faxing of schematics, we arrived at the conclusion that we lacked the one part needed to repair the unit. Meanwhile, Splash FM limped along at between 350 and 450 watts. No matter what we did, the other machine would not stabilize.

More phone calls, and we learned that indeed there might be some problem with a single machine and its inability to achieve a stable output unless it was slaved to the now-broken machine.

Given the low power we were putting out, we were astounded to discover how well the new phased antenna array worked. It penetrated nearly halfway down Eleuthera. With several solid reception reports from Governors Harbour, we

**Audio TX Communicator**

Download a FREE, fully working trial version today.

[www.musicamusa.com](http://www.musicamusa.com)

Tel: 732-739-5600

Email: [sales@musicamusa.com](mailto:sales@musicamusa.com)

Distributed exclusively in the Western Hemisphere by MUSICAM USA

See STEEL, page 18 ►



## Standard equipment on every model.

If any digital audio delivery system could have a "trust" button, DAD<sub>PR032</sub> is it. Live assist or automation, single radio station or regional cluster, you can trust DAD<sub>PR032</sub> to deliver 24/7/365. Put your mind at ease, choose DAD<sub>PR032</sub>—from ENCO Systems.

Smarter. Faster. Better.



800. ENCO.SYS

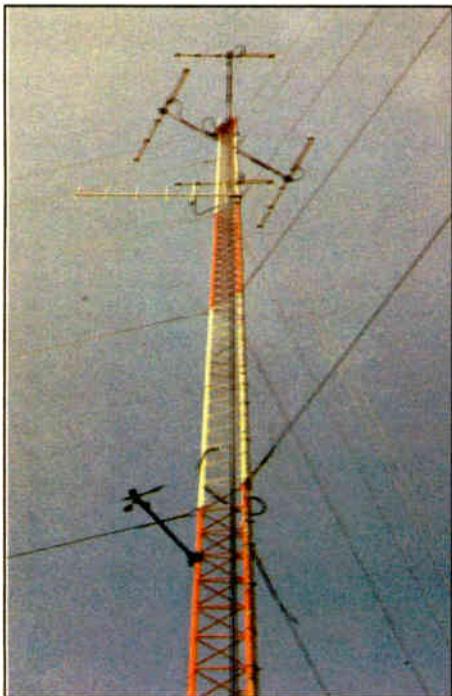
[www.enco.com](http://www.enco.com)

# Steel



Continued from page 16  
determined we were getting nearly 40 miles on less than 500 watts.

In fact, we were getting just about as far, with less than half the power, as the system did with the original pair of antennas (which were pointed at two different azimuths) running at 1 kW. The new setup consisted of a matched and phased pair of vertically polarized five-element yagi antennas pointed down Eleuthera and a second, identical phased



This is a view up the 125-foot tower of the interim four-antenna array. Also visible, and lower on the tower, is an anemometer (wind meter) and a back-up yagi.

pair pointed southwest towards the town of Nassau, on New Providence Island.

After running for a while, and making some calls to Nassau, we determined we even had spotty coverage on New Providence Island, nearly 50 miles away! Unfortunately, it was time for me to head on home, so I boarded the little Continental puddle jumper for the quick run to Miami and then my Delta connection to Atlanta.

Sometimes the old joke is true; it doesn't matter if you are bound for heaven or hell, in the south you'll pass through the Atlanta airport.

After some haggling with the sales rep

the manufacturer, Splash FM got its second transmitter back from repairs and is finally able to run a solid 1,000 watts. This seemed to improve stereo reception in the existing coverage areas, which were remarkable already, but did little actually to increase penetration.

Not given to standing still, Chris Forsythe wondered what they could do to improve the solidity of the signal in Nassau, almost exactly 50 miles southwest of the station in Spanish Wells. Reaching the Nassau market is critical if Splash FM is to be truly successful.

There were isolated reports, but reception was marginal at best. After more expensive overseas phone consultations with a sympathetic engineer at the Scala division of Kathrein, Chris concluded that another pair of antennas would help.

The existing four-antenna system offered a power gain of 8.3 and a maximum array gain of 9.2 dB. The system that Scala proposed using two more five-element yagis would push the power gain to 14.5 and the maximum array gain to 11.6 dB.

### Woe is me ...

So it came to be that I again had to visit the Bahamas. Oh, woe is me. We scheduled my visit for two days after Thanksgiving.

Once again I taxied to Atlanta, Delta'd to Miami and not-so-promptly had my connecting flight to Eleuthera canceled. This was right in the middle of all of that election recount business, making Miami even more hectic than usual. So after spending the night at the Hotel Mia in the Miami airport, I departed for the Bahamas the following morning.

Given the delay, I felt like I was on island time before I had even left the States. Since I had been down last, Chris had been busy. At my recommendation, he had designed, fabricated and installed two torque arms equipped with six guy wires apiece. The torque arms made a huge difference in the torsional rigidity of the structure. Gone was the twisting shimmy many small, traditionally guyed structures develop when being climbed.

Even with my late arrival, that afternoon we were able to relocate two antennas and the power divider, install two new antennas and re-plumb the system with new coax jumpers, and still enjoy an adult beverage before dinner.

What we ended up with is a phased pair of Scala F six-element vertically polarized yagis pointed southeast at 140 degrees. This pair of antennas is oriented

basically down the length of Eleuthera. The rest of the array is made of two stacked vertically polarized yagi pairs directed southwest towards New Providence Island (Nassau) at an azimuth of 225 degrees.

Power is divided 50 percent to the 140-degree pair and 50 percent to the four-antenna 225-degree array. However, the additional gain provided by two more antennas gives the 225-degree array a bit more than 2 dB increase in effective radiated power towards Nassau, at the expense of an equal loss toward Eleuthera.

man's vacation in a bit of tropical paradise. When I last spoke to Chris, he was negotiating with two landowners in Nassau and the civil aviation authority for the translators.

In addition, Splash FM hopes to purchase a Henry tube transmitter of higher wattage and relegate the troublesome solid-state units to backup status.

I should mention that Chris and his family built their entire radio station using a couple of dog-eared copies of Radio World given to him by a retired station owner living nearby in the Bahamas. Those few issues provided him



A view from the tower early one morning looking literally across the entire island. The ocean is only about 200 feet from the base of the tower behind.

Alas, Nassau still suffers from marginal coverage at best. It is solid enough now to support a translator, however, so that is the next project.

Chris anticipates that the license application for a pair of translators, which has been filed, should not take too long to be granted. Once licensed, the actual equipment can be installed quickly. Hopefully, by mid-spring I'll get another working-

with a wealth of sources from which he developed their station.

You can learn more about Splash FM at [www.splashfmradio.com](http://www.splashfmradio.com) or send e-mail to the station at [splash899@batelnet.ba](mailto:splash899@batelnet.ba)

William Troy Conner, M.S.I.T., owns Tower Maintenance Specialists in Brasstown, N.C. Reach him at (828) 837-3526 or via fax to (828) 837-1015.

**Rapidly Transportable  
Mobile AM All-Band  
Antenna Systems**

**\*NEW PRODUCT\***



**Model STM-AMAB-5K  
5 kW All-Band Antenna Tuning  
Unit And Associated  
Telescopic Mast**

**Your No. 1 Source For AM Antenna Systems  
And Accessories In The USA And Worldwide**



**We Design  
And Build For  
DRM Or IBOC  
Digital Audio  
Broadcasting**

**Kintronic Labs, Inc**

Phone: (423) 878-3141

Fax: (423) 878-4224

**Product Brochures Available At [www.kintronic.com](http://www.kintronic.com)**

**High-Powered AM/Medium  
Wave Weatherproof  
Dummy Loads**

**\*NEW PRODUCT\***



**Model DL-300WP-4116EIA  
Rated for 450kW Continuous**

**Everything**  
you've ever wanted.

**Everything**  
you've ever needed.

**Everything**  
you'd expect from PR&E's legacy.

**And...it even looks better  
than Jennifer Lopez.**

**BMX** *digital*

*next level solutions*

SERVICE

SYSTEMS

AUTOMATION

TRANSMISSION

**HARRIS**

THE  
PERFECT  
SOUND

OPTIMOD-FM 8400

*By...*

**orban**

orban 1525 Alvarado Street, San Leandro, CA 94577 USA • 510.351.3500 • Visit our Web Site at [www.orban.com](http://www.orban.com)



Radio World, April 25, 2001

# Keep the Console Bulbs Burning

John Bisset

★ ★ ★

Many engineers are all too familiar with the task of changing switch lamps on consoles.

Over the years, we've seen improvements in console designs, the most recent being the use of LED replacement lamps. In one of the discussion threads on Dave Biondi's *radio-tech@broadcast.net*, several engineers

Jerry Mathis of LifeTalk Radio came up with a novel method of removing the wedge-base lamps used on the module on/off switches in Arrakis 12000 audio consoles.

Although the on/off switch bulbs aren't too difficult to remove, the lamps on the TRR1 module are another story.

Jerry found a piece of cable jacket from a large-gauge microphone cable. The cable brand and stock number are unimportant. The inside diameter of the jacket will fit snugly over the lamp. Once placed over the lamp, the snug fit permits easy removal of the lamp.

★ ★ ★

Bob Hughes and I have chased each other around stations here in Washington for too many years. Bob now works at the Pentagon, handling audio and video requirements for the Joint Chiefs of Staff. He's got his share of illuminated switches, which require periodic bulb replacement.

We've all attempted to extract bulbs using a pair of long-nose pliers. The task is risky at best, because you usually wind up breaking the bulb, shorting something and having to clean up the mess to boot!

Bob's solution can be seen in Figure 1. He outfitted a pair of hemostats (Kelly clamps) with two pieces of heat-shrink tubing. This modification provided two beneficial effects. First, the adhesion was increased. Then, the shrink tube offered a cushion on the "jaws" of the clamps, making them less likely to break the bulb.

★ ★ ★

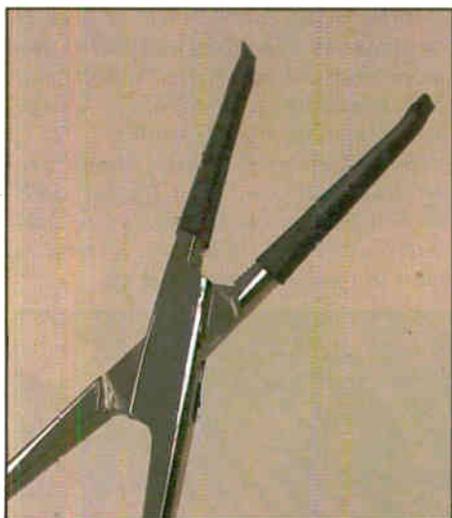


Fig. 1: Use heat shrink to cover the jaws of pliers or clamps and create a handy bulb extraction tool.

asked for information on these LED replacements. Milos Nemcik at KCPR - Cal Poly Radio suggested checking out the Web site [www.ledtronics.com](http://www.ledtronics.com)

The only drawback is cost; LED replacements haven't quite gotten down to the price of incandescent lamps, but the cost is dropping.

As you select a replacement bulb, note the polarity of the circuit. The LEDs come in two polarities for the most common bulb replacements.

It won't be long before AM engineers will be seeing sights like those of Figures 2 and 3 inside their ATUs/ACUs (antenna tuning units/antenna coupling units).

network, Ralph recommends 5/16-inch refrigeration copper tubing for your connections — but the tubing needs to be sized according to power. Needless to say, the tubing diameter is much larger in 25 kW and 50 kW networks.

Corrosion where components join together is a common problem. To reduce corrosion, Ralph recommends



Fig. 2: Inside an ATU, lightning has damaged a sampling toroid.

Direct strikes and Delta sampling toroids don't always mix, as you can see in Figure 2.

In addition, the physical shock of the strike literally can shake a coil off its mounts. Figure 3, on page 22, shows the cracked insulators as a result of the strike.

Ralph Winquist, P.E., suggests leaving a burning light bulb inside your coupling unit box. In cooler weather, the light keeps a more consistent temperature. In damp weather, the bulb reduces humidity.

If you are reworking your coupling

wiping the joints with De-Ox manufactured by Ilasco, available through your electrical wholesaler.

★ ★ ★

One of the most frustrating problems for an engineer starting a new job or working at a newly purchased station is AC wiring. A variety of problems result from improper wiring.

As you do your due diligence, grab one of those AC polarity indicator plugs, available at most hardware or electric

See WORKBENCH, page 22 ▶

## NEW! DigiStor II is here!

An all new digital audio recorder with dozens of uses!

DigiStor II is ideal for network news delay, traffic reports, translator IDs, weather reports, call-in telephone info lines, message-on-hold, news & actuality lines, travelers information radio, sound effects....

**DigiStor II has all the features of the "original" DigiStor and a lot more!**

**MORE MESSAGES...**8 messages with random access  
**MORE TIME...**8 or 16 minute recording capacity  
**MORE AUDIO...**6.5kHz B/W, 60dB S/N, 1% Dist.  
**MORE USES...**with auto-answer telco coupler



[www.henryeng.com](http://www.henryeng.com)  
 Tel: 626.355.3656  
 Fax: 626.355.0077



**We Build Solutions**

# SBE News

► Continued from page 8  
repeater or paging system.

The goal of the EAS committees should be to establish communications systems that will deliver, via unattended electronic means, each of the following varieties of messages to each media outlet *at the same time*. (What they do with the message is a subject for another time.)

*National messages* from your region's PEP Station need to be distributed. Just how the messages get from the PEPs to the LPs in each market is left up to the states. Thankfully, National Public Radio is getting involved in this process, and, as a result, connecting this "national circuit" may be as easy as contacting your local NPR station and working out the details.

It's critical that *everyone* be able to relay the EANs. Be sure that your EAS box is *in the program line*. This is the only way to guarantee that your station will be fully compliant with the requirement that EANs are to be aired immediately. Having your EAS decoder appear on an audio console input or router somewhere will not cut it. The feds need the ability to break in, even if the station is unattended or the person in charge is "down the hall."

Now let's turn to the three types of messages that will comprise 99 percent of EAS activity:

*NOAA messages* arrive at your facility fully encoded via NOAA Weather Radio. Every station should be connected to NOAA as it's likely that 90 percent of EAS messages will come from them.

If your station operates unattended, you will want to program your EAS box to relay weather warnings so that they will be automatically broadcast. If you operate attended, you will likely want to have your station's voices relay the information. All attended stations should have an electronic reader-board sign connected to their EAS box as this makes EAS messages very user friendly.

*State messages*, or messages originating in the state EOC, should be distributed via a State Relay Network (SRN) so that they can be received by all of the electronic media at the same time, statewide.

This requires some serious effort and

hardware. Some states have utilized existing state microwave or police systems while others have developed their own using broadcast station subcarriers or other systems. The SRN is a great vehicle for relaying the national level

## The Amber program uses EAS to spread news of missing children.

EAS messages. If it's used for this purpose, it must be a required monitoring assignment. Every station should monitor the SRN.

*Local messages* from local governmental entities should be distributed to the electronic media via a Local Relay Network (LRN) so that everyone gets the message at the same time. Local EAS messages should be encoded at their source, just like those from NOAA.

Each station or cable system should then connect the LRN to their EAS box. Here in Washington state, LRNs are called for in the state plan and utilize a variety of methods, Part 74 facilities, Separate Audio Program (SAP) channels and existing government and private radio systems.

It's critical that the EAS encoder be located at a 24/7 manned location. 911 Dispatch Centers are ideal, Emergency Management Offices that are only activated after an emergency event are not ideal, for the simple reason that for EAS to be effective, the message must be delivered immediately.

### EAS 101

Training is vital to make sure EAS will work well in time of need. Training must take place on the source end as well as on the broadcast and cable side.

Each committee should have one or two people who fully understand how EAS works available to go out and teach "EAS 101" on a frequent basis. My commitment to this effort has led me to travel all over this state, as well as to several others to conduct EAS workshops.

The future of EAS is bright, thankfully, because we have a system whose foundation permits us to expand and improve its performance. We have a full plate this year as we look forward to the FCC's release of a further rule making for EAS. This will enable many changes and improvements to be made.

Already around the country the Amber program is becoming popular, giving EAS another mission. Amber is a program with roots in the Dallas/Ft. Worth area of Texas, named after a child who was abducted. Its goal is to use EAS to reach broadcast and cable systems rapidly with news of a missing or abducted child.

The system is only used in cases where law enforcement feels the public can be of help if informed very quickly. Amber is catching on, supported now by a number of cities and states. At present, the Amber use of EAS is via codes that

are not designed for this type of use. Amber proponents are likely to propose to the FCC an event code of their own.

Here in Washington state, we are pioneering some innovative and exciting cooperative activities involving NOAA Weather Radio.

Being connected is important, for it enables us to share and learn from each other. The SECC and SBE-EAS remainders enable us to all communicate in a way heretofore impossible. At NAB2001 this month, SBE is holding a two-hour session dedicated to EAS; and on May 10, I will be in Nebraska to conduct a statewide workshop. If you have a question or just want to share about EAS, drop me a note.

As you can tell, I am a believer.

*Clay Freinwald is employed by Entercom as a senior facilities engineer who works in Seattle. Reach him via e-mail to k7cr@wolffnet.com*

## Workbench

► Continued from page 21  
supply stores, and check the outlets.

Just as important is proper wiring of plugs connecting to equipment. Most manufacturers now use molded cords, but some pieces of equipment still require hand-wired plugs.

So for your "clip-and-save" file, here's the scoop on plug wiring. Present-day plugs have silver, brass and green screws on the plug. The

white AC wire is connected to the silver screw. The black (or hot) wire is connected to the brass screw, and the green ground wire is attached to the green "ground" screw.

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

*Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com*



Fig. 3: Check for cracked or broken insulators supporting coils and other components in an ATU.



## A 1 kW STICK-ON®...?

The question is frequently asked...  
...but Not Yet.

However, over 200 other exciting products from RDL® are sure to fit many of the other needs in your facility. You know us by our slogan, "SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™".

For your full-line product listing, including 13 NEW PRODUCTS for 2001, call or write:

(800) 281-2683 • (805) 684-5415  
email: sales@rdlnet.com • website: www.rdlnet.com



# GM Journal

Radio World

Resource for Business, Programming & Sales

April 25, 2001

## Chicago Radio in State of Flux

*Two Giants Boss Chicago Radio, as the Market Sells, Moves and Flips Its 89 Stations With Abandon*

by Tim Jones

**Since the Telecom Act passed, Chicago radio revenues have increased more than 60 percent.**

**W**hen it comes to radio, the city of big shoulders has always been exceptionally well-endowed.

As many markets were losing their classical radio stations, Chicago offered two. The city also had two 50,000-watt clear-channel all-news stations and three sports-talk stations. (Some might call this a mixed blessing, given the recent performance of its pro sports teams.)

Things have changed in Chicago, the third-largest Arbitron market. It now has one classical station. Last August, one of the all-news stations disappeared. The three all-sports stations remain, but some fans bemoan that it is difficult to distinguish among them.

That's the increasingly homogenous nature of Chicago radio, which lost some of its quirky identity in the past year through consolidation forces that have helped redefine radio across the nation.

### 'Good mix'

"Deregulation has certainly been good for the business of radio. Obviously with fewer owners there is the ability to make higher profits," said Mike Elder, operations director at ABC's WLS(AM), which earned a 4.5 share of the Winter Arbitron ratings, among listeners 12 and older, Monday to Sunday, 6 a.m. to midnight. (All references to Arbitron Winter ratings in this article refer to this demographic, except where noted.)

"From the listeners' stand-

point, I don't know."

Elder said he has not taken one telephone call from a listener complaining about the corporate control of radio or the loss of competition in the marketplace. He thinks Chicago has maintained a good mix of local and syndicated programming, such as Rush Limbaugh and Dr. Laura Schlessinger, two popular draws on WLS.

"But it's really a different marketplace now," Elder said, adding that the loss of localism brought about by companies trying to maximize profits "has hurt to some degree."

That is a belief held by many in the industry, most recently expressed by John Gehron, co-chief operating officer of Infinity.

At a country music conference in Nashville in March, Gehron said he heard "a sameness from station to station. I hear

See CHICAGO, page 24 ▶

## Diga System

- Production
- Scheduling
- Archiving
- Web Publishing

**Master Your Station's Content Needs**

6193 Finchingfield Rd Warrenton VA 20187 Tel 540.341.8550 Fax 540.341.8565

  
MANAGEMENT DATA  
MEDIA SYSTEMS INC  
mdata-us.com

# Chicago

► Continued from page 23  
wonderful production and I don't hear any personality."

To be sure, Chicago still has its home-grown favorites. Don and Roma Wade, a husband-and-wife team, host the morning drive-time gabfest on ABC news/talker WLS(AM). Steve Dahl holds court every afternoon at Infinity talk station WCKG(FM). Mancow Muller is morning drive-time anchor on Emmis' alternative WKQX(FM), as is Kevin Matthews on ABC's WZZN(FM). Tribune Co.'s news/talker WGN(AM) has the distinction of shunning syndicated show hosts.

The Chicago market also has changed in ways unrelated to deregulation. For one, English-language stations can no longer

simply carve the pie for themselves.

Ten years ago, Chicago had four Spanish-language stations; now there are seven. Two — Spanish Broadcasting System's WLEY(FM) and Hispanic Broadcasting Corp.'s WOJO(FM) — have cracked the top 15 stations as measured by ad revenue. WOJO earned \$14.3 million and WLEY collected \$12.1 million ad revenue dollars in 2000, according to BIAfn.

### Hispanic boom

Recent census figures show the Chicago area's Hispanic population soared 68 percent in the past decade, to more than 1.4 million. Chicago is the fifth-largest Hispanic market in the country, according to Arbitron, and the media market here has reflected that growth.

While the market's Spanish-language stations earned \$44.3 million in revenues

last year — a figure that lags far behind the proportional representation of the Chicago market's Hispanic population — station executives are convinced the new census numbers will present a compelling case for advertisers to spend more money at Hispanic radio stations.

"I gotta believe that after the census numbers are digested," said Mario Paez, general manager of WLEY(FM), "the numbers will go up."

If Hispanic's ad dollars were to reach parity with the Hispanic population in this market, those dollars would reflect a dou-



WBBM(FM)'s SummerBash 2000 featured fashion shows in addition to big-name musical talent that included Destiny's Child, R. Kelly, Sisqo and Enrique Iglesias.

bling of the advertising dollar over the current amount.

Thanks to deregulation, radio in Chicago has been in rapid transition from mom-and-pop operations to the corporate suite since the mid-1990s. Chicago, with 89 stations, provides a good example of how the business has changed to a battle among giants.

The two largest owners dominate the city: Clear Channel Communications and Infinity Broadcasting Corp.

Combined, these Goliaths earned \$304.3 million with their 14 stations, or almost 54 percent of the market's \$564.4 million ad revenue last year.

### Clearly urban

The nearest single competitor was Tribune Co., whose WGN(AM) collected \$38.5 million last year, according to BIAfn.

The big companies' consolidation strategy is paying ratings dividends. Clear Channel and Infinity placed six stations in the top 10 during the Winter Arbitron ratings period.

Clear Channel's urban WGCI(FM), with \$38.8 million in revenue, was the highest-rated station, with a 7.5 share. Clear Channel's smooth jazz WNUA(AM), with \$25.4 million, finished fourth with a 4.0 and

See CHICAGO, page 26 ►

# 25th Anniversary Silver Sweepstakes

**Enter to win one of 25 great prizes in Radio World's reader appreciation contest giveaway!**

*IMAS Publishing is celebrating 25 years of serving you and the radio broadcast industry. To mark this significant milestone, 25 of radio's leading equipment suppliers have teamed up with Radio World to express their appreciation. Throughout 2001, Radio World will conduct 25 random drawings. Prizes and winners will be announced in every issue of Radio World all year long.*

*To become eligible to win, you need to complete these three easy steps:*

- 1) Register online at our Web site [www.rwonline.com](http://www.rwonline.com)
- 2) Click the Silver Sweepstakes icon on our homepage
- 3) Fill out the electronic entry form — that's it, you're done!

*It's your chance to celebrate our Silver Anniversary with these fine Radio World supporters ...*

Contest Rules: To enter the drawing, simply register online at [www.rwonline.com/sweeps](http://www.rwonline.com/sweeps). 25 drawings will be held throughout the year. Contest ends December 19, 2001. One prize per winner. All contestants MUST reside in the United States and have a valid mailing address. Winners should receive prizes within 30 days of notification, however, actual delivery time may vary and is not guaranteed by IMAS Publishing. Federal, state and local tax laws may apply to prizes and are the sole responsibility of the winner.

## Chicago

Market rank: 3  
Market revenue rank: 3  
Number of FMs: 46  
Number of AMs: 43

Estimated Revenue (in \$ 000s):  
1996: 349,700  
1997: 388,600  
1998: 439,400  
1999: 534,800  
2000: 564,400  
2001: 603,900

Revenue Growth:  
'94 - '99: 11.4%  
'00 - '04: 7.2% (proj.)

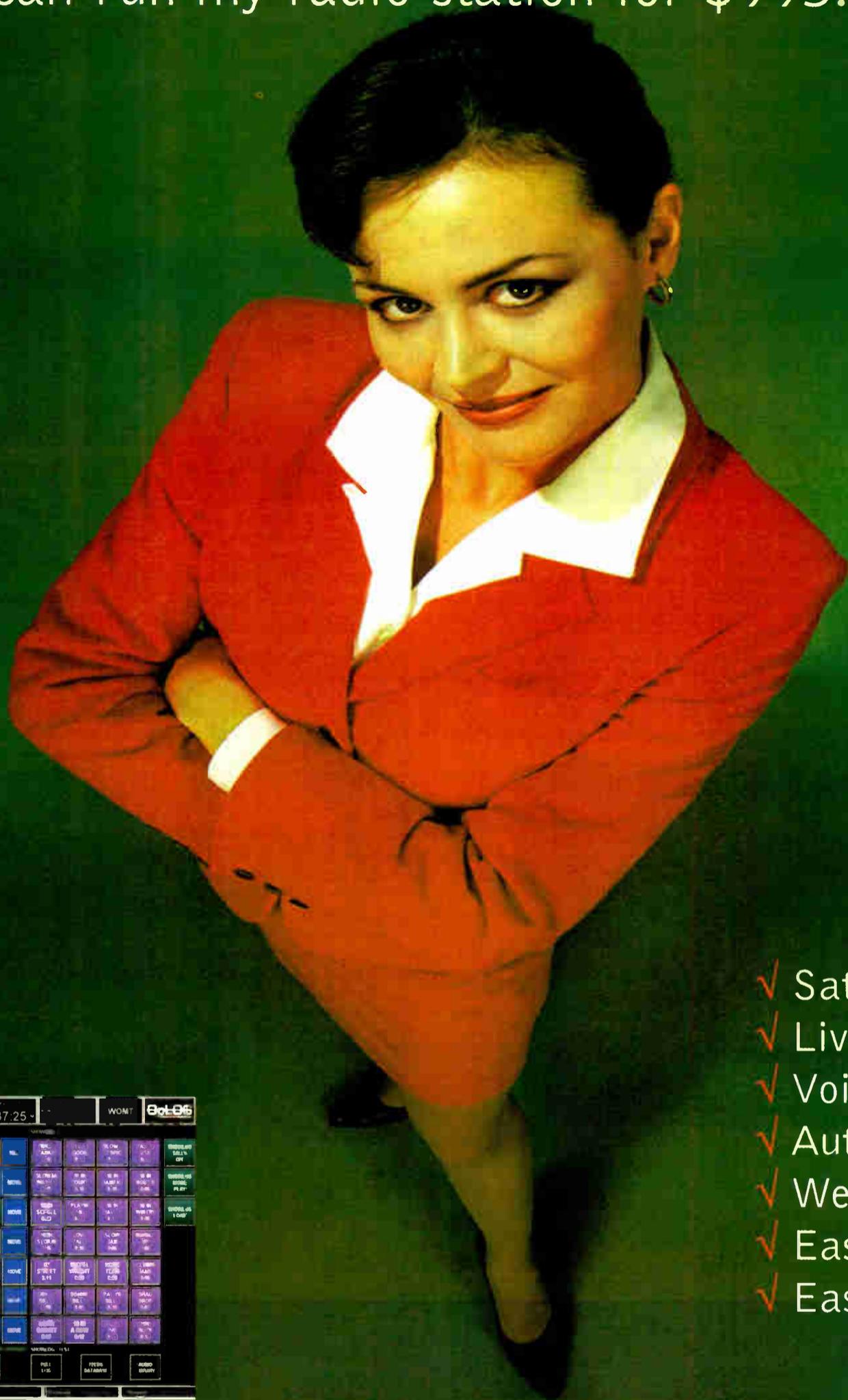
Local Revenue: 72%  
National Revenue: 28%

1999 Population: 2,896,016  
Per Capita Income: \$21,094  
Median Income: \$47,532  
Average Household Income: \$58,280

**BIA** Financial network

The Field Museum in Chicago displays their treasure, 'Sue,' the largest, most complete, best-preserved skeleton of a T.Rex.

**i** can run my radio station for \$995.



- ✓ Satellite
- ✓ Live assist
- ✓ Voicetrack
- ✓ Automation
- ✓ Web-Ready
- ✓ Easy to use
- ✓ Easy to install



iMediaTouch runs your radio station without sacrificing quality.  
Download it today and install it yourself!

**MediaTouch**  
**i can do more.**

[www.imediatouch.com](http://www.imediatouch.com)  
(888) 665-0501

**\$995**

# Chicago

► Continued from page 24  
urban/adult contemporary WVAZ(FM), with \$24.6 million in 2000 revenues, was fifth with a 3.8.

Infinity stations ranked third, sixth, eighth and 10th. Its contemporary hits station WBBM(FM), with \$27 million in 2000 revenue, earned a 5.3 share, and news/talk WBBM(AM), with \$26.1 million, had a 3.6 share. Infinity's oldies station, WJMK(FM), which earned \$19.8 million last year, held a 3.3. Country WUSN(FM), with \$34.8 million in revenues, earned a 2.9.

## Seven-station share

Infinity's seven stations had a combined share of 23.2 percent, while Clear Channel's six-station group collected a 21.2 percent share. This kind of strong performance was unthinkable five years ago.

When Congress unlocked the regulatory floodgates by approving the Telecommunications Act of 1996, the Chicago radio market — like virtually every big market in the country — went through a monumental change.

And through it all, radio revenue soared in Chicago, from \$349.7 million total for the market in 1996 to \$564.4 million in 2000, an increase of more than 60 percent.

Chicago was a central player in the consolidation movement. Sam Zell, the financier and real estate czar, was the chairman of Chicago-based Jacor

Communications. Jacor epitomized the meteoric growth of radio groups as it rose to become the fourth-largest station group in the country before agreeing to be bought by Clear Channel in 1998.

Chicago radio veteran James deCastro rose to the top of Chancellor Media Corp. (later AMFM Inc.) and saw his company swallowed by Clear Channel a year later, in October 1999. The domination by one or

Evergreen Media and Tribune vying for listeners.

In fairly short order, AMFM, Infinity, Clear Channel and to a lesser extent, Bonneville redefined the Chicago radio landscape.

Jack Minkow, president of Broadcasting Asset Management Corp. of Winnetka, Ill. should know. He brokered the whopping \$165 million sale of WNIB(FM) and its sis-



(From left) Mike North, weekday afternoon 'Score Guy' at WSCR(AM), broadcasts in February from the 'Tasty Dog,' an Oak Park, Ill., hangout in danger of seizure via eminent domain by local authorities who plan to sell the property to developers. Rob Barton, talking with North, owns the Tasty Dog with his brother Mike, said the 'Dog' would be saved and moved across the street. (That's Mike North's friend 'Knuckles' in the background.)

two companies was unheard of five years ago, when the Chicago market was a balkanized realm of station ownership, with companies like Gannett, Viacom, Century, Diamond, Pyramid, Westinghouse,

ter station, WNIZ(FM), the last local independent stations in the market, in November last year. Bonneville International Corp., the privately held broadcasting arm of the Church of Jesus Christ of Latter-day Saints, added the signals to its stable of 18 stations, including three in Chicago.

## Biggest sale

WNIB is a case study in the power of money and the lure of a strong broadcast signal. Owners Bill and Sonia Florian began running the station in 1955, offering an odd mixture of jazz, show tunes and classical music. The station was like their home, as well as the actual home to a mangy assortment of cats and dogs.

As Minkow said, they indulged their tastes and consistently earned higher ratings and more revenue than their wealthier opposition, WFMT(FM), owned by the nonprofit



The entrance to public station WBEZ(FM) on the Navy Pier is marked by a Ted Gall sculpture.

Window to the World Communications.

Radio regulation and their own programming savvy enabled the Florians to stay in business and continually fend off lucrative offers to sell. That all changed last summer.

Classical music fans were horrified when the Florians couldn't say no any longer. But then, they weren't there when the Florians pondered the monetary implications of \$165 million.

"I don't think (selling) had been in our minds until the broker started calling this summer," Sonia Florian said in November when the WNIB/WNIZ sale was announced.

"We'd hoped to keep it until death, but that's a bad time to start thinking about the future."

The Florians certainly weren't the first in Chicago to find the temptation irresistible. George Collias and his broadcast partners turned a \$300,000 investment in 1966 in obscure station WFMF(FM) — now WNND(FM) — into a \$77 million sale 31 years later.

Evergreen Broadcasting Corp. was the  
See CHICAGO, page 27 ►

# Digigram POWERED

The best sounding, most reliable  
digital audio systems use  
Digigram sound cards.

Does yours?

DIGIGRAM INC.  
TEL: +1 703 875 9100 ◊ FAX: +1 703 875 9161  
E-MAIL: INPUT@DIGIGRAM.COM ◊ WWW.DIGIGRAM.COM

NETWORKING SOLUTIONS FOR DIGITAL AUDIO AND REMOTE MANAGEMENT



## Interactive RDS/RBDS

Model 711 - \$1200

**NEW!**  
THIS FULL-FUNCTION  
RADIODATA ENCODER  
LINKS TO STATION AUTOMATION

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

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



**Inovonics**  
1305 Fair Ave. • Santa Cruz, CA 95060  
TEL: (831) 458-0552 • FAX: (831) 458-0554  
www.inovon.com • e-mail: info@inovon.com

# Chicago

► Continued from page 26

buyer, but it would soon be bought by Chancellor Communications, which itself would be bought by Clear Channel. Bonneville now owns WNND(FM).

## Big changes

The Chicago radio market is still in transition.

Last August, Infinity Broadcasting Corp. pulled the plug on WMAQ(AM), one of the oldest names in broadcasting, and shut down the station's all-news operation. Infinity took the call letters from WSQR(AM), another Chicago station it owned, and recreated WMAQ as a sports talk station.



Davante Stone, afternoon host on Chicago's top-ranked WGCI(FM), is at the mic for Clear Channel's 'Big Jam' holiday concert at the United Center last December. With him are producer Lisa Edwards and station staff.

Infinity owned the other all-news station in the city, WBBM(AM), and didn't see economic sense in competing against its own property.

The demise of WMAQ may have helped news-oriented public station WBEZ(FM). The station now competes in drive-time hours with WBBM(AM) for the news audience and has been able to cut its on-air pledge drives from four per year to two thanks in part to the Internet.

Over a three-day period in January, WBEZ ditched its regular on-air fundraising drive and asked listeners to pledge online. The goal was modest: \$100,000 and the on-air reminders were brief — anywhere from 15 seconds to 1 minute — totaling 55 minutes over three days.

It marked the first time the station

replaced an entire on-air pledge drive with the Internet. The results exceeded expectations: WBEZ collected \$135,000.

Still, that is a tiny portion of the station's annual \$4.1 million fundraising budget, \$1.7 million of which it receives directly from listeners. Torey Malatia, WBEZ's president and general manager, said the Internet helps but has its limitations.

"The Internet does reduce the annoyance to a minimum, but you can't cut the on-air drives down to zero," Malatia said.

## Timeless rock

In late February, Bonneville, which owns WLUP(FM), WNND(FM) and WTMX(FM), officially took over WNIB(FM). In late March, the company changed the call letters to WDRV(FM), dropped the classical format and launched yet another derivation of the classic rock format.

"Timeless rock," said the new WDRV promo. "Different? Yeah. This radio station is all about you — your life, your times."

Bonneville already operates two classical music stations — in Washington and San Francisco — so it chose to enter the already-fierce competition for the Chicago popular music audience rather than operate a third classical station there. And Chicago already has classical music station WFMT(FM).

Where the Florian's WNIB was always a clearly defined niche player in the Chicago radio wars, the station's re-creation as WDRV has heightened the already fierce competition for the popular music audience.

Six of the top 10 stations in the Winter Arbitron ratings were either urban or adult contemporary formats.

One example of the phenomenon was exhibited on the day the Florians said they would sell last November. ABC-owned WXCD(FM) fired nearly its entire staff and changed its format from classic rock to '80s.

In January, WBUT(FM) changed its call letters to WKSC(FM) and its format, moving from jammin' oldies to contemporary hit music.

News/talk placed three in the top 10, with Tribune Broadcasting's WGN(AM) second, with a 6.4 share and ABC's WLS(AM), with a 5.0 share was fifth, joining No. 6 WBBM(AM) in that category.

No doubt, the market will continue to change as it settles into its new ownership patterns and tries to determine just the right programming to entice listeners in the "Windy City."

Tim Johnston is the media writer the Chicago Tribune. Contact him via e-mail to [txjones@tribune.com](mailto:txjones@tribune.com)

## CHICAGO Commercial Radio Market Overview

Station	Owner	Format	BIAfn's 2000 Est. Station Revenue (\$000s)	Winter '00 Rating
WGCI(FM)	Clear Channel	Urban	38,800	7.5
WGN(AM)	Tribune Broadcasting	News/Talk	38,500	6.4
WUSN(FM)	Infinity Broadcasting	Country	34,800	2.9
WTMX(FM)	Bonneville International Corp.	AC	28,100	3.6
WBBM(FM)	Infinity Broadcasting	CHR/Dance	27,000	5.3
WBBM(AM)	Infinity Broadcasting	News	26,100	3.6
WXRT(FM)	Infinity Broadcasting	Progressive	25,800	2.2
WNUA(FM)	Clear Channel	Smooth Jazz	25,400	4.0
WKQX(FM)	Emmis Communications	Alternative	25,100	3.4
WVAZ(FM)	Clear Channel	Urban AC	24,600	3.8
WCKG(FM)	Infinity Broadcasting	Talk	21,600	2.1
WSCR(AM)	Infinity Broadcasting	Sprts/Talk	21,400	1.7
WLIT(FM)	Clear Channel	Soft AC	19,900	3.0
WJMK(FM)	Infinity Broadcasting	Oldies	19,800	3.3
WLS(AM)	ABC Radio Inc.	News/Talk	18,300	4.5
WKSC(FM)	Clear Channel	CHR	17,100	2.9
WLUP(FM)	Bonneville International Corp.	Clsc Rock	16,600	2.4
WNND(FM)	Bonneville International Corp.	AC	16,100	2.8
WOJO(FM)	Hispanic Broadcasting Corp.	Mexican	14,300	2.0
WLEY(FM)	Spanish Broadcasting System	Mexican	12,100	2.5
WZZN(FM)	ABC Radio Inc.	80s Hits	10,000	2.0
WYLL(AM)	Salem Communications Corp.	ChrsContemp	9,000	1.1
WMVP(AM)	ABC Radio Inc.	Sports	8,600	0.8
WIND(AM)	Hispanic Broadcasting Corp.	Span/News	6,500	0.6
WFMT(FM)	Window to the World Comm. Inc	Classical	5,900	1.4
WKIE(FM)	Big City Radio	CHR/Rhymc	4,500	0.9
WNIB(FM)	Bonneville International Corp.	Variety	4,400	1.7
WXXY(FM)	Big City Radio	Spanish	4,300	0.9
WYBA(FM)	Crawford Broadcasting Co.	Gospel	3,400	0.7
WZSR(FM)	NextMedia Group	AC	2,800	0.5
WIL(FM)	NextMedia Group	Adult Rock	2,750	0.4
WYPA(AM)	NewsWeb Corp.	Talk	2,500	N/A
WLXX(AM)	Hispanic Broadcasting Corp.	Spanish	2,300	0.7
WGCI(AM)	Clear Channel	Black Gospl	2,000	1.1
WYCA(FM)	Entravision Comm. Co. LLC	Spanish	2,000	0.3
WNTD(AM)	Radio Unica	Spanish	1,850	0.6
WYCA(AM)	Crawford Broadcasting Co.	Gospel	1,700	0.6
WPNA(AM)	Polish National Alliance	Polish	1,600	N/A
WRDZ(AM)	ABC Radio Inc.	Children	1,600	N/A
WVON(AM)	Midway Broadcasting	Talk	1,600	0.7
WXLC(FM)	NextMedia Group	Hot AC	1,600	0.3
WAIT(AM)	NextMedia Group	Nostalgia	1,450	1.7
WNVR(AM)	Polnet Communications Ltd	Polish	1,400	N/A
WSPY(FM)	Nelson Enterprises	AC	1,200	N/A
WERV(FM)	NextMedia Group	Oldies	800	N/A
WLIP(AM)	NextMedia Group	Adlt Stndrd	700	N/A
WCCQ(FM)	Three Eagles Comm. Inc.	Country	650	N/A
WJOL(AM)	NextMedia Group	Talk	650	N/A
WZCH(FM)	Entravision Comm. Co. LLC	Spanish	650	0.1
WCGO(AM)	Q Broadcasting Corp. Inc	Nostalgia	600	0.4
WJTW(FM)	NextMedia Group	AC	550	N/A
WKTA(AM)	Polnet Communications Ltd	Diverse	500	N/A
WNIZ(FM)	Bonneville International Corp.	AC	500	0.1
WCSJ(AM)	Nelson Enterprises	Adlt Stndrd	400	N/A
WLLI(FM)	NextMedia Group	Rock	400	N/A
WKRS(AM)	NextMedia Group	News/Talk	350	N/A
WYKT(FM)	STARadio Corp.	AAA	350	N/A
WYXX(FM)	Big City Radio	Spanish	300	N/A
WYLL(FM)	Salem Communications Corp.	ChrsContemp	300	N/A
WBVS(FM)	NextMedia Group	CHR	250	N/A
WKKD(AM)	NextMedia Group	News	100	N/A

**BIA Financial network** Stations are ranked in order of Arbitron Winter 2000 12+ share. Copyright 2001 the Arbitron Company. May not be quoted or reproduced without the prior written permission of Arbitron. Other information provided by BIA Financial Network through its MEDIA Access Pro Radio Analyzer Database software.

Background: Clouds scrape the mighty Sears Tower as it stands on Jackson Ave. in downtown Chicago.

## ► NETIA inc

West Caldwell Business Park  
195-2A Fairfield Ave West  
Caldwel NJ 07006 USA  
Tel +1 973 364 7511  
Fax +1 973 364 7522



## "Split Second" Digital Editing

Short/Cut Editor offers all the features you'll need to capture and edit dual channel audio for talk radio, call-in clips, news actualities, promos and spots. Features: split-second editing; high-resolution waveform display; real-time editing including cut, copy, insert, erase; insert record; crossfades; fade-in/fade-out; gain changes and ramping; one-touch instant record; title and cut select with built-in keyboard; assign cuts or edited clips to 10 Hot Keys per Directory; internal hard disk stores 4 hours of audio; reads and writes .WAV, .BWF and .AIFF files on MAC or PC disks; balanced XLR analog I/O; AES/EBU digital I/O; IEC-958/II Input; D-NET output.

360 Systems SC180-3 List \$3,495.00  
**ONLY \$2,949.00**



**SALE**  
**\$2,949<sup>00</sup>**

## Top-Selling Arrakis On-Air Consoles

The 1200 is ideal for on-air, production and news applications. Features include: stereo and mono mix outs; mix-minus bus; stereo monitor outs with dim and talkback; remote channel on/off with tally, cough and talkback; 2 monitor outputs; mono cue with Autocue. The 1200-5 is 5-channel, 10-input, stereo output console (1 input per channel plus a 5-source multi-line selector); the 1200-10 is a 10-channel board with 20 inputs and dual stereo out; and the 1200-15 has 15 channels with 25 inputs (the 1200-10 and 1200-15 each contain two 5-line selector channels).

Arrakis 12005S List \$2,295.00 **ONLY \$2,159.00**  
 Arrakis 120010S List \$3,495.00 **ONLY \$3,289.00**  
 Arrakis 120015S List \$4,495.00 **ONLY \$4,249.00**



**SALE**  
**\$3,289<sup>00</sup>**



## Omnia's Most Powerful Digital Audio Processor

The new Omnia-5 is the latest and most powerful FM processor from Omnia. Features: 96-kHz sampling and 24-bit resolution; five bands of AGC and six bands of limiting; a fully adjustable crossover network; low processing delay; remote control via modem, RS-232 or TCP/IP; a "Split Channel" processing mode that lets left and right channels operate as independent processors; built-in Omnia SPACE-EFX stereo enhancement; virtually unlimited preset storage using standard PCMCIA cards (up to 30 presets per card); plus lots more.

Omnia OMNIA6 List \$10,900.00  
**CALL FOR PRICE**



**SALE**  
**\$14,899<sup>00</sup>**

## State-of-the-Art Moseley Digital STL

Moseley's Starlink SL9003Q is the transmission leader: an open architecture, all-digital, 4-channel aural STL without compromise. Using spectrally efficient QAM (quadrature amplitude modulation) technology, it conveys up to four linear uncompressed audio channels over a single narrow bandwidth 950 MHz STL channel. This uncompressed 16-bit linear audio is absolutely uncompromised and can be configured with up to two pairs of stereo audio (that's like getting two radios for the price of one).

MOSELEY SL9003Q-4S List \$16,250.00 **ONLY \$14,899.00**



BROADCAST SUPPLY

The World's  
 Source for Professional  
 Audio Products

HURRY  
 Before



### MX2642A

4-Bus, 16-Channel 12" Rack Mount Production Mixer

This professional console offers incredible performance for the low price of only \$899.00. For example, all channels have a high-quality preamp section, 6 aux sends and mute functions. Features include: 16 channels (8 mono, 4 stereo); 8 mic preamps; 4+2 subgroups; 8 channel insert outputs; and more.

Behringer MX2642A List \$1,099.00 **ONLY \$899.00**



### DI4000/DI100/PX2000

Direct Inject Boxes/Patchbay

Behringer's ULTRA-DI PRO (DI4000) is a flexible 4-channel direct inject box/level converter for all studio applications. The DI100 is a single channel active DI box. The PX2000 is an affordable patchbay with 4 pairs and 4 switchable normal modes.

Behringer DI4000 List \$229.00 **ONLY \$189.00**

Behringer DI100 List \$79.00 **ONLY \$69.00**

Behringer PX2000 List \$69.00 **ONLY \$59.00**

Call Your BSW Sales Representative



World's Best Professional Products.

SALE, Sale Ends 5/15/01

# Behringer Warehouse Sale!

Visit [www.BSWUSA.com](http://www.BSWUSA.com)

to View Products from Our Catalog or to Get Incredible Prices on Used/Demo Gear Plus Warehouse Overstocks!



For Approved Net 30-Day Customers, the BSWONLINE section offers Ordering, Pricing, Product Availability, Order Tracking and Much More. Visit Our Web Site Today.

SALE \$899<sup>00</sup>



SALE \$1,099<sup>00</sup>

### MX3242X

Full-Featured Production Mixer with Special Effects

This comprehensive solution combines a 4-bus, 16-channel mixing console with a 24-bit digital effects processor. The mixer offers 32 mono inputs and has 16 mic preamps; 4-band EQ; 16 direct outs and more. Plus it adds the Behringer VIRTUALIZER multi-effects programs for reverbs or 31 other algorithms. Order today for our low sales price of \$1099.00!

Behringer MX3242X List \$1,399.00 ONLY \$1,099.00



### MX1804X/MX2004A

Studio Production Mixers

In the MX1804X, Behringer took their renowned VIRTUALIZER effects processor and fit it into a 14-channel production mixer. This gives you built-in 24-bit effects such as reverb, chorus, flanger and more, plus graphic EQ at your fingertips. MX2004A is a super affordable traditional 16-channel mixer with 8 mono mic inputs and 4 stereo line inputs. NOW ONLY \$279.00!

Behringer MX1804X List \$499.00 ONLY \$399.00

Behringer MX2004A List \$379.00 ONLY \$279.00



SALE \$479<sup>00</sup>

### DSP9024

6-Band Stereo Dynamic Processor

The Behringer ULTRA-DYNE PRO DSP9024 is an extremely powerful 6-band stereo dynamic processor. With its two 24-bit signal processors and high-resolution 24-bit A/D and D/A converters, this highly developed mainframe offers unparalleled digital mastering perfection for compression/gating with separate peak limiting.

Behringer DSP9024 List \$599.00 ONLY \$479.00



### MDX1400/MDX2200/MDX4400

Dynamic Processors

Behringers compressor/limiters provide great results at exceptional prices. MDX1400 is a 2-channel compressor/limiter/expander/enhancer with side chain input. MDX4400 is a 4-channel compressor/limiter. The higher-end MDX2200 2-channel compressor/limiter offers extremely quiet operation with a peak limiting circuit suitable for both studio and live recording applications. Call for these low prices while supplies last!

Behringer MDX1400 (Autocom Pro) List \$149.00 ONLY \$119.00

Behringer MDX4400 (Multicom Pro) List \$179.00 ONLY \$149.00

Behringer MDX2200 (Composer Pro) List \$179.00 ONLY \$149.00

For Representative for Details 1 . 800 . 426 . 8434

WorldRadioHistory

# Retail Tops Radio Advertising List

*Dot-com Companies Spend Almost as Much as Leading Category Retail in 2000*

Eighty-five percent of the top-20 radio advertisers increased their dollars allocated to radio last year, as compared to 1999. Eighty-five percent

also increased the percentage of their national ad budgets allocated to our medium, according to Interep.

Retail lead the spending list with \$396.9 million on national radio ads, followed by media companies with \$311.1 million. Among the top individual radio advertisers was Verizon, with \$72.18 million, followed by AT&T with \$56.4 million spent on radio ads last year. As a category, telecommunications ranked fourth in dollar rank, according to the Interep analysis.

Of the companies increasing the percentage of their national ad budgets to radio, six increased their percentage of spending by more than two percentage points. They include gum manufacturer William Wrigley, General Motors' Dealers' Associations, DaimlerChrysler Dealer Association, Sears & Roebuck, AT&T, Procter & Gamble and pharmaceutical and consumer healthcare company Pfizer Inc.

Debbie Durben, president of the Interep Marketing Group, stated, "Advertisers' decisions to allocate an increasing percentage of their media budgets to radio is the best testament to the medium's marketing effective-

ness. We are particularly proud of the progress that we are making in the packaged goods and pharmaceutical categories, areas that have typically under-utilized our medium."

dot-com spending.

The categories reported in the "2000's National Radio Ad Categories" chart shown here exclude dot-com spending.

"We break out the dot-com spending from the traditional companies' categories because we find most people like to see the contrast between

## 2000's National Radio Ad Categories by Dollar Rank \*

- |                       |                 |
|-----------------------|-----------------|
| 1. Retail             | \$396.9 million |
| 2. Media              | \$311.1 million |
| 3. Automotive         | \$287.9 million |
| 4. Telecommunications | \$275.7 million |
| 5. U.S. Government    | \$172.7 million |
| 6. Financial          | \$164.5 million |
| 7. Restaurants        | \$150.0 million |
| 8. Medicines/Remedies | \$129.9 million |
| 9. Insurance/Realty   | \$127.1 million |
| 10. Department Stores | \$110.7 million |

\* Above figures exclude dot-com spending in each category.

Source: Interep Analysis of CMR data, January - December 2000; Total National Spot & Network Radio Expenditures.



## Top 10 National Radio Advertisers of 2000 (000's)

- |                            |          |
|----------------------------|----------|
| 1. Verizon                 | \$72,118 |
| 2. AT&T Corp.              | \$56,395 |
| 3. National Amusements     | \$52,502 |
| 4. Time Warner             | \$50,252 |
| 5. U.S. Government         | \$49,973 |
| 6. DaimlerChrysler Dealers | \$47,381 |
| 7. SCB Communications      | \$46,832 |
| 8. Berkshire Hathaway      | \$44,403 |
| 9. General Motors          | \$39,891 |
| 10. General Electric       | \$37,968 |

Source: CMR 2000; Total National Spot & Network Radio Expenditures.

Interep said its analysis is based on data from Competitive Media Reporting, which separates the large department store sector from the retail category. If the two are combined, total retail dollars still slightly exceed

them," said Michele Skettino, vice president, marketing communications at Interep.

Last year, dot-com advertisers spent half a billion dollars on national radio, according to Interep.

## STATION/STUDIO SERVICES

Business Boosters from Grace Broadcast Sales • ORDER TOLL-FREE! 1-888-GRACE-88

Selling ads is good.  
....Selling more ads is better.



Sound Ideas for Building Business<sup>SM</sup>

Stations across America BOOST their May billing with our :30 or :60-sec. features for:

- H. S. GRADUATION •MOTHER'S DAY
- MEMORIAL DAY •SUMMER SAFETY

... You Can, Too! It's So Easy!!

For DEMO visit [www.gracebroadcast.com](http://www.gracebroadcast.com)

*The Mix*

The Elite Royalty-Free Music

U.S.: 1-800-387-3030  
905-886-5000  
[www.mixmusiclibrary.com](http://www.mixmusiclibrary.com)  
A Division of Sound Ideas

HIGH-ENERGY BUY-OUT PRODUCTION MUSIC

PROFESSIONAL SOUND EFFECTS, INCLUDING COMEDY EFFECTS & LASERS.

**GHOSTWRITERS**  
800-759-4561

ON-LINE DEMOS AT:  
[WWW.RADIO-MALL.COM](http://WWW.RADIO-MALL.COM)

**BALSYS**

TECHNOLOGY GROUP, INC.

PROFESSIONAL BROADCAST ENGINEERING SERVICES

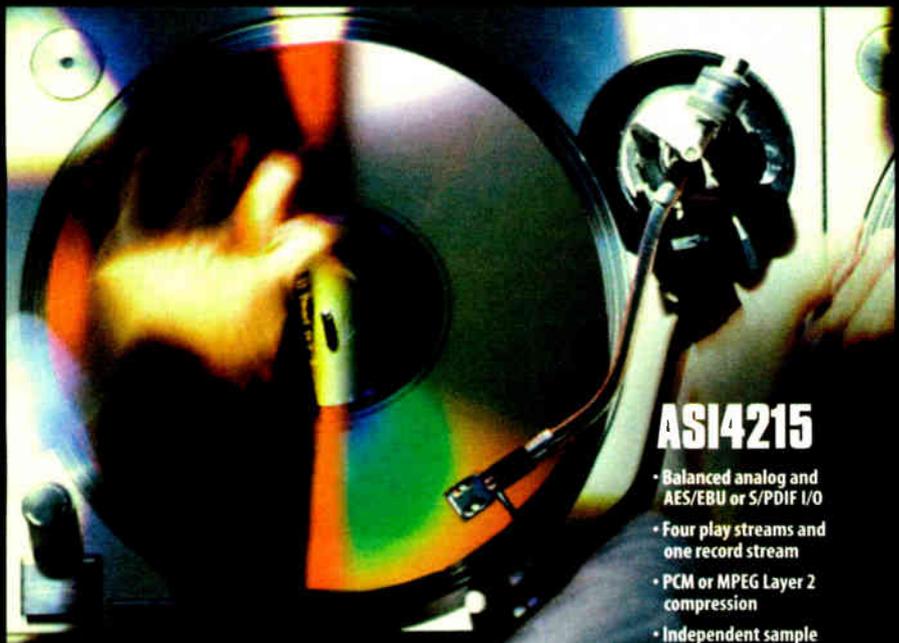
Analysis - Installation - Support

7141 Tallowtree Lane  
Orlando, FL32835  
Tel:407-822-7055  
Fax: 407-296-2587  
[www.balsys.com](http://www.balsys.com)  
[sales@balsys.com](mailto:sales@balsys.com)

**ATTENTION PROVIDERS!**

Promote your services to **Radio World's** readers. Reach Radio Station and Recording Studio owners/managers and engineers with your message. For information on affordable advertising call **Simone** at **1-800-336-3045, ext. 154.**

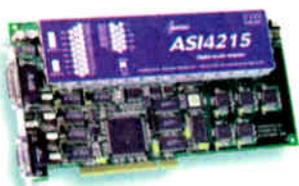
## FUTURE PROOF



ANALOG OR DIGITAL?

### ASI4215

- Balanced analog and AES/EBU or S/PDIF I/O
- Four play streams and one record stream
- PCM or MPEG Layer 2 compression
- Independent sample rates and formats
- Windows and Linux drivers

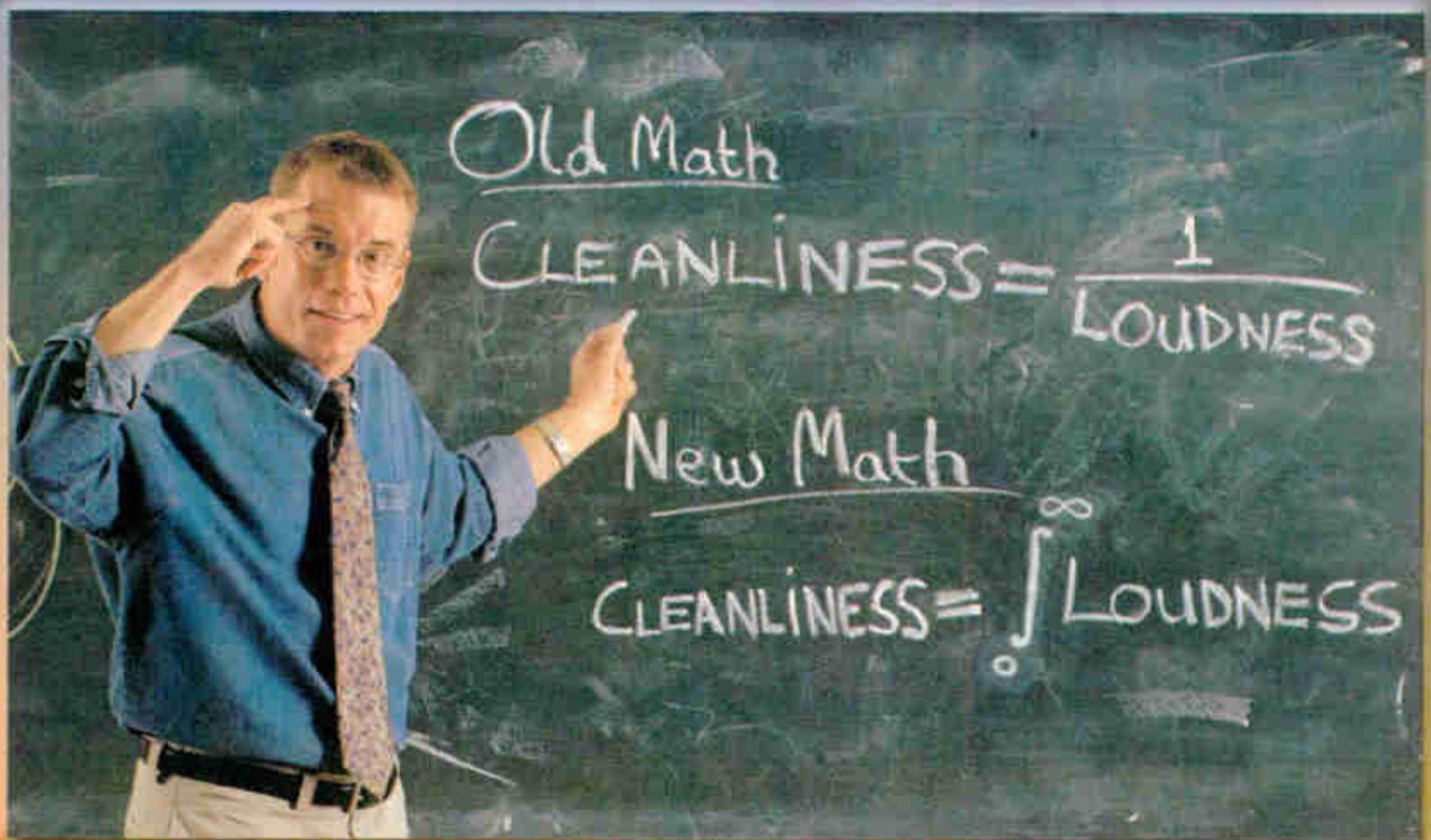


Need analog today but digital tomorrow? The multi-stream ASI4215 sound card from AudioScience has both. It combines the flexibility of independent sample rates and compression formats with a choice of balanced analog and AES/EBU or S/PDIF digital I/O. Combine this with DSP based MPEG compression for minimal CPU loading and maximum responsiveness. With the ASI4215, your station automation system is ready for action, now or in the future.

[www.audioscience.com](http://www.audioscience.com) +1-302-324-5333



# Process This!



*Introducing*

## **The NEW Aphex 2020MkII**



**T**he original Aphex Model 2020 audio processor set the standard for audio quality, loudness and extended coverage. Not content to sit on its laurels Aphex continued to research ways to improve performance even further. The result is the 2020MkII.

New processing algorithms and circuit designs, in addition to the fifteen proprietary circuits\* from the original, allow even greater loudness without sacrificing a clean, natural sound. The MkII's increased flexibility also gives a station the ability to create its own unique sonic signature. New features include a split band optical high frequency limiter, a low distortion overshoot compensated low pass filter\* (with no spurs), improved remote control interface, RDS, and dual composite outputs.

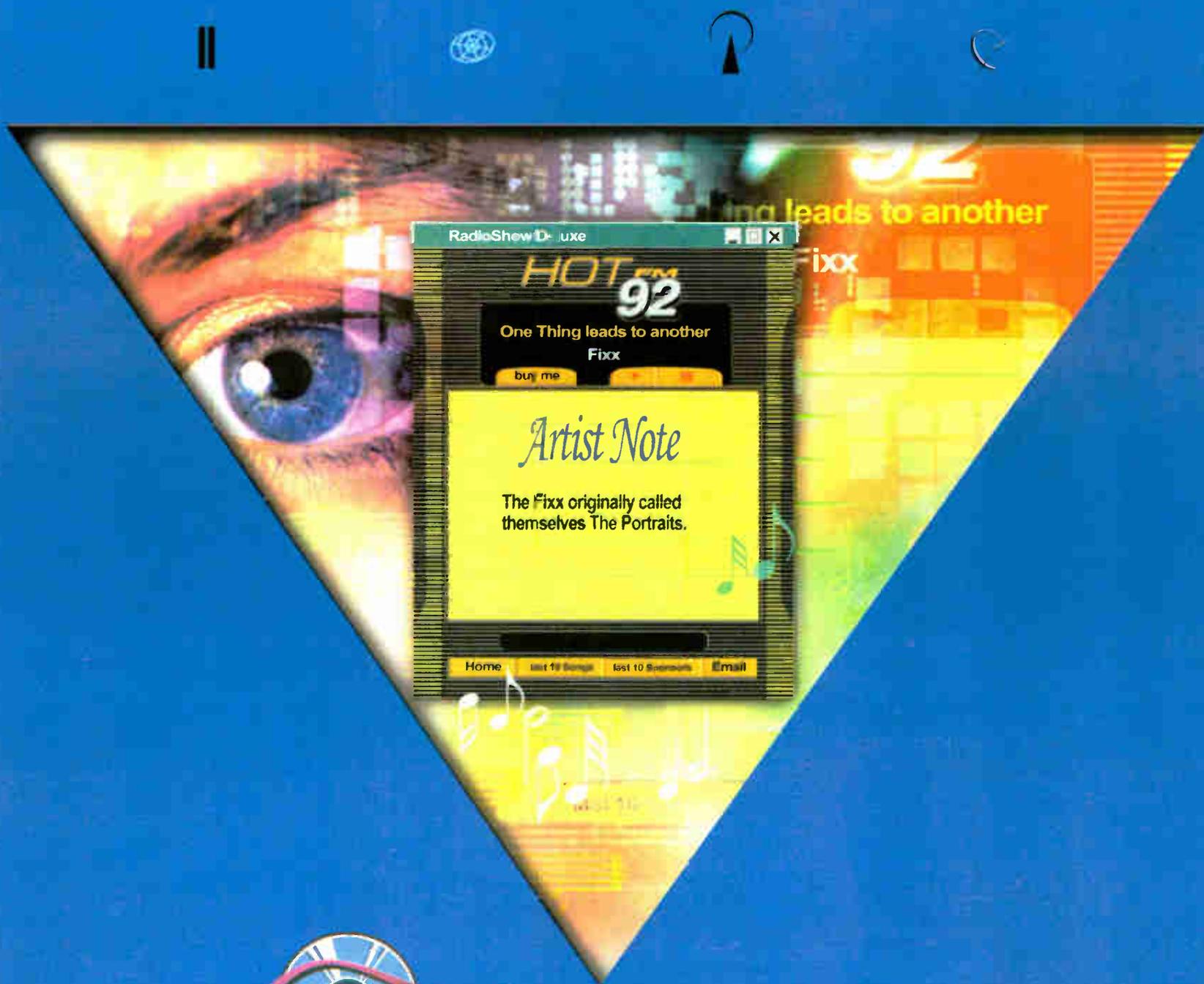
Audition the new 2020 MkII on your station and you'll find that Aphex has really done its homework— creating a processor with performance and features unmatched at any price. The 2020MkII—in a class by itself.

**APHEX**  
SYSTEMS

***Improving the way the world sounds<sup>SM</sup>***

11068 Randall Street, Sun Valley, CA 91352 U.S.A  
818-767-2929 Fax: 818-767-2641 [www.aphex.com](http://www.aphex.com)

\*(patented or patent pending)

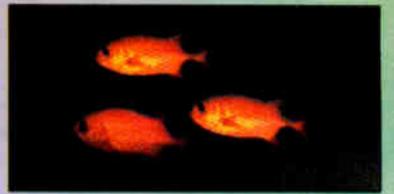


What if your listeners could  
**see** what was on-the-air?

See it now: [www.RCSWORKS.com](http://www.RCSWORKS.com) [Info@rcsworks.com](mailto:Info@rcsworks.com) In USA call 914 428 4600, ext. 408



# Internet Radio



**Fish Finder**  
See Page 38

Radio World

How to Succeed in the Dot-Com World

April 25, 2001

NEWS MAKER

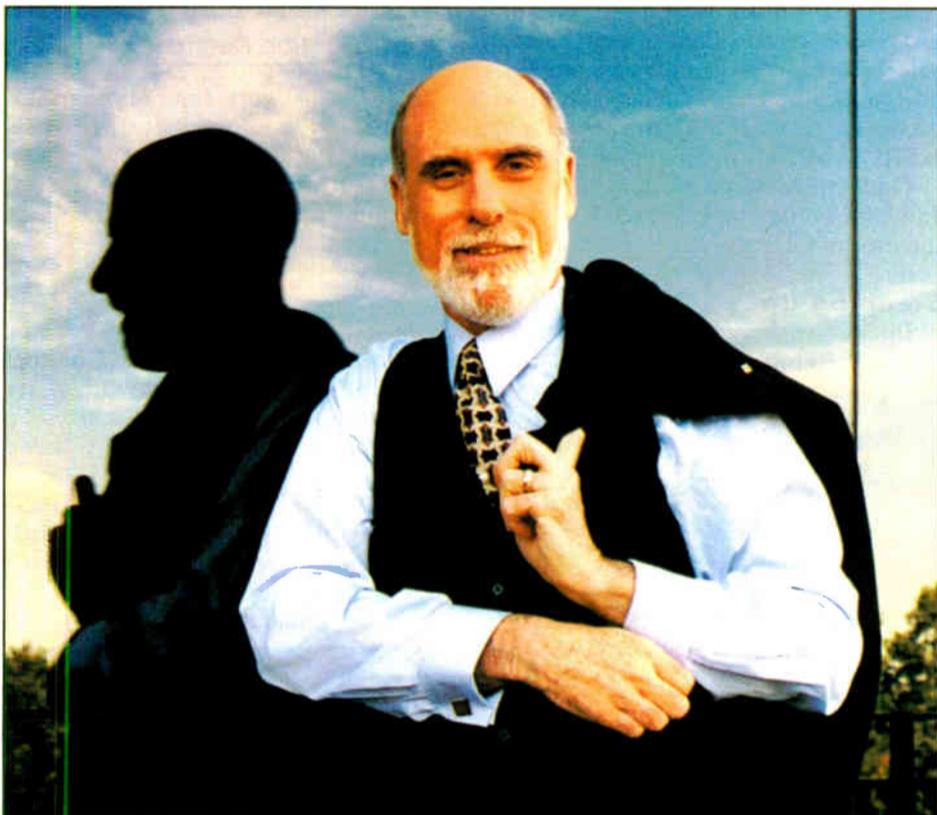
## Vinton Cerf, Architect of the Web

No doubt he's tired of hearing the Al Gore jokes by now. But a few pioneers are recognized as the founding fathers of the Net. Among them is Senior Vice President of Internet Architecture and Technology for WorldCom Vinton Cerf.

Cerf delivers the Technology Luncheon keynote address on Wednesday, April 25, at the NAB2001 convention in Las Vegas.

chairman of the board in 1999.

He is the founding chairman of the new Internet Societal Task Force, charged with making Internet access universal and analyzing international, national and local policies for Net use. He has been a member of the U.S. Presidential Information Technology Advisory Committee since 1997.



Vinton Cerf

His technical innovations include co-designing the TCP/IP protocols that serve as the underlying architecture of the World Wide Web. He served as the founding president of the Internet Society from 1992-95 and the organization's

Cerf's work has helped create an emerging communications medium based on delivering packets of data quite unlike the steady stream typical of traditional broadcast. The Internet's distinctive information infrastructure defines both

limits and possibilities for new media.

Radio World's Carl Lindemann interviewed Cerf about what lies ahead for radio and the Internet.

**RW:** Does radio really translate to the Web given the Internet's IP protocols?

**Cerf:** First, we need to define what we mean by "radio." It's commonly understood as broadcast radio. But radio as a means of wireless communication is affecting the Internet in ways beyond conventional broadcast radio.

A lot of my interest goes beyond the reproduction of broadcasts over the Internet. Think about wireless telegraphy. That's what Marconi demonstrated in 1901. We didn't get the first broadcast use till 1916.

**RW:** Yes, but station streams are gathering audiences online.

**Cerf:** Of course. Looking at broadcast in the Internet context, it's already very clear that on-demand radio is happening quite broadly on the Net. So far, there aren't a lot of devices to support this.

Walking around my office, I see people listening to streaming audio in their cubicles with headphones on.

**RW:** What do you make of the intellectual property issues raised?

**Cerf:** I don't know what to think about that. My biggest fear is that we'll end up with laws that can't be implemented or, worse, are enforced by the wrong people, like the Internet service provider.

There are other issues that are important to look at as broadcasters move online. Equal time, for example, looks very different here because there's no limit to time on the Internet.

**RW:** But the FCC does not have the same

See CERF, page 39 ▶

WEB WATCH

## Fear and Loathing: Net Radio Stymied

Carl Lindemann

Web Watch is a roundup of all things radio and the Web. Send your news and tips to Internet Radio editor Laura Dely at [ld@imaspub.com](mailto:ld@imaspub.com)

Was Chicken Little right? The dot-com downturn has most saying that the sky is falling. Moody markets



have soured. Are all the industries they purportedly represent in shambles? The pullback in online audio is obvious. Not so very long ago, there was a flood of announcements from companies homesteading the Internet/radio frontier.

See WEB WATCH, page 34 ▶

# PORTABLE ONE

## DUAL DOMAIN

True Dual Domain Audio Testing at an Attractive Price Point

- Comprehensive analog audio analyzer
- True digital domain analyzer with -140 dB residual noise
- Independent analog & digital audio generators and analyzers
- Generate and measure interface jitter
- Digital interface analyzer
- View AES/EBU status bits
- Loudspeaker monitor for digital & analog signals
- Internal save and recall of 30 test setups

**Audio precision**

Audio Precision  
PO Box 2209  
Beaverton, Oregon 97075-2209  
Tel: (503) 627-0832; Fax: (503) 641-8906; US Toll Free: 1-800-231-7350  
Email: [techsupport@audioprecision.com](mailto:techsupport@audioprecision.com); Web: [www.audioprecision.com](http://www.audioprecision.com)



## Clear Channel Enters Net Ratings

Clear Channel Communications Inc. made its first appearance in the latest Internet radio ratings from both Arbitron and MeasureCast Inc.

In the latest Arbitron's Webcast Network Ratings, Clear Channel had 95,000 aggregate tuning hours for the month of December. Ironically, in April the group suspended streaming as a reaction to increased spot talent expenses.

Arbitron defines ATH as the total sum of hours that listeners tune to a given station. Clear Channel ranked 23rd in the Arbitron December, 2000 "Webcast Networks Ratings Report"; while CyberAxis/Clear Channel station Star98.7, KYSR(FM) appeared in the No. 7 spot in the March Internet radio station ratings from MeasureCast.

Topping the chart in December's Arbitron Webcast Network Ratings was NetRadio, an aggregator that offers music in many formats, with more than 2 million ATH for the month. Live365, an Internet-only radio service that enables anyone to create their own radio station or listen to thousands of stations created by others, has climbed to the No. 2 spot with more than 1.7 million ATH.

Live365 bumped ABC Radio Networks, which slips from the No. 2 to the No. 4 slot, which Live365 held in the previous month.

Other newcomers to the Top 25 list are No. 6 CableMusic Networks Inc., No. 7 Beethoven.com,

No. 13 Entercom and No. 14 MEDIAmazing.

To see the complete Arbitron December Webcast Ratings, visit [www.Arbitron.com](http://www.Arbitron.com)

MeasureCast Inc. reports that while Internet radio listening is primarily a weekday (at work) activity, there are a few shows Webcast on weekends that draw even bigger audiences.

ABC Radio's "Money Talk," with host Bob Brinker, broadcast from WLS(AM) in Chicago, draws a larger audience during his Saturday and Sunday afternoon shows than the station's programming in the same time slot during the week.

But weekend listeners tune in online throughout the weekend. MeasureCast found that only 44 percent of Saturday and Sunday online listeners were tuned in between 7 a.m. and 3 p.m., far less than the 67 percent of weekday listening that occurs during this time period.

MEDIAmazing, a listener-formatted Internet-only station, moved up to take the No. 1 spot in the MeasureCast March Internet Radio ratings, trading places with March's No. 2: WABC(AM)/77.

MeasureCast also reports that in March, Internet radio audience increased 21 percent over January's, continuing the trend of ever-bigger audiences for online audio every month.

—Laura Dely

### The MeasureCast Top 10 — March 2001

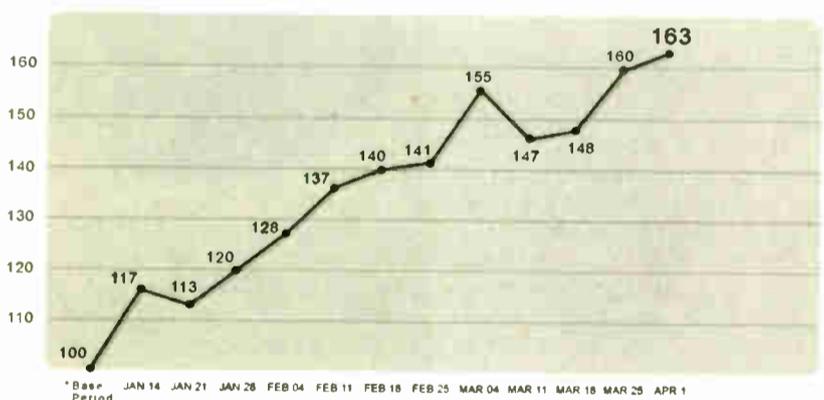
measurecast

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

Channel/Format	Owner	URL	TTSL
1. MEDIAmazing Listener Formatted	MEDIAmazing	<a href="http://www.mediamaizing.com">www.mediamaizing.com</a>	429,366
2. WABC(AM)/Talk Radio	ABC Radio	<a href="http://www.wabcradio.com">www.wabcradio.com</a>	344,736
3. Virgin Radio/Adult Alt	Ginger Online	<a href="http://www.virginradio.co.uk">www.virginradio.co.uk</a>	277,652
4. WSKQ/Spanish	LaMusica/Spanish Broadcasting	<a href="http://www.lamega.com">www.lamega.com</a>	243,821
5. Radio Margaritaville/Classic Rock	InternetAmerica	<a href="http://www.radiomargaritaville.com">www.radiomargaritaville.com</a>	199,437
6. WPLJ(FM)/CHR-Top40	ABC Radio	<a href="http://www.wplj.com">www.wplj.com</a>	193,888
7. KYSR(FM)/Adult Cont.	CyberAxis/ClearChannel	<a href="http://www.star987.com">www.star987.com</a>	187,878
8. Black Gospel Network/Gospel	Oneplace/Salem Comm	<a href="http://www.oneplace.com">www.oneplace.com</a>	187,022
9. WJZW(FM)/Jazz	ABC Radio	<a href="http://www.smoothjazz1059.com">www.smoothjazz1059.com</a>	175,055
10. KQRS(FM)/Classic Rock	ABC Radio	<a href="http://www.kqrs.com">www.kqrs.com</a>	156,423

measurecast  
now you know

MeasureCast Internet Radio Index™  
2001



\* Base Period  
The 10 week Base Period is an average of the weekly Total Time Spent Listening (TTSL) from OCT 30 2000 through JAN 07 2001

\*\* Index values are for an entire week ending on the date listed above

### Arbitron Webcast Networks Top-10 Report — Dec. 2000

ARBITRON

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

Network	Owner	URL	ATH
1. NetRadio*	NetRadio Corp.	<a href="http://www.netradio.com">www.netradio.com</a>	2,198,500
2. Live365	Nanocosm, Inc.	<a href="http://www.Live365.com">www.Live365.com</a>	1,796,200
3. GlobalMedia	GlobalMedia,	<a href="http://www.globalmedia.com">www.globalmedia.com</a>	1,607,400
4. ABC Radio	ABC Radio	<a href="http://www.abcradio.com">www.abcradio.com</a>	1,594,800
5. BroadcastAmerica	BroadcastAmerica	N/A	713,900
6. CableMusic Networks	CableMusic Networks	<a href="http://www.cablemusic.com">www.cablemusic.com</a>	590,200
7. Beethoven.com	Marlin Broadcasting	<a href="http://www.Beethoven.com">www.Beethoven.com</a>	565,700
8. Enigma Digital	Enigma Digital	<a href="http://www.enigmadigital.com">www.enigmadigital.com</a>	416,400
9. DiscJockey.com	DiscJockey.com	<a href="http://www.disjockey.com">www.disjockey.com</a>	389,500
10. Corus Entertainment	Corus Entertainment	<a href="http://www.corusentertainment.com">www.corusentertainment.com</a>	373,500

\* Tuning information for the Dec. 13 to Dec. 31, 2000 period is incomplete.

N/A: BroadcastAmerica has dissolved its business and is no longer online.

# Web Watch

► Continued from page 33

For all the panic, here's the simple truth for broadcasters to hold on to through the downturn: Online audiences continue to show strong growth with streaming audio one of the main draws.

## Roosters crow

Content may be king, but in a downturn, the ad man rules the roost. Live365, which made an impressive move to the No. 2 slot in the latest Arbitron Webcast Network Ratings, has also restructured its sales force.

The company brought on new leadership to manage it, with Terry Higham appointed director of advertising sales. He moves from SurferNETWORK, where he was national sales manager. In addition to selling and educating ad agencies about streaming media, Higham will represent Live365's east coast relationships. Also, a "new business sales group" has been formed.

Ron Denman will lead the new group as vice president of new business sales. Denman is a radio veteran. He is co-founder of DG Systems, the digital distribution network for radio and TV commercials. He also served as general sales manager at Infinity's KFRC(AM/FM) in San Francisco.

Garrett Jamison will work with Denman as director, new business sales. Jamison comes to Live365 from OnAir Streaming Networks, where he was director of business development.



Ron Denman

## Stepping up

Interactive media sales are starting to line up some high-profile clients.

CyberRep, an interactive ad agency, announced that the Discovery Channel



bought ads on two of its Webcasting client's sites to promote a documentary, "Land of the Mammoths," in March. The CyberRep sites, RadioWave and TheDial, streaming audio channels, used the same radio spot copy for the streaming spots.

"Forward-thinking advertisers like the Discovery Channel are recognizing that if it works on radio, it can work on streaming audio," said Emily Beys, vice president of CyberRep.com.

Of course, advertisers continue to look to research firms for information to inform media buys. The new MeasureCast Internet Radio Index is a weekly measurement that places audience statistics in a context that reveals trends. (See Net radio ratings, at left.)

"Our index is calculated much the way the S&P 500 and other stock indices are calculated, meaning it is a representation of the trend in 'total time spent listening' across a spectrum of online stations measured by MeasureCast," said

Evan Oster, vice president of research for MeasureCast.

At Arbitron, a surprise winner surfaced in the December Arbitron Webcast Ratings, when Beethoven.com managed to nudge out the formerly first-place WABCRadio.com for the most aggregate tuning hours. Beethoven.com is owned and operated by Marlin Broadcasting, better known for WCCC-FM-AM in Hartford, Conn.

The Web-only classical station racked up an impressive 565,700 ATH in December, well over news/talker WABC(AM)'s 294,800. What is most amazing is that Beethoven.com managed this coup while news/talk formats thrived both on-air and online in the wake of the presidential election fracas.

"A major part of our success is that we've created a relationship with the listener that makes them want to come back to Beethoven.com on a daily basis," said Kevin

See WEB WATCH, page 36 ►



Evan Oster

# Introducing the Cash™ miracle diet.



## Lose three minutes in an hour!

Gone are the days of hunt-and-cut editing, warbling time compression, and sped-up chipmunk audio. Now overstuffed, overtime audio productions can be reduced through a real-time, undetectable process that can cut up to one minute of audio from every twenty without reducing program content.

The Cash audio time machine from Prime Image is a fully digital, easy-to-operate device that utilizes a patented system of random "micro-edits" to reduce the length of any production, whether voices, sound effects, or music. And Cash works automatically, in one pass, with no additional processing. Simply enter the amount of time you want to lose and the period of time over which to lose it. Then push the start button and find

something more important to do. Like kicking back and enjoying a cup of coffee—but, in the interest of your waistline, take a pass on the donuts.

For specifications, information, or orders contact Prime Image:  
[www.primeimageinc.com](http://www.primeimageinc.com)  
408-867-6519

**Prime  
Image**

The Digital Video People  
Tel (408) 867-6519 Fax (408) 926-7294  
[www.primeimageinc.com](http://www.primeimageinc.com)

# Web Watch

Continued from page 34

Shively, director of Web content and business development at Beethoven.com.

Two other classical stations hit the Arbitron Top 25 Webcast ratings, including sixth-ranked Seattle-based KING(FM), a Classic Radio Inc. station and Washington-based Bonneville station WGMS(FM) which placed 23rd.



SurferNETWORK, the New Jersey-based Webcasting company, continues to pull together the pieces left in the wake of the dissolution of BroadcastAmerica.com.

Gordon Bridge, chairman and chief executive officer of SN, said it was working through lists of stations orphaned in BA's demise to offer to restore streaming services, after SN secured BA's radio assets in bankrupt court.

"Technically speaking, the contracts (they had with BA) are binding. We're in the process of contacting the radio stations and getting them up and running. Our intention is not to obligate people. It's never a good idea to sue your customers," he said.

Meanwhile, Broadcast-URBAN.com has come over to SN. The 100-plus station urban radio Webcaster has formed a strategic alliance reminiscent of one made previously with BA. BroadcastURBAN is privately held.

"They did have a relationship with BA, actually brought up some stations as BA affiliates. We plan on doing

something similar," said Bridge.

According to Bridge, SN is up more than 100 stations and is adding several daily. He expects to pass the 500-station mark by midyear.

### They're here

According to the Pew Internet & American Life Project, many millions join the online ranks each month. The study reveals that as of January, 56 percent of adults have Internet access, as do 45 percent of children.

This is a dream come true to those who can remember back five years ago. Back then, the Web was populated by early adopters who occasionally took time out from deep reflections inspired by the latest episode of the "X-Files" to rant about the presence of any commercial activities online.

We are way past the "If you build it, they will come" phase. Now that they've arrived, the challenge is to figure out how to make money from the



The Late, Great, Kerbango Radio



The Kerbango Internet Radio Web site is Ker-gone-go.

gathered multitudes.

Given this reality, the reaction by some companies is utterly astounding, with Intel at the top of the list of those throwing the baby out with the bath water. In February, the giant chipmaker gave up on its streaming services initiative. After investing in mammoth facilities both stateside and in England, the company made an about-face on this year-old initiative.

### Hasty?

Did Intel suddenly decide that the Internet was a fad? Did they have some research that showed this something like the CB radio craze in the '70s?

More than likely, the drastic decision was more a reaction to other problems that make the fate of the streaming services initiative seem like a ripple in a tidal wave.

In the first quarter 2001, Intel's chip sales dropped 25 percent from the previous quarter and some 5,000 jobs are about to be phased-out.

At 3Com, first-quarter 2001 losses hit \$246 million — quite a shift from \$506.3 million revenues from the year before.

"The abruptness and severity of the current technology slowdown has clearly impacted 3Com," said Bruce Clafin, the company's chief executive. "3Com is taking immediate steps to reduce costs and achieve profitability," he said.

### Kerbango gone

One of those steps is to pull the plug on all its Internet appliances. The recently released "Audrey," an e-mail station and Internet surfboard, and the long-awaited Kerbango Internet Radio are history. Incredibly, announcements of Kerbango's final release were sent out just days prior to the bad news.

Other companies are simply cutting back. The incredible growth in many organizations in the past few years was in anticipation of a continuing boom. Up until the end of last year, it was still possible to argue that the markets would bounce back, that the downturn was only temporary.

See WEB WATCH, page 37



\$289.00

## FlipJack

Operates with most hand-held cell phones that have the standard 2.5 mm hands-free adapter jack.

- Mic Input
- Mic/Line Input
- Headphone jack
- Balanced Line Output



\$245.00

## CellJack

Operates with Motorola bag type cell phones.

- Mic/Line Input
- Aux Input
- Balanced Line Output
- Headphone jack

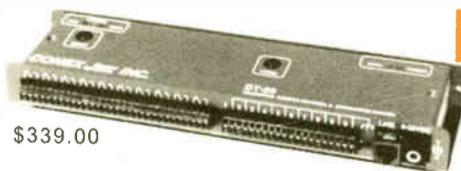


\$349.00

## CellJack II

Operates with Motorola bag type cell phones.

- 2 MIC/LINE Inputs
- AUX Input
- Balanced Line Output
- Level Indicator
- 2 Headphone Jacks



\$339.00

## DT-55

Telephone Remote Control

- Control 10 Relays ... Momentary, Latching or Interlock
- Monitor Logic State Of 10 Inputs
- Simple Dial-Up Connection

# CONEX ELECTRO SYSTEMS

1602 Carolina St. P.O. Box 67 Bellingham, WA 98227  
360-734-4323 FAX 360-676-4822

EMAIL conex@conex-electro.com

FOR MORE INFORMATION

1-800-645-1061

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

www.conex-electro.com

# Web Watch

▶ Continued from page 36

Those hopes faded as the winter's chill set in. The **Walt Disney Internet Group** cut 135 staff positions at the

Though the Chicken Littles of Internet radio may be — I think they are most certainly — mistaken, sometimes such paranoia isn't totally misplaced. Some savvy marketers even capitalized on the "sky is falling" motif. On its Web site, **Taco Bell** offered a certificate for free taco to

everyone in the United States if any core elements of the **Mir** space station happened to land on a floating target they'd set adrift in the Pacific.

The odds of a direct hit on the floating 40-foot target painted with a Taco Bell bull's eye and bold purple letters stating: "Free Taco Here" logo were pretty remote. But how can you know for sure?

Just in case, the company took out an insurance policy so that it wouldn't get stuck with having to pay for the whole enchilada.

Too bad more Internet companies didn't have the same foresight last year to set aside something just in case the boom didn't last.

*Carl Lindemann has worked in radio as a field reporter and production director.*



Taco Bell's Web site offered a minute-by-minute countdown of Mir's descent and this picture of its 'Free Taco If Mir Hits This' target that was floating in the South Pacific.

*He consults on radio/new media projects and writes extensively on these subjects. Reach him at carl@cyberscene.com*

**As of January, 56 percent of adults have Internet access, as do 45 percent of children. Has the Internet become a mainstream mass medium?**

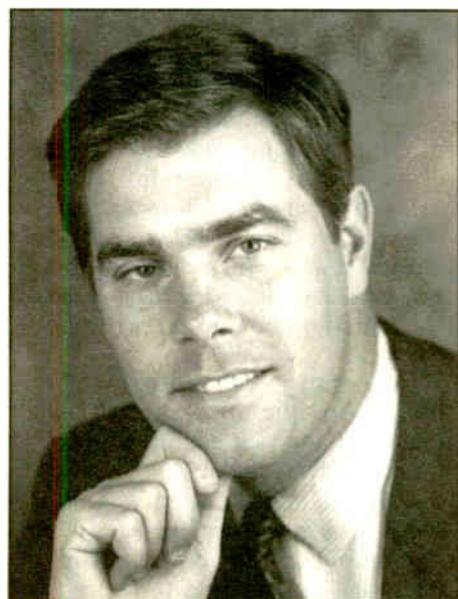
end of February, mostly from **ABC.com** and **ABCNEWS.com**.

These cuts came in the wake of Disney's decision to give up on its **Go.com** portal strategy. Even so, rumors have it that Disney still has an eye out for Internet opportunities. According to **CNET**, when asked about possible interest in acquiring **Yahoo!**, **Disney Chairman Michael Eisner** said that the Internet powerhouse was a great company — just overvalued.

As **Yahoo!** continues to drop — its stock in March was down more than 90 percent from its peak a year earlier — it may soon become part of one of the major media companies. How the world has changed since **AOL** managed to buy **Time Warner!**

Still, the Internet will continue to expand its presence on traditional media. **Salon.com**, the award-winning news and lifestyle Web site, will go forward with plans for producing a weekly public radio version. **Public Radio International** was to launch the show on March 1 on more than 100 affiliate stations including most major markets.

The launch was first moved back a month and now has been postponed until fall.



Michael O'Donnell

"While we felt excited and encouraged by the progress we were making with the show creatively, we felt that the finished product wasn't quite ready," said **Michael O'Donnell**, chief executive officer and president of **Salon Media Group**. The extra time will allow **SMG** to build the show's staff. This expansion into radio is in stark contrast with staff cuts for **Salon.com's** core operation.

# NEW Digital MARTI Transmitters

**Plug N Play 150**  
The latest in digital and RF technology combined with Broadcast Electronics' exciter technology—accepts analog or digital input (AES/EBU, SPDIF, TOSLINK) from an STL, ISDN or direct feed.

**Plug N Play 1000**  
All-new PNP 1000 produces 1000 watts of super clean FM signal from any analog or digital source. Easily rack mounted and easy on the budget.

**Digital Cellcast**  
The new digital version of our popular Cellcast transmitter is easier to use, lighter and more rugged. Just turn it on and go!

See **MARTI's** new digital transmitter line at **NAB 2001**, **Broadcast Electronics' booth R2505**.

[www.martielelectronics.com](http://www.martielelectronics.com)  
**(817) 645-9163**

# MARTI™

A Broadcast Electronics Company

©2001 Broadcast Electronics, Inc. Marti is a registered trademark of Broadcast Electronics, Inc. - 301BER/RWD

# ◆ NET RADIO SERVICES ◆

Programs and Services for Radio Stations  
Mail info and photos to: RW Station Services, P.O. Box 1214, Falls Church, VA 22041

## Vindigo Wireless Service Sends Ads to Moving Users



Vindigo is a wireless service that delivers targeted, measurable, location-sensitive advertising to commercially available mobile devices, such as Palm Pilots, Ricochets or Internet-enabled cell phones.

It allows users to carry listings, information based on the user's location and update content whenever the user's device is in sync with their personal computers.

Vindigo offers a feature called "point-of-interest advertising" that allows a consumer to search for more information about products and services.

Webcasters could, for example, send ads to listeners who

were in the vicinity of an advertiser's business.

The base of people who actively synchronize with Vindigo's server numbers approximately 300,000 in 20 cities.

Last year the Ad Council began using mobile devices to make public service announcements in partnership with Vindigo.

The Ad Council uses these new advertising opportunities to promote charitable campaigns.

For more information on Vindigo wireless services call (212) 590-6900.

# Never Go Off the Air! Get Scott Studios'

# INVINCIBLE

Fail-Proof  
Digital Audio System

## Scott Studios Delivers Radio's Only Self-Healing Redundant Digital System

Major stations in major markets choose Scott Studios' *Invincible*. It's a mirrored pair of top-of-the-line SS32 digital audio systems, plus Scott's exclusive diagnostic watchdog that double-checks everything several times every second by fast USB. At any hint of trouble, the backup automatically starts playing where the problem unit left off! *Invincible* switches so fast that most listeners hardly hear a glitch. In fact, one touchscreen controls both systems seamlessly so some announcers don't notice a switch.

Hands-free redundancy is one of many reasons why major stations in New York, Chicago, Los Angeles, Houston, Dallas, Philadelphia, San Francisco, DC, San Antonio, Phoenix and Toronto installed Scott Studios' SS32 recently. 3,500 stations in the U.S. have Scott systems and those of our sister company, Computer Concepts Corp. More stations use our systems than the second and third largest digital vendors combined! Our customers benefit from the biggest and best service and support staff in radio's digital audio industry, with 105 people at your service.

Scott's *Invincible* SS32 is the most robust digital system of all! SS32 delivers more streams of perfect uncompressed and MPEG audio than any other system. You get industrial rack computers, the fastest CPUs, mega-memory, hot swap redundant power supplies, ultra-fast RAID mirrored hard drives, extra cooling, NT networking, two premium four-output stereo audio cards per system, the best flat panel touchscreens and up to a 5-year exchange warranty! Nothing else gives so much peace of mind as Scott's *Invincible*.

Scott Studios SS32's user-friendly intuitive touchscreen is the simplest for announcers to use and gives all the features that creative major market air talent demands.

For example, SS32 delivers:

- 30 sets of 30 hot keys for instant play of jingles and effects.
- Cart walls that play song requests within 1 to 3 seconds.
- Display of last play and next scheduled play dates/times.
- Ripper puts CD music on hard disk digitally in 18 to 28 seconds!
- Easy voice tracking in context in air or production studios.
- Fast "no-dub" production uploads from Sound Forge.
- Phone recorder with audible scrub and waveform editing.
- SS Enterprise supervises 24 stations over the Internet!

For details about SS32 *Invincible*, go to [ss32.com](http://ss32.com) or call toll-free at 1-888-GET-SCOTT.



Shown above is the top-rated "Big Boy" morning drive personality pointing to the SS32 touchscreen at KPWR, Power 106 FM in Los Angeles. For details, visit [ss32.com](http://ss32.com) or call 1 888 GET SCOTT.

## Scott Studios

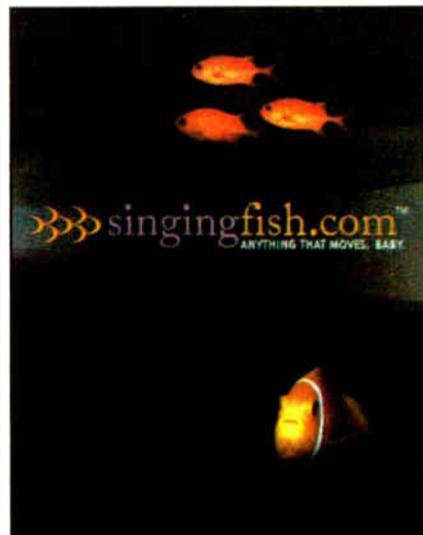
13375 Stemmons Freeway, Suite 400  
Dallas, Texas 75234 USA  
Internet: [scottstudios.com](http://scottstudios.com)

(972) 620-2211 FAX: (972) 620-8811  
1-888-GET-SCOTT

## Give Streaming Media Ocean Access

Singingfish.com allows Internet users to locate streaming content including audio, video, MP3 files or Webcast stations. The service is custom-fit to each customer's Web site.

Singingfish provides search engine architecture and access to a collaborative network of content producers that the company says is respectful of ownership and copyright issues.



The service provides listeners with the ability to find movie trailers or clips for any of the films that a morning talent mentions on the Friday weekend preview, or video clips of a musician who will soon be in town when a station is giving away tickets for that show via an on-air/online contest.

Or a station can add streaming media to the Singingfish.com multimedia search engine, allowing Internet users to find it.

The Singingfish search engine is scalable, so it adds and updates more streaming media to its listings, increasing the efficiency for users and reducing the number of "dead ends."

Dial-up and broadband users will find access to 7 million streams in the company's streambase.

Singingfish.com is a subsidiary of Thompson Multimedia, the world's fourth-largest consumer electronics producer and marketer of RCA brand products.

For more information call Singingfish in Seattle at (206) 691-0565 or visit [www.singingfish.com](http://www.singingfish.com)

# Cerf

► Continued from page 33  
regulatory responsibilities over the Internet as it does radio and TV.

**Cerf:** That's been a subject of some discussion and debate. (FCC Commissioner) Harold Furchtgott-Roth would agree with you. But others would say that it does and that, for now, they've just held off regulating to let the new medium grow.

## 'Radio as a means of wireless communication is affecting the Net in ways beyond conventional broadcast radio.'

We could have a good debate at NAB2001 if we could get Michael Powell to come out. He's going to be under pressure because of a kind of schizophrenia that strikes Republicans. They're split between a desire for a hands-off regulatory attitude and a concern for content — an outrage over the fact that certain things are found on the Net.

(Ed. Note: FCC Chairman Powell was indeed expected to speak at NAB2001.)

**RW:** What about concerns about free, open access as media giants like AOL/Time Warner try to direct those online to its content?

**Cerf:** AOL/Time Warner will have to skirt that with some care. Otherwise, we'll be moving back to the time when the movie studios owned the theaters and would only play what they had produced.

**RW:** What are the non-broadcast radio concepts that interest you?

**Cerf:** The idea of reproducing audio online opens up all kinds of intriguing possibilities. Really, this allows for an expansion of what we think of as radio.

In cars, for example, an Internet-enabled device can deliver more than just sound. It might just as well have a "heads-up" display with it. What's powerful is that you can separate audio and video advertising, or have audio with video information that's not tied to it.

Using the Internet this way makes it a richer medium than radio. You don't have to interfere with the audio playing to

achieve advertising objectives because that information can be offered elsewhere.

And it's not just video and audio, either. You can deliver anything embedded in Internet packets — all kinds of additional content on top of the audio.

**RW:** What about altogether different communication concepts unique to the Internet?

**Cerf:** I'm still toying with the idea of

what it might mean to have "group radio." This is where people use a Web-based application where sound is produced.

**RW:** This sounds similar to some attempts at musicians having online "jams" as well as talk radio programming.

**Cerf:** Yes. And it's hard to make that work. You can't afford much delay before the jam or the conversation breaks down.

Doing audio and video synched is tricky. I participated in a talk radio show we did all around the Net. A fellow in San Diego was taking audio off the phone line from around the world and dumping it on the Internet.

Meanwhile, we were also in a chat session online. I was typing something about the sound I was hearing. Someone typed back that they were hearing something else. We discovered that people on dial-up connections were anywhere from 30 to 90 seconds behind those connected with a T-1 line. The typing and the talking weren't in synch.

It's partly a consequence of having to buffer audio to keep it from breaking up. The buffering is a consequence of (the need for) storing forward. Packet switching over varying bandwidth circuits introduces a great deal of variability.

**RW:** So the Internet is really better geared for asynchronous communications rather than those in real-time?

**Cerf:** In some ways, simultaneity no longer means anything. Looking far into

the future at the interplanetary Internet, the phrase "at the same time" is completely empty.

**RW:** Speaking of space, what about the wireless future where Internet data is distributed via satellite?

**Cerf:** I've gotten very excited about digital broadcast satellite as a way to deliver high-bandwidth IP packets to targets. It is a very reasonable thing to do, especially if it is a one-way multicast.

With enough forward correction, you can do a fairly good job of sending (more) than just sound and video. The satellites going up for broadcast radio are not geared for this. However, the digital broadcast satellites for video are perfectly suited for it.

**RW:** What about the next-generation cell phone network?

**Cerf:** Things have been evolving rather quickly with the third-generation cell phone network. Supposedly, it's got a 2 megabit burst rate. That's not a continuous rate and I'm not sure what these can sustain. It's also an open question as to how many of these can operate per square mile.

This depends on technical issues that will have to be sorted out — things like power control issues and how it relates to the "near-far" problem.

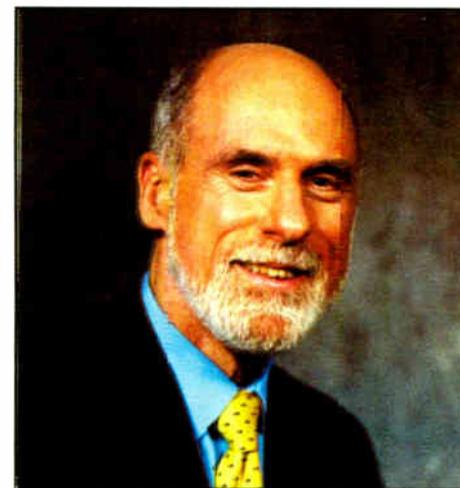
**RW:** Is it a mistake to just think of the Internet as an alternate means of distributing broadcast material?

**Cerf:** It's like calling an automobile a

horseless carriage.

It's a common thing (with an innovation) to start out with something that emulates the known medium with a known market in place. Then, once it's become established, you discover a lot of other things. In time, Internet telephony will sound as sensible as "horseless carriage."

**RW:** And this gets back to radio's first use — "wireless telegraphy."



Vinton Cerf

Broadcasting followed much later.

**Cerf:** Exactly. (Where the Internet differentiates itself from traditional broadcast) is in the ability to do things on demand and interaction in general.

What's terrific about some new devices, for example the TiVo (personal TV service), is that it allows you to pause real-time TV broadcasts. Think of how this could translate to radio. Suppose you're driving and the phone goes off. How nice to be able to hit pause and pick up the radio show where it left off!

**RW:** So broadcasters should be looking for ways to add amenities offered by the Internet — combinations of the media.

**Cerf:** Hybrid ideas are what I preach about all the time.

## 'Suppose you're driving and the phone goes off. How nice to be able to hit pause and pick up the radio show where it left off!'

Think about voice-enabled browsers. We're seeing speech recognition becoming a very valuable tool. You could even have a conversation with the Internet-enabled computer playing the streams to your car.

What's tremendous is that the Internet lends itself to broadcast when it's appropriate to have a lot of people connected as well as to narrowcast or pointcast. It's capable of all this. 🌐

For all your audio & audio-for-video needs:

BROADCAST

www.BRADLEYBROADCAST.com

PRO AUDIO

800-732-7665

Local Phone: 301-682-8700 • Fax: 301-682-8377 • Address: 7313-G Grove Road, Frederick, MD 21704

# CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing: Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it.

Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

On the other hand, maybe you are the sort who can run a fast machine. Who loves the thrill of smooth power. Who revels in the admiration of others.

Omnia-6 - if you can handle it.



[www.omniaaudio.com](http://www.omniaaudio.com)

North America: + 1.216.241.7225  
Europe: + 49.81.61.42.467

Omnia is used in 4 of 5 leading stations in New York, 2 of the 3 top stations in Los Angeles and 5 of 6 of the most listened to stations in the US. It's on the leading stations in Paris, all of the BBC's FM stations in the UK, and the number one stations in Canada, Ireland, Germany, Finland, Australia, India, China, Denmark, and Sweden.

# Studio Sessions



**ARP & Greaseman**

See Page 44

Radio World

Resource for Radio On-Air, Production and Recording

April 25, 2001

## Stroll Down Radio's Memory Lane

*An Equipment Junkie Takes a Look at Studio Equipment That has Shaped Our Past, Present*

**Tom Vernon**

I've worked in radio over the past 30-odd years. Whatever other job titles I've had, my unofficial title has always been "station packrat."

My philosophy is this: what was once worn-out junk becomes with the passage of sufficient time "vintage gear." Whether it was sales catalogs, tech manuals or broadcast equipment, anything that looked interesting and was about to be

tossed out never made it to the dumpster.

For the interest of collectors everywhere I've decided to share some of a few of the items from my attic and bookshelves, pictured in these pages.

### Pull up a cart

The cart machine was introduced in the late 1950s as a way to reduce the drudgery of reading the same live spots over and over. This tool quickly became an essential item in the studio.

As technology advanced, the limitations of the cartridge and tape medium made cart machines the weak link in most broadcast chains. By the 1980s, compact disc players and digital storage devices were beginning to replace the cart machine.

The rapid-fire barrage of commercials and jingles that was a staple of top-40 radio would not have been possible without them.



The Gates Sta-Level was found in many stations throughout the 1960s.

Later, with secondary and tertiary cue tones, and the larger B and C size carts, they were an important component in early automation systems. The NAB later adopted stereo carts, originally mono devices.

Head alignment on the early cart machines was rather crude by today's standards. A long, thin wrench was inserted on the mounting nut behind the head and slowly rocked back and forth devices.

See VINTAGE GEAR, page 42 ▶

### PRODUCT EVALUATION

## GEM Burns Tape With TurboTrax

**Read G. Burgan**

When the audiocassette was introduced nearly 40 years ago, it created a revolution. The cassette provided an inexpensive, high-quality and convenient recording medium. The masses and professionals readily embraced it.

That was then; this is now. The audio compact disc has eroded the cassette market severely. With blank CDs selling for as low as 20 cents and CD recorders for under \$200, the audiocassette is in retreat.

In retreat — yes, but far from dead.

Additionally, where there are audiocassettes, there is a need to duplicate them. Good cassette duplicators are easy to come by — if money is no object. Most quality, high-speed duplicators run \$2,000 or more. That price is a bit stiff if all that is needed is to duplicate a few spots or an occasional program.

### Makin' Trax

But what if you want a low-cost unit? I went looking for a good, affordable, one-to-one duplicator, and was impressed by a unit made by

**Why would a company choose to market a new line of cassette duplicators when the world is marching vigorously toward the digital realm?**

Almost everyone owns several cassette players or recorders, and there are almost as many cassette players in cars as there are cars themselves.

Even radio stations and production studios still find plenty of uses for audiocassettes. What better way to make a copy of this morning's talk show for a listener? How about a quick copy of that new spot for the corner grocery store? And how many news departments still prefer their trusty old cassette recorder?

Graph Electronic Machines Ltd. of England. The GEM TurboTrax one-to-one monaural duplicator can be purchased for as little as \$350.

Why would a company choose to market a new line of cassette duplicators when the world is marching vigorously toward the digital realm? For an answer, I asked GEM General Manager Alan Leonard.

"Graff Electronic Machines Limited was founded in 1983 by its  
See TURBOTRAX, page 47 ▶

**You'll find endless features and more than forty cool effects in every box of Cool Edit Pro!**

**Cool Edit Pro**  
The complete multitrack recording studio for Windows™

**100% new features & many improved!**

P.O. Box 62255  
Phoenix, AZ 85082 USA  
cepro@syntrillium.com  
1-888-941-7100  
(toll-free sales, USA and Canada)  
tel: +1-480-941-4327  
fax: +1-480-941-8170

**...good sound stuff!**

**Syntrillium**  
SOFTWARE CORPORATION

## Vintage Gear

► Continued from page 41

while the engineer monitored the 10-kHz tone on the alignment tape for a peak reading. A liberal glob of nail polish on the nut more or less locked the setting.

Even with mono cart machines, this was a hit-or-miss proposition. Life became much easier when head height and azimuth could be accurately set with Allen wrenches on the newer-style head brackets.



This ATC/Collins cart machine featured plug-in modules with vacuum tubes for both program and cue amps.

My 1961 Spotmaster 500 was built in Washington, and was the first cart machine to be manufactured by the company that would later be known as Broadcast Electronics. The Spotmaster 500 family was around in various forms for about 20 years, but this prototype machine had some unique features.

Start or stop buttons are absent from the front of the machine. Rather, this device is started with a spring-loaded toggle switch on the right side of the chassis.

### Design

Line and mic input jacks are located on the left side of the machine. The circuitry is a hybrid tube/transistor design, with the playback and cue tone amps being solid state, while the record electronics uses vacuum tubes.

Neon bulbs indicated ready and record status. The tape transport was an early variant of the Viking-manufactured belt and flywheel drive device included in every Spotmaster and Tapecaster cart

machine from that era.

FCC type-approved frequency and modulation monitors used to be a required item in every station until the rules were relaxed. When the FCC eliminated the requirement for logging carrier deviation readings on the transmitter log in the early 1970s, the stand-alone frequency monitor went the way of the dinosaur.

The early modulation meters were not too accurate with program audio. In addition, users had to rely on the adjustable peak flasher to gauge where modulation

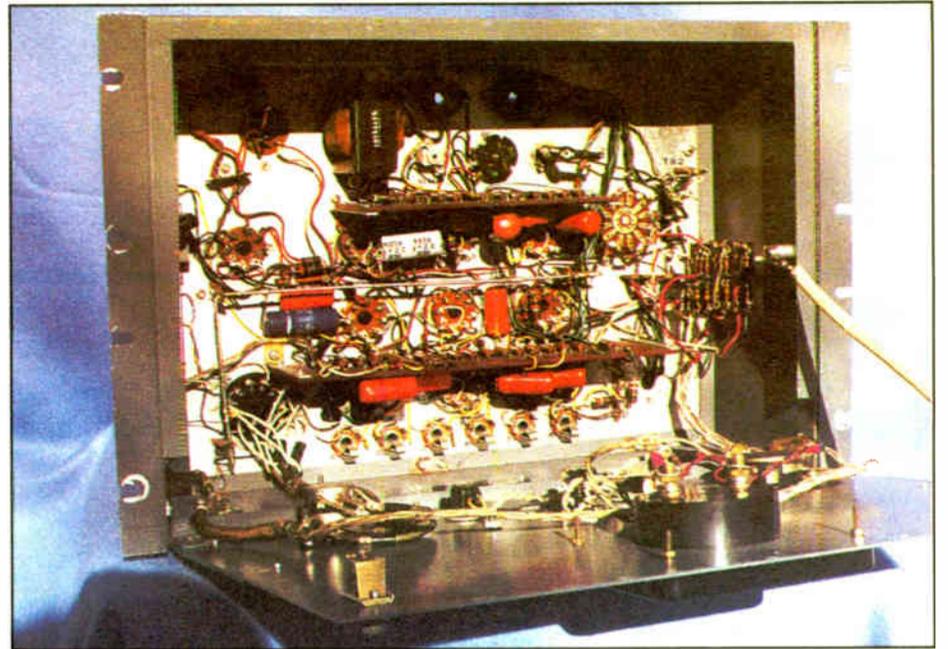
peaks were hitting, even with very limited processing.

The sight of the flasher regularly lighting at 100 percent, while the meter indicated 30- to 40-percent modulation, was not uncommon.

Manufacturers gradually improved the



The author spent many hours doing progressive radio shows in New Hampshire with this 1946 Gates model 31-B console.



The front panel of the SA39B hinged down for easy access to interior components. Note the jacks on the bottom for checking tubes.

circuitry so that the meter was more of a true representation of average modulation. Eventually, modulation meters incorporated bar-graph displays, eliminating the mechanical meter movement altogether.

The 1947 GE BM-1-A FM frequency and modulation meter was built at a time when General Electric was a major player in the manufacturing of both radio and TV broadcast equipment. The blue hammertone finish we see on this monitor

was a signature of the company's gear.

The BM-1-A has 14 tubes and uses 8-3/4 inches of real estate in the equipment rack. Its companion regulated power supply weighs in at 26 pounds, takes up and additional 7 inches of space and was usually mounted below the monitor.

Both meters and the peak flasher could be remote to an extension panel or remote control. Some of the meter's specifications might not be up to today's standards. The illuminated center frequency meter had an accuracy of +/-500 Hz.

The monitoring output had an overall distortion of less than 0.25 percent, frequency response within 0.5 dB of the standard de-emphasis curve from 50 to 15,000 Hz and noise level about 75 dB below 100-percent modulation — pretty impressive specs for 1947.

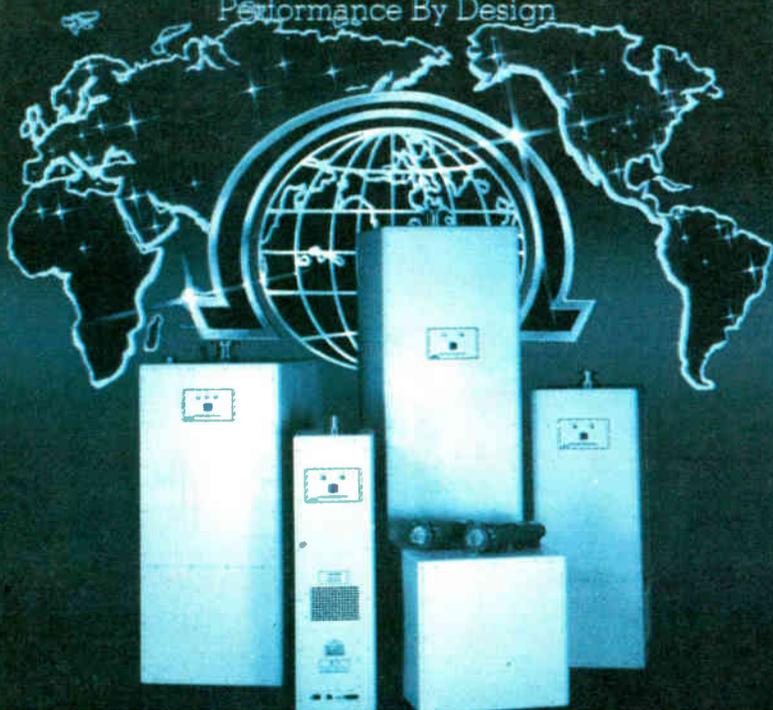
Except for one control on the front panel, this monitor has all its original components. While it will probably never see service again, it makes a unique display piece.

Audio processing has not always been a competitive sport. Originally, AGC amps and peak limiters merely smoothed out dynamic range and kept modulation within FCC limits of 85 to 100 percent of

See VINTAGE GEAR, page 43 ►

## ALTRONIC RESEARCH INC.

Performance By Design



MANUFACTURER  
OF RF COAXIAL LOAD RESISTORS.

DUMMY LOADS FROM 1 KW TO 1500KW,  
AVAILABLE IN AIR, WATER OR SELF  
CONTAINED HEAT EXCHANGERS.

HIGH POWER NON-REACTIVE CERMET  
RESISTORS FROM 1 OHM TO 20 MEGOHMS.



ALTRONIC RESEARCH INC.

P.O. Box 249 • Yellville, Arkansas 72687 870-449-4093 • Fax: 870-449-6000  
E-mail: altronic@mtnhome.com Web Site: <http://www.altronic.com>

# Vintage Gear

► Continued from page 42  
frequently recurring peaks. Then the FCC revised the rules so that AM stations could modulate at 125 percent on positive peaks and the loudness wars really heated up.

This strategy became even more necessary with the advent of disco in the late '70s, where energy in the low-frequency band of dance records reached levels never before imagined. Eventually, the audio processor evolution had more to do with software innovations than analog circuit design, as digital signal processing techniques were incorporated into broadcasting.



This 1948 General Electric BM-1-A FM monitor kept a Boston broadcaster legal for many years.

Early asymmetrical AM peak limiter circuits used simple logic devices and a small relay to reverse polarity of the audio if the negative peak had a higher amplitude than the positive, ensuring a continuous train of high positive peak audio to the AM transmitter.

The Gates Sta-Level AGC and SA-39B peak limiter are typical 1960s processing devices.

The Sta-Level was usually located at the studio. The unit had six tubes and its only adjustment was a front panel toggle switch for single or double recovery time.



The 1972 Wilkinson GCA-1 was one of the first AGC amps to use a true RMS detector in the limiter circuitry.

Later, it was discovered that a more natural sound was possible by dividing the audio signal into three or more bands and processing each one separately and multi-band limiting was born.

The control circuitry was developed around the type 6386 variable-mu remote cutoff dual triode. The system was similar to a circuit developed by GE for the Uni-Level amplifier

## Get Focused.

24-bit Analog I/O • 24/96 Digital I/O  
Balanced XLR Connections



"Sonically, the LynxONE is top quality. Easy install and crash free operation... offers I/O and sync options professionals expect. One could use this card for a big-buck master session or block-buster movie without any reservations."  
- Pro Audio Review  
April 2000

"It's extremely clean, very clear, and amazingly accurate. Rock solid with a wide range of programs."  
-Recording Magazine  
February 2000

"The LynxONE is an excellent mastering card in terms of sound quality and flexibility. Suitable for today's professional studio."  
AUDIO QUALITY: 5 [out of 5!]  
-Electronic Musician  
August 1999

**LynxONE**  
Lynx Studio Technology, Inc.  
1048 IRVINE AVE. #468, NEWPORT BEACH, CA 92660 ph.949.515.8265 • www.lynxstudio.com/rw



Shown is the first cart machine manufactured by Spotmaster. The original 500 contained both tube and transistor circuitry.

The SA-39B lived at the transmitter site and had only a six-position switch to adjust recovery time. Optimal balance of the push-pull stages was essential both to good audio quality and to eliminate the thumping sound that plagued tube limiters with fast attack and recovery times.

### Detect and reject

To that end, the SA-39B featured 1/4-inch phone jacks in the cathode circuits of all six tubes in the audio stage so balance could be checked without a tube tester. Neither the Sta-Level nor the SA-39B had "operate/disable" switches to defeat limiting action. When it came time to do the annual proof, you simply removed the rectifier tube in the limiter circuit.

A seldom-seen item in my processor

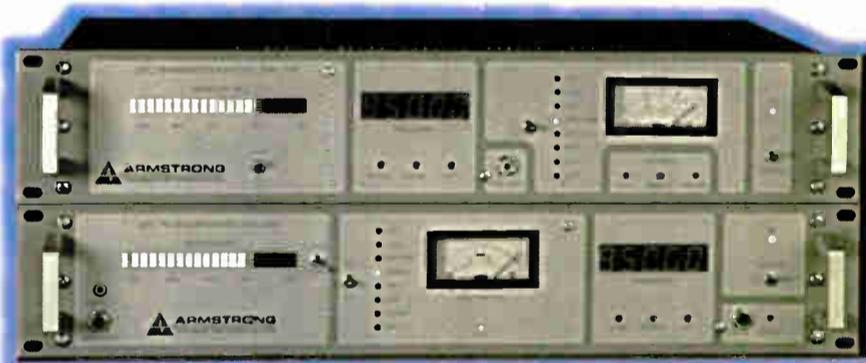
collection is the 1972 Wilkinson GCA-1 stereo AGC amp. It was among the first devices to use a true RMS detector circuit rather than the traditional peak detector, allowing more accurate gain reduction on both voice and music.

A Rayistor, a proprietary Raytheon device with an incandescent bulb and LDR, largely governed the limiting action speed of the GCA-1. The user could not adjust the limiting action. The GCA-1's naturally slow response made it a favorite with classical music broadcasters.

Quarter-inch open-reel tape has been the most pervasive medium in broadcast. This tape can be traced back to its origins in Germany during the late 1930s. Reel-to-reel machines still survive in small

See VINTAGE GEAR, page 44 ►

## Frequency Agile STL Systems



▲ If you are looking to deliver clean, crisp audio to your transmitter via microwave, Armstrong FML-10 STL system offers unsurpassed audio purity in a rock-solid, feature-packed package.

▲ Built to tough manufacturing standards throughout, FML-10 system features microprocessor controllers, advanced PLL circuitry, ultra linear VCO and front panel frequency programmability with digital frequency readout.

▲ Currently in service at over 300 stations in 21 countries, this field proven design is a "rock-solid" STL choice for any station.

**Complete System Under \$5500.00**  
**Same Day Shipping**  
**30 Day Money Back Guarantee**



**ARMSTRONG**  
TRANSMITTER CORPORATION

4835 N. Street • Marcellus, NY 13108 • PH: 315/673-1269 • Fax: 315/673-9972  
E-mail: info@armstrongtx.com • www.armstrongtx.com

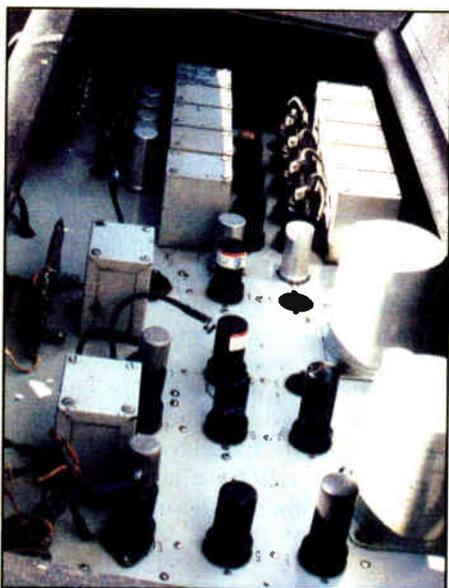
## Vintage Gear

► Continued from page 43

market and college stations and the vast amount of material archived on 10-inch reels insures that a few machines will be around well into the 21st century.

While the basic three-head design of most recorders remained unchanged, transports evolved from rather crude devices with high torque motors, felt brakes and microswitches to microprocessor-driven devices with regulated DC motors, photocells and motion sensing logic.

Record/playback electronics evolved from tube to integrated circuit. The latest machines have microprocessor control of levels with indications via a digital display of hexadecimal numbers.



A Look Inside the Eight-Channel Gates Console

Besides enabling the recording and playback of radio programs at a later date, the reel-to-reel machine gave birth to the art of editing tape. For the first time, programs could be edited both for length and creative content.

Almost every radio station in the 1960s had at least one Ampex 350 with a splice block mounted on the head stack in the production room. This Ampex 601 was the baby brother to the 350 series. Not as versatile as the larger machines in terms of reel size or editing capability, it came in a portable case, making it useful for field recordings and newsroom operations.

The machine was available in full- and half-track configurations and some models allowed selection of both 3.75 and 7.5 IPS speeds. The AG600, introduced in 1967, was a solid-state version of the old 601.

Consoles usually were the focal point of studios and many of these vintage boards were works of art. Some had a built in multimeter and switching so all the tubes could be checked without taking the board out of service.

A hot standby program amp was often available with the flick of a switch, should the main line amp fail. Some Western Electric consoles had a built-in patch panel. A number of unwired utility switches were usually provided so there were unlimited opportunities to design custom intercom, door buzzer, muting, and remote switching functions.

Chrome trim and wood end pieces were also common. Gradually, many of the superficial design frills disappeared and slide faders replaced the familiar rotary pots. Today's digital consoles look very similar to the analog predecessors

and computer touch screens may replace consoles altogether.

My 1946 Gates model 31-B 8-channel console comes from the generation of boards that preceded the popular Yard, Studioette and Gatesway series and features the same sleek black and chrome front panel as the other models.

### Classic design

While the 31-B is housed in the metal enclosure shown here, the 31-A featured handcrafted wood cabinetry, an option not seen since then. The five mic pre-amps are two-tube circuits with a 6F5 and a 6C5.

The identical program and monitor amps each have a three-stage 6J7, 6C5, 6F6 push-pull circuit. A cue amp was not originally included in these older consoles. Attenuators with a cue position were added later.

Interestingly, the audition and program positions on the channel keys reversed. An external power supply provided filament and plate voltages, as well as 6 VDC for the muting relays. Smaller Gates consoles in this series used a large lantern battery to power these relays.

A six-position rotary switch on the chassis selected several ranges for the VU meter and also connected it to terminals on the rear of the chassis so that it could be used for external metering. This was a common feature of older broadcast gear.



This Gates SA-39B peak limiter once processed beautiful music for a Boston radio station.

It's somewhat sad to recall these once-vital items as display pieces in a collection.

Over the past 30 years, broadcast gear has transitioned from analog equipment with vacuum tubes, transistors, and integrated circuits, and now to software and sound files on a hard drive. A glimpse of this old equipment brings to mind sounds not heard around the station for some

time: 45 records being slip-cued, reel-to-reel tape fast forwarding, the once-a-second clunk of the Western Union clocks and the ever-present clatter of the teletype machine.

In his spare time, Tom Vernon still scavenges for vintage broadcast gear. Reach him at [tlvernon@blazenet.net](mailto:tlvernon@blazenet.net) or at (717) 367-5595.

## Lending a Hand in the Grease Pit

Alan R. Peterson

If you have kept track of the trades, you may have seen that Doug "Grease" Tracht is trying a comeback in the Washington market and in syndication.

You may recall CBS Radio dismissed Tracht two years ago for a blurb that backfired on him due to racial overtones. He was for the most part considered untouchable by the broadcast industry, except for some TV projects.

peared from the Boss Jock roster and the public awareness.

But Tracht had to be on the air. Not as a matter of pride, but because it is what he does.

How he got there will be told in a moment. As for me, it was a ride I would not have missed.

### Wanna swap?

In the mid-1980s well into the '90s, Grease tapes were traded among DJs like so many Pokémon cards

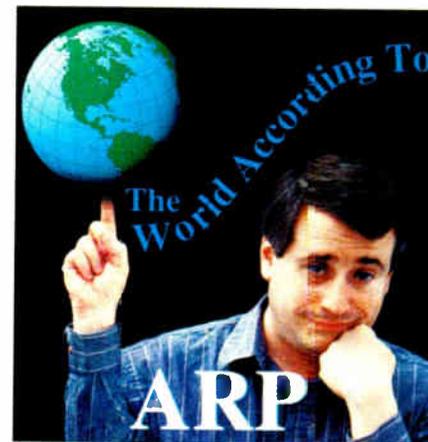


Who's giving the pointers here?

Many lesser jocks would have taken the same road traveled by others unemployed before them: become a wedding DJ, hang out the "consultant" shingle or repackage themselves as an "ad agency" specializing in one or two vanity accounts and moonlighting at the beer distributor warehouse at night. Within months, their names would have disap-

peared from the Boss Jock roster and the public awareness.

In 1984, I was a fan of comedy-based jocks like "The Real Bob James" in Cleveland and Gary Craig in



Hartford, Conn., and was already doing my own fast-talking, wisecracking thing in Western Massachusetts. A friend and former news director at WMRV(FM)/WENE(AM) just outside of Binghamton, N.Y., sent me a cassette of the Grease. It made me feel as if my own show efforts were mired in wet cement.

### The wheels on the bus

In 1986, I chaperoned a bus trip to Washington and heard the show live on WWDC(FM). The day before, I had four wisdom teeth pulled and prescription codeine painkillers were blunting my consciousness. What I remembered about the show was practically a rumor.

It wasn't until I moved to D.C. in 1995 that I finally heard an entire broadcast. In 1997, I began submitting unsolicited comedy material to the program, which almost always aired. And in 1999 came the unfortunate denouement.

Move ahead two years.

An Internet newsgroup reported that Tracht was poised to begin anew at a brokered 5 kW directional AM station in

See GREASE, page 48 ►

# Products & Services SHOWCASE

Lower **boom!**  
the



O.C. White Co.

#### Mic Boom Arms

- Noise-free, precision microphone placement
- Holds a multitude of mics
- Black or beige finish
- Large selection of mounts & risers available
- Order from your favorite dealer today!

**ALLIED**  
INDEPENDENT REPRESENTATION

Contact Dave Burns (765) 935-3893  
Email: dbcow@aol.com

## WEATHER RADIO Model CRW



Price \$540.00

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm audio output. Double conversion crystal controlled, crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel ( $\pm 25$  kHz) down to 70 dB. 19" rack mount, 3.5" H, all metal enclosure. In stock—available for immediate delivery.

### GORMAN REDLICH MFG. CO

257 W. Union St. • Athens, Ohio 45701  
Phone 740-593-3150 • FAX 740-592-3898  
www.gorman-redlich.com/jimg@gormanredlich.com

## AES3 Switching And Distribution

### Made Easy with the AES-200



#### Features:

- 2 Input AES3 Switcher
- 2 XLR Outputs, 2 BNC Outputs
- Remote Control/Status

#### Uses:

- Main/Alt. Transmitter Audio Switching
- Digital Studio Switcher
- Professional Digital Dubbing

### Broadcast Devices, Inc.

**bdi**

5 Crestview Avenue  
Cortlandt Manor, NY 10567  
Tel. (914) 737-5032 Fax. (914) 736-6916  
Website: www.Broadcast-Devices.com

## Network Control Made Simple!!



SEN-6 shown with optional rack mount

### THE NEW SEN-6

The SEN-6 is a single channel encoder with integral audio filtering that can produce 25Hz, 35Hz and combination tones from external closures. A special test mode and output lets you set tone insertion level without sending the tones over the regular program path.

### Finally! A professional Subaudible Encoder that you can really use!

- Encodes 25, 35 & 25/35 combination tones (can also generate 50 & 75Hz \*).
- Tunable notch filters remove subaudible content from program material prior to tone insertion.
- LED indicators for power, input set, output clipping and tone generation.
- Primary control & Status connections are duplicated on both screw terminals & a DB-9.
- Jumper-set precise tone duration.
- Suggested List Price only \$399.00

\* 50 & 75 Hz tones may require external input filtering to avoid false tripping.

CircuitWerkes - (352) 335-6555 / Fax 380-0230  
http://www.circuitwerkes.com / 3716 SW 3<sup>rd</sup> Place, Gainesville, FL 32607

## Remote tools

Designed by broadcast engineers for broadcasters, our flexible line of remote access and control equipment gives you elegantly functional solutions to your control requirements without the need for "custom boxes".



#### DC-8A Dial-Up Remote Control

Controls and monitors 8 external devices from any touch-tone telephone with extremely flexible programmable features.



#### PSC Programmable Schedule Controller

Stores and controls up to 160 events with Hour/Minutes/Seconds, Day/Month/Year, or Day of Week with Daylight Savings Time correction. 20 SPST relays and/or 32 serial custom commands provided.



#### MSO-8 Control Panel

Provides a convenient way to add front panel control to our smaller profile products with eight LED-indicator-equipped switches.



#### SRC-1616L Serial Remote Control

Equipped with 16 opto-isolated and CMOS/TTL compatible inputs and 16-Relay (Form C) outputs that may be controlled from a host computer, or a pair of units can be used in a stand-alone configuration (relay extension cord).



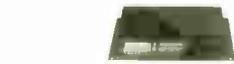
#### MC-16 Telephone Hybrid/Coupler

Full featured telephone line coupler/hybrid provides 32 programs; 32 ASCII strings (DTMF to ASCII); 64 macros; 16 relays; auto answer; 4-digit access codes and much more.



#### BOS, ROS & PBB-24 Switch Panels

The BOS offers 12 N.O. dry contact switches with status LEDs in a desktop panel. The ROS is similar, but in a single-space rack unit. The PBB-24 provides 24 momentary buttons that can be programmed to output ASCII character strings.



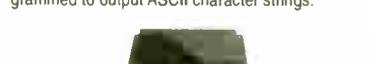
#### SRC-8 Serial Remote Control

The SRC-8 provides a means of adding 8 channels of remote control to RF, wireline and fiber type STL systems and may also be used with dedicated modems (full & half duplex models).



#### SSM Smart Silence Monitor

Monitors any stereo or two independent monaural sources and generates alarms indicating loss of carrier when white noise and/or silence is detected.



#### UI-4II Universal Interface

Perfect for adding logic functions to mechanical switches/relays, adding remote functions to transmitter control/logic, detecting phone line "ring", etc.

Check out our web site for product information, list pricing and a list of distributors!

Internet: www.broadcasttools.com E-mail: bti@broadcasttools.com

Voice: 360 . 854 . 9559  
Fax: 360 . 854 . 9479

**BROADCAST**  
**tools inc.**  
Innovative Problem Solving Tool For Broadcast



## Econco REBUILT POWER TUBES



Approximately One Half  
the Cost of New

3,000 Hour Unconditional Guarantee

Please call for quotation

Econco 1318 Commerce Ave. Woodland, CA 95776  
Phone: 530-662-7553 Fax: 530-666-7760  
Toll Free: 800-532-6626  
www.econco.com

## On Target.

Performance,  
value, and  
reliability  
through  
innovative  
technology.

5 models available:

- BC6DSL
- BC6DSR
- BC8DSL
- BC8DSR
- BC12DSL

## Vanguard Series™ STEREO BROADCAST CONSOLES



**ATI** AUDIO  
TECHNOLOGIES  
INCORPORATED

http://www.atiguys.com

Call or write for free detailed brochure.  
222 W. Maple Ave. Horsham, PA 19044, USA  
(215) 443-0330 FAX: (215) 443-0394

# Products & Services SHOWCASE



**MAGER  
SYSTEMS, INC.**  
The Best in Sound Furniture

Since 1979 Mager Systems has been designing and fabricating exquisite custom studio furniture for the broadcast industry nationwide. Our unique award winning furniture offers true solid wood premium construction, 3D drawings and design, delivery and installation. Of course, we still offer our 10 year warranty on solid surface tops exclusively, that will long out last wood edges and laminates. Our quality furniture is very affordable, and can accommodate every budget from economy to show-place. We know the broadcast industry is changing everyday, so, if you haven't looked at Mager Systems lately, its time you checked to see what we have new to offer like **Turnkey Rewiring**. Call us today and find out why Mager Systems is the best in sound furniture.



21602 N. Central Ave., Suite 1  
Phoenix, Arizona 85024  
TEL: 623-780-0045  
FAX: 623-780-9860

Does Your Studio Furniture Look As Great As This?

Check Out Our New Turnkey Rewiring

Designed, Fabricated,  
Delivered and Installed

[www.magersystems.com](http://www.magersystems.com)  
[mager@magersystems.com](mailto:mager@magersystems.com)

## THE #1 CHOICE!

- Eliminate flanging (hollow room) effect
- Eliminate bad room acoustics
- Hold absolute levels
- Correct voice symmetry

### AIRcorp 500PH Microphone Processor



- Front panel input level select +4 to -50 dB
- Three section variable boost and cut equalization
- Compressor/Expander cross coupled for maximum punch
- Built-in earphone jack
- DE-ESSER designed to protect pre-emphasis curves
- Simultaneous mic level and line level outputs
- Internal 48 Vdc Phantom Supply

**AIR corp**

Call your dealer

or call 972-304-0455 or fax: 972-304-0550

Freeland Products, Inc.  
Rebuilder of Quality Tubes Since 1940.

75412 Highway 25  
Covington, LA 70435 U.S.A.  
1-800-624-7626  
[www.freeland-inc.com](http://www.freeland-inc.com)  
E-mail [freeland-inc.com@freeland-inc.com](mailto:freeland-inc.com@freeland-inc.com)

THE COST EFFECTIVE  
ROAD TO POWER TUBES  
SAVE ABOUT 50%  
OFF NEW TUBE PRICES



ARE POWER POLES DEFORMING  
YOUR AM COVERAGE PATTERN?

DIRECTIONAL  
OR  
NON-DIRECTIONAL  
PROBLEMS CAN BE SOLVED  
SIMPLY  
AND  
INEXPENSIVELY  
WITH THE  
FERROLINEAR  
RF CHOKE

FOR INFORMATION CONTACT  
NOTT LTD  
PHONE 505-327-5646  
FAX 505-325-1142  
EMAIL [k5ynr@tjantenna.com](mailto:k5ynr@tjantenna.com)

**FERROLINEAR**



**Excalibur Electronics**

**CDA-1**

Composite Distribution Amplifier

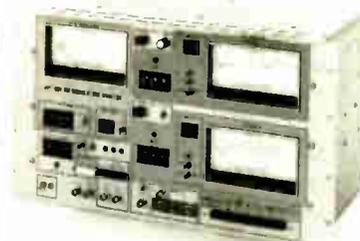


This 1 in, 3 out distribution amplifier allows you to distribute stereo composite and/or subcarrier signals as easily as audio.

- DC-100 kHz frequency response
- 90 dB signal/noise ratio
- +6 dB to -20 dB gain range
- Individual 20-turn output trimmers
- 1 3/4" rack mount enclosure

EXCALIBUR ELECTRONICS, INC., CHANTILLY, VIRGINIA  
Call your favorite radio broadcast dealer today for Excalibur products!

THE MOST COMPLETE FM  
TEST SET AVAILABLE  
AND IT'S A GREAT MOD MONITOR TOO!



- Complete proof of performance instrument
- Frequency agile
- Converts standard X-Y scope into a spectrum analyzer

The QEI Model 691 Modulation Monitor and Test Package is a high technology precision instrument that set a new standard for FM performance measurement tools. We also manufacture a very comprehensive FM transmitter Line. Contact QEI today and let us put our innovations to work for your station. Contact our sales department at 800-334-9154 (International 856-728-2020) or by e-mail at [qeisales@qei-broadcast.com](mailto:qeisales@qei-broadcast.com).

<http://www.qei-broadcast.com>  
QEI CORPORATION  
PO Box 805  
Williamstown NJ 08094 USA  
800-334-9154/856-728-2020  
856-629-1751 Fax

**QEI**

# TurboTrax

► Continued from page 41

sister company, Tector Limited, who were manufacturers of visual systems for flight simulators," said Leonard.

"The purpose (was) to have a product range that would create regular assembly work for a highly skilled production staff who were not always fully occupied on a day-to-day basis due to the lengthy contracts that were involved in flight simulation."

As to why cassette duplicators in particular, Leonard said. "The reason for choosing duplicators, was to further an engineering concept and our belief that there was a real need in the market for a duplicator that would offer the ease of use and performance that can only be achieved with a true direct drive mechanism."

## Look ma, no belt

The company's TurboTrax series of duplicators offer some attractive features for a low-cost unit, including a direct-drive system that uses no belts, pulleys or flywheels.

The units feature a microprocessor that controls all functions and even slows the cassettes down prior to stopping in the rewind mode.

The units actually break down into two categories and, from there, into two more subcategories, each with several variations.

One set of duplicators is not expandable. The other can accept slaves to increase the number of cassettes that can be duplicated at one time.

Each of these categories has either a one-to-one or a three-to-one configuration. In addition, the units can be purchased with standard or long-life heads, with or without erase heads. Mono and stereo units are available.

GEM sent me a mono, one-to-one unit with standard heads and an erase head. The unit has a plastic exterior case that is held in place without screws.

After playing with the unit for a few minutes, I figured out that the case just snaps in place and I was able to remove the cover to see what makes it tick.

The first thing to catch my eye was the mounting plate. The plate is a rugged, all-steel chassis that should hold up well to any normal abuse.

The second thing to catch my attention was the unit's simplicity. Three sets of motors exist for each cassette well — two smaller ones for the hubs and one larger one whose shaft serves as the capstan. Missing are the usual flywheels and belts and interconnecting rods.

The motors connect to an electronics board that runs the entire length of the left side of the unit. The board contains the microprocessor as well as the record/play amplifiers and bias electronics for units with erase heads. A hefty power transformer is mounted on the other side of the unit.

All of the heads and idler wheels for both wells are mounted on a common sliding plate. This ensures that the alignment for all wells remains constant.

All in all the TurboTrax is an attractive-looking piece of equipment, but how well does it perform?

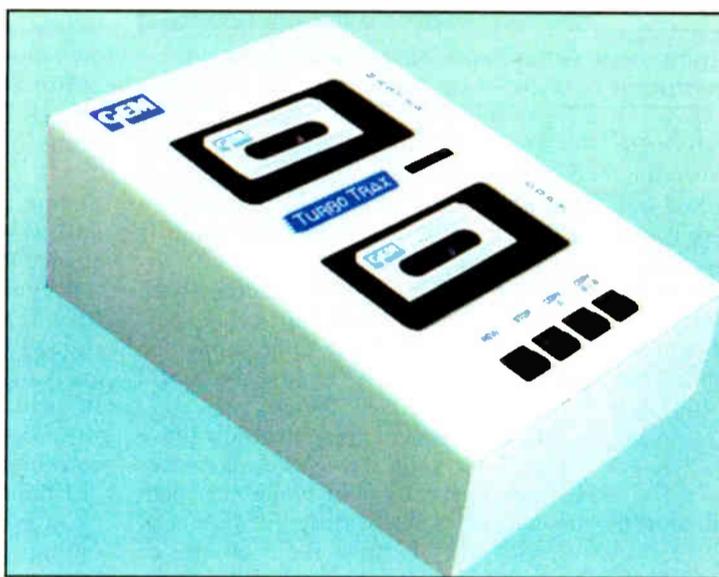
The machines are a pleasure to use. I have owned several duplicators, and all of them have been heavy, noisy affairs. At eight pounds the TurboTrax is light in comparison to other units and with direct drive motors, is delightfully quiet.

Operation is simple. Four push buttons control the unit — Rewind, Stop, Copy A and Copy A+B. The unit is so quiet, the user will hardly know it's running and because of the microprocessor, a user can stop and rewind the cassettes at any time.

The TurboTrax duplicator copies at 16x speed and can rewind a C-60 cassette in approximately 35 seconds. I use C-65 length cassettes and found I could copy a cassette in just over 2 minutes and rewind it in 37 seconds.

## New and improved

This was not the first unit I tested. Last year I tested a similar unit and the



The GEM TurboTrax

wow and flutter was unacceptably high. At that time I was told that several design changes were under consideration and I was asked to wait until the changes had been made.

What changes did GEM make in the TurboTrax? Leonard indicated that they had made several changes.

"The overall width of the sliding plate was reduced to give greater rigidity. The method of head mounting was revised to improve alignment between erase and record heads.

"The pinch roller arm was redesigned to give greater rigidity and the pinch roller arm fitted to main chassis instead of the sliding plate to maintain parallel path with capstan shaft. The left hand spool motor (rewind) has improved specifications and all speed control circuitry is now part of main PCB's to reduce number of interconnections."

With all of those changes, how would this unit fare? The initial copies I made sounded very good with great levels. I used chrome masters with high-quality, duplicator-grade, regular-bias cassettes for the copies.

Then it was time for serious tests. This time when I ran a frequency run, the tones were steady. The wow and flutter measured out at 0.25-percent — right in the ballpark and quite acceptable for a unit in this price range.

The frequency response was also respectable for a unit in this price range. The response was down -2.5 dB at 50 Hz and -3.0 dB at 5 kHz.

At 6,000 Hz the response was down

-7.0 dB, and by 10 kHz it was down -17 dB. When I re-measured the frequency response using cassettes supplied by GEM, the frequency response at 6 kHz improved to -4 dB. While not exactly high fidelity, the frequency response is respectable for a duplicator in this price range.

However, when I checked the timing accuracy, I discovered that the copies were running 1.2 percent faster than the master cassettes. This confirmed what my ears were hearing, i.e.: that the copies sounded a bit higher in pitch.

This result suggested that the copy well was running slower than the master well. When I brought this to the attention of Alan Leonard, he said, "The copy position is factory set to run approximately 1-percent slower than the master position. This was requested by our U.S. dealers from the outset to compensate for variation in tape lengths, and thus ensure the total content of the

master is transferred to the copy cassette."

He said, "The capstan speeds are individually adjustable and can be set to identical frequencies."

Armed with that information, I recalculated the timing accuracy and it came out to a very respectable 0.2 percent.

All in all, I'm impressed with the Gem TurboTrax cassette duplicator. I have ordered three of the one-to-one units with long life heads from the factory. These will be set with the master and copy wells in sync to ensure proper pitch.

And that would be my caveat: when purchasing a TurboTrax duplicator, specify that the master and copy wells are

synchronized.

I did not test a stereo version, so I cannot provide any insight on how well these units might perform. However, I have owned stereo duplicators in this

## Product Capsule:

### GEM TurboTrax Cassette Duplicator

#### Thumbs Up

- ✓ Lightweight
- ✓ Easy to use
- ✓ Direct Drive Motors
- ✓ Quiet operation
- ✓ Good quality copies
- ✓ Rugged

#### Thumbs Down

- ✓ U.S. models set to run fast
- ✓ No user adjustable volume controls
- ✓ No level indicators to measure output levels

List price starts at \$350.

For more information contact Graff Electronic Machines Ltd. in the United Kingdom at +44 (0)1636-893036, fax +44 (0)1636-893317 or visit the Web site at [www.graffelectronics.freemove.co.uk/home.html](http://www.graffelectronics.freemove.co.uk/home.html)

price range manufactured by other duplicator companies, and the results were not good.

It is difficult to maintain sufficient contact between the head and the tape on an inexpensive duplicator. In many cases, the result is unacceptable frequency cancellation when you record a mono tape on a stereo duplicator.

My recommendation is that if you need to duplicate something in stereo, do it on a compact disc. But for inexpensive, monaural duplication, the GEM TurboTrax is a delight to use and provides good quality copies.

If I were making a wish list, I would want level controls and level indicators. But in fairness to GEM, none of the competitors offers these features in a comparably priced unit.

In addition to the TurboTrax series of duplicators, GEM has a line of duplicators, some with Quartz Crystal capstan motors and high-speed digital duplication from computer to cassette.

Read Burgan is a free-lance writer and a former public radio station manager. Reach him at (906) 296-0652 or through e-mail at [rgb@bresnanlink.net](mailto:rgb@bresnanlink.net)

## The Wizard™ has gone STEREO!

The new **DIGITAL** FMSA-1 gives The Wizard System unmatched stereo monitoring capabilities. . .



Superlative stereo performance. Linear-phase filters that reveal the true performance of your audio processing. The stability of digital stereo demodulation. The sophisticated graphical presentation of The Wizard. And—with the RS-232 port—operation on site or off.

Contact Belar today for more details on what should be your next modulation monitor



**BELAR ELECTRONICS LABORATORY, INC.**  
119 LANCASTER AVENUE • P.O. BOX 76 • DEVON, PA 19333-0076 USA  
(610) 687-5550 • FAX (610) 687-2686

Call, write or FAX for more information on Belar AM, FM, Stereo, SCA, and TV monitors.

[www.belar.com](http://www.belar.com)

# Grease

► Continued from page 44

Washington. He would pay the station to allow him to bring back his theater-of-the-mind sketches, complete with music and sound effects mixed on the fly — a craft deftly developed with multiple turntables decades earlier in Connecticut by Bob "Colonel Hogan" Crane and now handled by two 360 Systems Instant Replays.

Permanently deleted from the Grease repertoire: ethnic-based humor. Lesson learned, thank you.

## Jump on board

Finding his old e-mail address, I dropped a line offering to write or produce some recorded material, maybe a sound effect montage as a welcome-back. Instead he replied, "I could use some help on the show from 8 to 10 a.m. There is no pay, but it would be a labor of love."

Why not? My free-lance endeavors did not affect my mornings, it would give me a reason not to oversleep, and I'd be actively contributing jokes and silly stuff to The New Greaseman Show as it rebuilt itself from a two-year exile.

At first I offered to help produce for one week. That turned into two. At deadline, it may turn out longer. In those two weeks I offered joke ideas, loaded music and carts, predicted what direction his sketches took and pre-staged appropriate sound effects, timed his network breaks and mastered the entire show daily to CD-R. In other words, I was the world's only 43-year-old radio station intern.

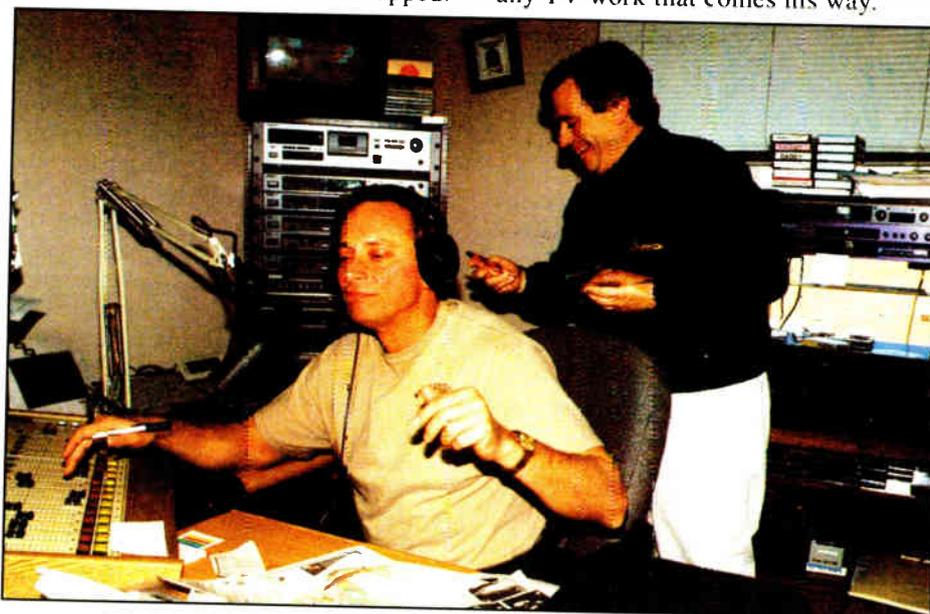
I didn't make a buck on the deal, but how many jock/columnists do you know who can say they worked with the Greaseman just for giggles?

After a broadcast finished last month, I asked him where he was hiding out for the last two years and how the new show came about.

A year or so earlier, he was gearing up to do a radio show in the Virgin Islands, but the protesters arrived there before he did, and the station manager got cold feet. The show was scrapped.

their efforts. The chance encounter resulted in Dime One, as in "We are never going to see ... from this deal."

He still retains an acting agent for any TV work that comes his way.



Al lends a hand during the new 'Greaseman Show,' syndicated via satellite from the studios of WZHF(AM), Arlington, Va.

He mentioned a pending divorce that was on his mind. As a diversion, he spent time on his boat, worked out in the gym and even volunteered at a soup kitchen just to stay busy. "Now I'm rested, refreshed and ready to do what I'm famous for," he grinned.

To become ready, Tracht had to become an entrepreneur and launch his own syndication effort, Dime One Productions.

## Back on the horse

"I ran into Jimmy Townsend, an old friend of mine," said Tracht.

"He asked, 'Why don't you get back on the radio?', and I said, 'Well, I'm kinda running into a little bit of resistance.' He asked why I don't buy my own station. I said I didn't think I had the money, and he said, 'I just might.'"

The duo realized they didn't need to buy an entire station; only syndicate

"Being a one-man band with a syndication company means my day is pretty tied up," he said. "I wouldn't mind a role here or there, but radio is my favorite."

Most jocks would be content with just going back on the air in their particular market. Dime One sends the show out by satellite and on the World Wide Web via Live365.com

"In the course of doing the show I love to do," he said, "it makes it better because I get calls from around the country and get a lot of different points of view. And if I can make a couple of bucks by doing it, what's not to like?"

The Dime One moniker is an appropriate one for the startup efforts. The show is cheerfully offered to markets at bargain rates and the local rate card works out to about one-fifth of what the market's top-rated shows command. The duo feels the show content

is more important than instant returns.

"If you do this for the sheer love of it, you'll make money in the long run," he said. "It's easier for me to do the show when I'm getting calls from all over the country."

Tracht also avoids being baited by other jocks in the market that insult other talent on a regular basis.

"Why? We're all broadcasters," he reasoned. "It would be like DeNiro slamming Al Pacino: 'That actor stinks, he's no good, he's rotten ...' when all he does is show his own style. It's so much easier to destroy than create, that's why they do it."

## Judgment

I'm old enough to remember a well-known and -loved New York City weatherman who self-destructed on-camera with an insensitive quip about rape. Inside a 4-minute weathercast he went from trusted friend to despised outcast. In 1999, a similar emotional outcry went up against Tracht for his own indiscretion.

But this time, listeners responded positively to his public apologies. Some organizations offended by the crack forgave him and moved on. Station managers tired of Angry Radio and wannabe shock-jocks took a chance and aired his syndicated efforts.

Regardless of how the public or broadcast history in general will regard the Greaseman in the final analysis, it is clear Tracht loves radio. Instead of getting paid, he's paying *someone else* to be on the air. And I'm working for him for free.

I think I know how broadcast history is going to remember me for this outing:

Broke.

At the conclusion of the interview, Al asked Tracht if he had anything else he wanted to add. In character, he vocalized several splat effects, then bellowed, "That's for all you radio maggots that have been on my ass!" Obviously there are no hard feelings ...

Products & Services

# SHOWCASE

## THE COST EFFECTIVE ALTERNATIVE TO MANUFACTURER SERVICE

### SERVICE, REPAIR & CALIBRATION

- STL's • RPU's • TSL's
- Exciters • Optimods
- AM/FM Monitors
- Remote Control Systems

### SPECIALIZING IN EQUIPMENT BY

- Belar • Marti
- Moseley
- McMartin
- TFT
- And others...

### WE ALSO PROVIDE

Free, over-the-phone technical assistance  
STL loaner/rentals  
PCL 505 Certification



2198 Hubbard Lane, Grants Pass, OR 97527

(541) 471-2262

## AM ANTENNA SYSTEMS

### Antenna Tuning Units Transmitter Combiners Folded Unipole Antennas Diplexers, Triplexers RF Components

LBA antenna systems will improve your efficiency, performance and reliability. Our products are designed and built to international standards. Call LBA Technology for RF systems and excellent technical service.

800-522-4464 / 252-757-0279  
Fax 252-752-9715

Email: lbatech@lbagroup.com  
or Contact Our Representatives Worldwide



### LBA Technology, Inc.

P O Box 8026 Greenville, NC 27835 USA  
35 YEARS OF WORLDWIDE  
ENGINEERING SERVICES

An LBA Group Company



## Designed for Broadcasting! MINI-MIX 8A



\$2499  
List

12 Stereo Inputs    2 Stereo Outputs  
2 Dedicated Mikes    1 Mono Output

Service & Affordable Quality for Over 28 Years

## AUTOGRAM CORPORATION

1500 Capital Avenue (972) 424-8585  
Plano Texas 75074-8118 1-800-327-6901  
FAX (972) 423-6334  
info@autogramcorp.com

# In the Spotlight!

The Broadcast Richardson name may be new to you, but its ideology is not...servicing the customer.

With the acquisition of turnkey distributor Broadcast Richmond in the Spring of 2000, Richardson Electronics realized the combined strengths of each organization would result in a very dynamic product and service offering.

The Broadcast Richardson name signifies an expanded direction for the company. By combining the technical, integration and consulting expertise of Broadcast

Richmond with the wide product offering, unsurpassed service levels and logistic strengths of Richardson Electronics, Broadcast Richardson is prepared to lead the way in the broadcast industry.

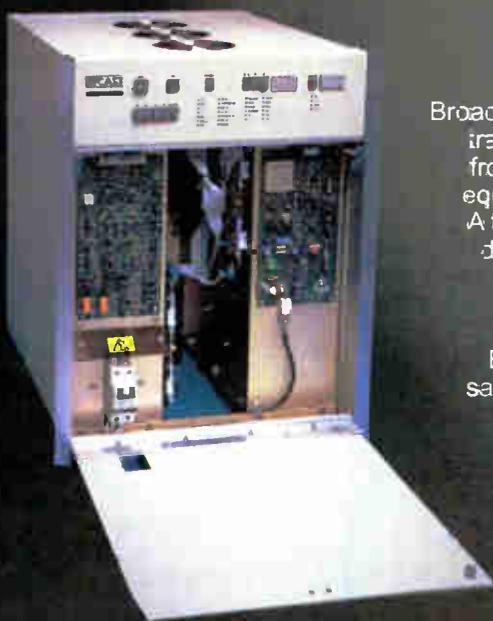
Complimenting its specialized, value-added services, Broadcast Richardson draws from its over 200 franchised product lines to offer you true inter-product integration.

Turn to us for your next component, equipment or system need!

## A Featured Presentation...

From one of our 200 product lines!

AT1K5  
AM Transmitters



# RFCAST

MT1K  
FM Transmitters



Broadcast Richardson offers a wide selection of AM and FM transmitter solutions. Responsive delivery is available from our factories. Exceeding FCC requirements, our equipment offers great reliability...at affordable prices! A full offering of power levels is available. For modular designs, RDS and stereo capabilities, ease of use, low operating costs, and reliable operation - make sure to ask for RFCAST!

Broadcast Richardson understands that the initial sale of the equipment is only the beginning. We back our products with full warranty protection, immediate spare parts availability and strong technical support.

**Call Today! 800-348-5580**

**BROADCAST**  
**RICHARDSON**  
**Integrated Solutions**

More than 60 locations worldwide to serve you. E-mail: [broadcast@rell.com](mailto:broadcast@rell.com), Internet: [www.broadcast-richardson.com](http://www.broadcast-richardson.com), Toll Free: 800-348-5580 (U.S. & Canada), Australia: Castle Hill ACN 069 808 108 +61 (2) 9894-7288, Brazil: Rio De Janeiro +55 (21) 521-4004, China: Shanghai +86 (021) 6440-1284, Colombia, Sante Fe de Bogota, DC (57-1) 636-1028, Denmark: Hedenhusene +45 4655-5630, Finland: Helsinki +35 (8) 9386-90110, France: Colombes Cedex +33.1.55.66.00.30, Germany: Puchheim +49 (89) 890 214-0, Italy: Sesto Fiorentino (FL) +39 (055) 42.08.31, Japan: Tokyo +81 (3) 5215-1577, Korea: Seoul +82 (2) 539-4731, Malaysia: Selangor +60 (3) 5511-5421, Mexico: Mexico City +52 (5) 674-2228, Philippines: Pasig City +63 (2) 636-8891, Singapore +65 487-5995, Spain: Barcelona +34 (93) 415 8303, Sweden: Stockholm +46 8 564 705 90, Taiwan: Taipei +886 (2) 2698-3288, Thailand: Bangkok +66 (2) 749-4402, The Netherlands: Amsterdam +31 (20) 446 7070, Turkey: Istanbul +90 212 257 9506, United Kingdom: Slough +44 (1753) 733010, Vietnam: Ho Chi Minh City +84 8.823.3016, for other international inquiries call Corporate Headquarters: LaFox, IL (630) 208-2200, Fax: (630) 208-2550. © 2001 Richardson Electronics, Ltd. MK1089



Transmitter Components & Systems • Studio Equipment, Packages & Systems • Antennas • Cable TV • Microwave • Satellite

# Radio World

## Broadcast Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

### ACOUSTICS

#### Want to Sell



Full product line for sound control & noise elimination.  
[www.acousticsfirst.com](http://www.acousticsfirst.com)

### AMPLIFIERS

#### Want to Sell

Crown stereo power line, \$195. J Price, 214-321-6576.

Radio Systems DA-16 audio distribution amp, \$225. Steve, Bay Country Bdct Equip, POB 523, Chase MD 21207. 877-722-0131.

### ANTENNAS/TOWERS/CABLES

#### Want to Sell

Dielectric 3-5/8" motorized four port coaxial switch. Continental Communications, 314-664-4497. Email: [contcomm@fiastl.net](mailto:contcomm@fiastl.net).

### LPFM ANTENNAS \$95!

3db gain single bay  
[fmbroadcasters.com](http://fmbroadcasters.com)

Dielectric/RCA 4" marman clamps, \$20 ea. R Lankton, Clear Path Comm, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

### AM Ground Systems

Reliable, On-time Installation  
Quality Workmanship  
Ground System Evaluation  
and Repair  
[www.amgroundsystems.com](http://www.amgroundsystems.com)  
1-877-766-2999

Shively FM 6810-4R-DA, 4 bay full wave with radomes, 30' long, good for 98.7 to 102.7 MHz, pole mount. \$5000 FOB Colorado Springs. Jim Bruneau, KGFT, 6760 Corporate Dr, #340, Colorado Springs CO 80919. 719-531-5438 x124.

### Radio World

### AUDIO PRODUCTION

#### Want to Sell

Presonus ACP22 stereo compressor/limiter/gate, new, \$235; Audiotronics stereo sliders model 340-560 +extender boards 110EX6-2-A & 110-EX9-2-A, BO; Fostex line amp model 5030, \$195; Aiwa cassette deck model AD6900 MK II, BO; Otari auto locator CB111, \$195; Altec AM-FM receiver M-725A, \$195. J Price, 214-321-6576.

UREI 565 filter units (approx 20), all are balanced in/out, some transformer & some active, gd cond, sell singly or by the lot, as-is, BO. Bill Hineman, NPR, 202-513-2494. [whineman@npr.org](mailto:whineman@npr.org).

Symetrix broadcast audio delay unit model 610, never used, 1 year old, \$1800. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

### AUTOMATION EQUIPMENT

#### Want to Sell

Digalink III systems (2), complete with cables & manuals, currently operating & will be avail on March 1, 2001. Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299.

Scotts Studio complete system. Includes monitors, computers, voice track, touch screen. In great cond, currently on air, BO. Randy Anderson, KXRQ, 1420 East 2850 South #200, Vernal UT 84648. 435-781-1100.

Arrakis Digilink multiplay CD controller (2); Digilink III & Digilink II, BO. Alex McEwing, Mc LLC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Pioneer M603 CD players with tray/BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Scott Studio System, never used, still in boxes, call for details, \$9000. Mr. Cobb, WLRX-FM, POB 370, Nappanee IN 46550. 219-773-7989.

### COMPLETE FACILITIES

#### NEW OR USED COMPLETE PACKAGES

STUDIO/STL/TRANSMITTER/ANTENNA OR ANY COMBINATION OF ABOVE.  
-LEASE OPTIONS-  
-EMERGENCY RENTALS-  
-REMOTE BROADCAST RENTALS-

SCMS, Inc. (800) 438-6040  
"You Know We Know Radio"

### CONSOLES

#### Want to Sell

Collins-Autogram IC10, 10 pot stereo console, gd condition, needs cue module, \$1000 +shpg. Howard Espravnik, 915 N Water St, Gallatin TN 37066. 615-230-3618.

### DO YOU NEED PARTS FOR AMPRO CONSOLES & CART RECORDER

SEQUOIA ELECTRONICS  
800-848-4428  
Now Accepting VISA/MASTERCARD

Soundcraft SAC 200, 13 input modules, 2 phone modules, 1 dual selector module. Dual power supplies with change-over, gd cond, as-is, BO. Bill Hineman, NPR, 202-513-2494. [whineman@npr.org](mailto:whineman@npr.org).

### LIMITERS/AUDIO PROCESSING

#### Want to Sell

M.S.I. CP-803 composite clipper, \$685. Steve, Bay Country Bdct Equip, POB 523, Chase MD 21207. 877-722-0131.

Optimod 8100, working & on the air, sounds great & updated, BO. Charlie Hall, KXRQ, 1420 East 2850 South #200, Vernal UT 84648. 435-623-4131.

Symetrix 425 dual compressor, limiter, expander, \$300. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

#### Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

**YES!**  
Space is available!  
Call 703-998-7600, ext 154  
to advertise in  
**Radio World**

### MICROPHONES

#### Want to Sell

Altec 683B, \$295; EV 654A, \$125. J Price, 214-321-6576.

#### Want to Buy

GOLDEN MIKE ORIGINAL AWARDS WANTED. PAYING TOP DOLLAR!  
615-352-3456, fax: 615-352-1922,  
email: [billbryantmgmt@home.com](mailto:billbryantmgmt@home.com)

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: [billbryantmgmt@home.com](mailto:billbryantmgmt@home.com).

### MISCELLANEOUS

#### Want to Sell

Kohler 45 kW 3 phase 208/120 VAC or 480/277 VAC gas generator (convertible to propane), 502 hrs recently load tested w/Lexington Controls 400 A automatic transfer switch. Located in Denver CO, \$6900. Mike Pappas, KUVU Engineering, 10115 W Washburn Way, Lakewood CO 80227. 303-988-0976.

### BAY COUNTRY BROADCAST EQUIPMENT

BUY - SELL - TRADE  
Your #1 Source For  
Quality Used Radio  
Broadcast Equipment

View The Latest List On Line At:  
<http://www.baycountry.com> Or  
Call And We Will Fax It To You.

7117 Olivia Rd. Baltimore MD 21220  
Toll Free 877-722-1031  
FAX 786-513-0812  
E-mail: [info@baycountry.com](mailto:info@baycountry.com)  
Member of BBB

Magne recorder electronics (4 sets) with 7 transport units mounted in a 72" rack, also one cannabilized transport unit for spare parts, BO, must pick up. JB Crawley, WMSK, POB 185, Campbellsville KY 42719. 270-465-8884.

Sportscaster headsets, BO. C. Hall, KXRQ, 1420 East 2850 South #200, Vernal UT 84648. 435-623-4131.

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Monderson St. Omaha, NE 68164 402 493 1886 FAX 402 493 6821

Henry Engineering Digicord, new, never used, \$150. Mr. Cobb, WLRX-FM, POB 370, Nappanee IN 46550. 219-773-7989.

Steven-Trusonic Inc. Stereodot model SD-1, \$20; Beta Scope non destructive thickness gauge, \$25. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 64952. 573-998-2681.

### MONITORS

#### Want to Sell

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

QEI 691/01 FM modulation monitor, test set, \$2400. Steve, Bay Country Bdct Equip, POB 523, Chase MD 21207. 877-722-0131.

### Radio World

### RECEIVERS/ TRANSCEIVERS

#### Want to Sell

Adtram T3U600 (2) T1 multiplexer, \$2000 ea/\$3600 set; Musicam CDQ Prima 110 (3), 20 kHz stereo bi-directional codec, \$3500 ea/\$6200 set. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

### RECORDERS

#### Want to Sell

Otari MC5050 full track, 15 IPS, excellent condition, \$895. Sam Bogart, 817-467-0158.

Ampex 354-2 stereo r-r, excel cond, \$495; Ampex 440 stereo, \$495; Ampex 440C in console, 3.75 - 30 ips, \$595; set of new Ampex 8 trk 1" heads, \$750; set of new Ampex 16 trk 2" heads MM1100, \$350 ea; MCI J.H. 110 stereo in console, \$495; MCI stereo electr, \$100; MCI power supplies, \$100; Rusland recorder console, \$125; Ampex 351-2 stereo r-r in carrying case, \$1200; Ampex 351 mono r-r, \$595. J. Price, 214-321-6576.

Sony B-67 analog 1/4" 2 trk. Complete, condition unknown. Many new parts in boxes including new heads. Tabletop version. Bill Hineman, NPR, 202-513-2494. [whineman@npr.org](mailto:whineman@npr.org).

Sony MDSB2P mini disk R/P, BO. R Lankton, Clear Path Comm, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Sony PCM-3203 digital 1/4" 2 trk & Sony PCM-3402 digital 1/4" 2 trk. Dash format, gd condition with manuals, one is in roll around, as-is, BO. Bill Hineman, NPR, 202-513-2494. [whineman@npr.org](mailto:whineman@npr.org).

Studer Revox PR99 Mark-2 recorder & Revox monitor-PR99 with heavy duty stand on wheels, very little use & in gd cond; Ampex 601 & 602 r-r's, nice cond, cable, case; EV 644 shotgun mic, new, box, instructions, cable; EV 647 & 648 mics, nice cond, cables; EV 644 mic in nice cond with cable; EV 649B dynamic mini tie/clip mic, cable. Items from estate sale in excel cond with very little use. Make offer for entire lot +shpg. 914-949-5920, fax: 914-761-7419, email: [hdeans@netzero.net](mailto:hdeans@netzero.net).

JVC stereo cassette deck KD-V6, Dolby B&C, digital peak, output level control, mpx filter, well maintained, great sound, \$125. Dennis Scott, 615-309-8688, email: [ds.music@home.com](mailto:ds.music@home.com).

Onkyo stereo 3 head cassette deck, Integra model, 3 heads, 3 motors, tape type selector, dolby noise reduction, \$250. Dennis Scott, 615-309-8688, email: [ds.music@home.com](mailto:ds.music@home.com).

Sony PCM2700A pro DAT machine, like new, 50 hrs use, box, manuals, remote, rack ears, etc., excellent condition, \$900/BO. John, 610-644-1123 x120 or email: [john@lpbinc.com](mailto:john@lpbinc.com).

Tanberg 15-21 (2), 7" open reel machines, need belts, \$50/pr. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Tascam 122MKII cassette deck, working, needs work, BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Tascam 32, 1/4" production r-r tape machine, excellent cond w/manual, \$550 +shpg. Mark Schackow, Mark Schackow Recording, 307 4th Ave, E, Lemmon SD 57638-1604. 605-374-3424.

Tascam professional cassette deck model MK122-III, approx 6 yrs old, \$300. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

Teac stereo cassette deck V-340, tape selector, dolby noise reduction, sounds great, dependable workhorse, \$75. Dennis Scott, 615-309-8688, email: [ds.music@home.com](mailto:ds.music@home.com).

### REMOTE & MICROWAVE

#### Want to Sell

MOSELEY DSP6000A, Digital Studio-Transmitter Link, 4 Channels, Still in the box. Must Sell, No Reasonable offer refused. Len Martinez, 915-949-8800.

### REMOTE EQUIPMENT RENTAL

Silver Lake Audio  
(516) 763-1776  
[silverlakeaudio.com](http://silverlakeaudio.com)

Marti RPT-30 RPU transmitter on 455.800, BO. R Lankton, Clear Path Comm, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

### WE RENT FOR LESS

Hotlines	FM Exciters
Zephyrs	STL's
Nexus	FM Pwr Amps
Audio	Test Equipment

If we don't have it, we will get it!  
SCMS, INC. (800) 438-6040  
"You Know We Know Radio"

Marti STL-10 stereo STL with combiners, \$3895. Steve, Bay Country Bdct Equipment, POB 523, Chase MD 21207. 877-722-0131.

### SATELLITE EQUIPMENT

#### Want to Sell

SATELLITE C/Ku gear,  
[www.daveswebshop.com](http://www.daveswebshop.com).

Musicam Virtex Starguide II, BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

**Buying Or Selling  
Used Equipment?  
YOU'RE IN THE RIGHT PLACE!**

**For more information, call  
703-998-7600, ext. 154.**



Call  
703-998-7600, #154  
to advertise.

### SOFTWARE/ DATABASES

#### Want to Sell

Computer tools by Ron Balonis at [www.computertoolboxes.com](http://www.computertoolboxes.com).

### STEREO GENERATORS

#### Want to Sell

Moseley SCA EPU SCG-4 and ancillary equipment, i.e. tapes, deck, receivers, etc. BO. W.H. Brown. WWBC/BOGO, 645 Anderson Ct, Satellite Beach FL 32937. 321-777-0265.

### TEST EQUIPMENT

#### Want to Sell

IFR 1200S service monitor with spectrum analyzer, \$6500. R Lankton, Clear Path Comm, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Tektronix 7614, 7618 RF spectrum analyzer, \$4500. R Lankton, Clear Path Comm, 5053 Ocean Blvd #18A, Siesta Key FL 34242. 941-544-6842.

Tektronix digital multimeter DM 501A, \$150; Tektronix digital multimeter DM 502A, \$150; Eico 150 solid state signal tracer, \$100; Nuvisitors (assorted), \$25. J Price, 214-321-6576.

Weston Instruments model 1240 tester, \$20; Ampex 300E vacuum tube voltmeter, \$35; B&W Nidek 400 distortion meter, \$20; Eico 250 AC VTVM & amp, \$20; Electronic Designs 100 electronic voltmeter/ohmmeter, \$25; GC Electronics model 36-616 CRT tester & rejuvenator FC&BW, \$20; General Radio Co Type 1564-A sound & vibration analyzer, \$40; HP 330B & 330C distortion analyzer, \$25 ea; (4) HP model 400D vacuum tube voltmeter, \$45/all 4. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 64952. 573-998-2681.

### TRANSMITTERS

#### Want to Sell

Harris MW-50-B 50KW pulse modulated AM xmtr. Continental Communications. 314-664-4497. Email: [contcomm@fiastl.net](mailto:contcomm@fiastl.net).

#### OFF THE AIR? Emergency Back-up Rentals

FM Exciters - STLS -  
FM Pwr Amps - Antennas -  
Studio & Test Equipment

SCMS Inc (800) 438-6040  
"You Know We Know Radio"

Harris MW-5-B five KW pulse modulated AM xmtr. Continental Communications. 314-664-4497. Email: [contcomm@fiastl.net](mailto:contcomm@fiastl.net).

RCA BTF-20-E1 20KW FM xmtr. Continental Communications. 314-664-4497. Email: [contcomm@fiastl.net](mailto:contcomm@fiastl.net).

## TRANSCOM CORP.

Serving the Broadcast Industry Since 1978

Fine Used AM & FM Transmitters and Also New Equipment

300W FM 1988 Harris FM300K Solid State - Single Phase  
1KW FM 1981 Harris FM 1K  
1KW FM 1978 RCA BTF 1E1  
2.5KW FM 1984 Harris FM 2.5K Single Phase  
2.5KW FM 1980 Harris FM 2.5K Single Phase  
2.5KW FM 1976 Collins 831D Single Phase  
3.8KW FM 1994 Continental 814J Solid State  
5KW FM 1967 Collins 830E  
5KW FM 1985 BE FM5A w/FX50  
6KW FM 1994 Henry 6000D  
10KW FM 1995 QEI FMQ10,000B Single Phase  
10KW FM 1974 Harris FM10HK

1KW AM 1976 Harris MW1A  
1KW AM 1981 Harris MW1A  
1KW AM 1981 Collins 828C-1 (314R)  
5KW AM 1982 Continental 315R-1  
5KW AM 1980 Harris MWSA  
10KW AM 1983 Continental 316F  
10KW AM 1986 Harris MW10B  
25KW AM 1986 CSI T-25-A1  
50KW AM 1978 Continental 317C-1  
50KW AM 1982 Harris MW-50B

Miscellaneous Equipment:  
Belar AMM2B Mod. Monitor (1200 KHz)  
Belar FM Mod. Monitor  
Belar FM Stereo Monitor  
CRL SMP-900 AM Stereo Matrix Processor  
CRL MDF 800 Stereo De-Emphasis Filter  
CRL SEC 800 Compressor  
Marti RPT-2 (450) 2.5 wt port Transmitter  
TFT FM Modulation Monitor  
TFT EAS System: EAS 911  
TFT 844 FM Mod/Ster/Proof of Performance-Super Monitor

2655 Philmont Ave #200, Huntingdon Valley, PA 19006  
800-441-8454 • 215-938-7304 • FAX No. 215-938-7361  
VISIT OUR NEW INTERNET SITE: [www.fmamtv.com](http://www.fmamtv.com)  
SEND YOUR E-MAIL REQUESTS TO: [transcom@fmamtv.com](mailto:transcom@fmamtv.com)

## Transmitters, Antennas, STL Systems superiorbroadcast.com

contact **Jimmie Joynt**  
Phone 800/279-3326 Fax 800/644-5958

# CONSULTANTS



**EVANS ASSOCIATES** Consulting Communications Engineers

FCC Applications • Design • Field Engineering • Tower Detuning Upgrade & Relocation Studies • AM Directional Array Tuning & Proof

EXPERTS IN:  
TV • DTV Transition • FM • Directional Antennas • RF Exposure

210 S. Main St., Thiensville, WI 53092. (262) 242-6000. FAX (262) 242-6045  
<http://www.evansassoc.com> Member AFCCE

### Consulting Communications Engineers EMC Test Lab

- FCC Applications and Field Engineering
- Frequency Searches and Coordination
- AM-FM-CATV-ITFS-LPTV
- EMC Test Lab-FCC and European (IEC)

## OWL ENGINEERING, INC.

1-800-797-1338 Fax (763) 785-4631  
8899 Hastings St NE, Minneapolis, MN 55449 (763) 785-4115 Member AFCEE

### T. Z. Sawyer Technical Consultants

AM-FM-TV-LPTV

- FCC Applications & Exhibits
- Experimental Authorizations
- AM Directional Antennas
- High Power Antenna Arrays
- Frequency Studies
- Class Upgrades
- STL Applications
- Station Inspections

1-301-913-9287  
FAX: (301) 913-5799 • 5272 River Rd. #460 • Bethesda, MD 20816

### PC - SOFTWARE

AM FM TV Search Programs  
Signal Mapping—STL Paths  
RFHAZ—US Census PopCount  
FAA Tower—Draw Tower

Doug Vernier  
Engineering Consultant  
1600 Picturesque Drive  
Cedar Falls IA 50613  
800-743-DOUG

### System One Communications

Broadcast Constructors & Consultants  
Houston, Texas  
888-625-5649

- AM-FM Site Construction Specialists
- Complete Tower Service
- Antenna & Transmission Line Diagnostics
- Custom Studio Designs & Furniture

### MUNN-REESE, INC.

Broadcast Engineering Consultants

## AM - FM - TV

P.O. Box 220, 100 Airport Dr.  
Coldwater, MI 49036  
517-278-7339 or Fax 517-278-6973  
[wayne@munn-reece.com](mailto:wayne@munn-reece.com)

### GRAHAM BROCK, INC.

BROADCAST TECHNICAL CONSULTANTS  
Full Service From Allocation to Operation AM/FM/TV/AUX Services; Field Work; Antenna and Facilities Design

Over 35 years engineering and consulting experience

912-638-8028  
202-393-5133  
[www.grahambrock.com](http://www.grahambrock.com)

### MULLANEY ENGINEERING, INC.

Consulting Engineers

- Design & Optimization of AM Directional Arrays
- Analysis for New Allocation, Site Relocation, and Upgrades
- AM-FM TV LPTV Wireless Cable (MDS/MMDS/ITFS/OFS)
- Environmental Radiation Analysis
- Field Work
- Expert Testimony

9049 Shady Grove Court  
Gaithersburg, MD 20877  
Phone: (301) 921-0115  
Fax: (301) 590-9757  
email: [mullengr@aol.com](mailto:mullengr@aol.com)

### FREQUENCY SEARCH - \$199

FM APPLICATIONS - \$1199  
LPTV APPLICATIONS - \$748  
(LPTV fee includes freq. search)

Amendments & Upgrades  
Field Work • Site Construction  
MX Resolutions • Petitions  
Coverage Maps • \$39

MBC Consulting  
(800) 219-7461  
[www.mbcradio.org/consulting](http://www.mbcradio.org/consulting)



Market Analysis  
Engineering Software  
Ethnic/Demographic Data  
Custom Full-color Mapping  
Sales Marketing Packages

[www.dataworld.com](http://www.dataworld.com)  
800-368-5754

[info@dataworld.com](mailto:info@dataworld.com)  
fax: 301-656-5341

### R. MORGAN BURROW, P.E. & ASSOCIATES, P.C.

ALLOCATION STUDIES  
AM-FM-TV LPTV; New facilities, site relocation, FM upgrade, duplex

FIELD WORK A SPECIALTY

- AM Directional antenna adjustment, measurement & proof
- RADHAZ measurements
- RADIATION HAZARD evaluation
- FM & TV field intensity & other measurements
- Facility inspections for purchase/insurance purposes
- CATV Leakage Testing

ELECTROACOUSTICS  
OSHA measurements  
301-948-3844 • Fax 301-330-5565

### M Celenza

Communications Consultants  
TV-\$550; LPTV-\$550; FM-\$250;  
AM Freq Searches-Call for quote

Applications, Amendments & Upgrades  
Antenna Structure Registration,  
Field Work Avail  
631-928-0077  
Fax: 631-928-1905

PROMOTE YOUR BUSINESS!  
SPACE IS AVAILABLE!

★★★★★★★★★

Call Simone Mullins for more information at 1-800-336-3045 ext. 154.

### WE'LL BUILD YOUR STATION!

COST-EFFICIENT (not CHEAP)  
QUALITY CONSTRUCTION,  
MINOR MODS TO COMPLETE  
TURNKEY PLANTS

BUILDOUTS-UPGRADES-REPAIRS-DIPLEXING  
HIGH POWER AM-BA SPECIALISTS

[BuildYourStation.com](http://BuildYourStation.com)  
Box 748482, Dallas, TX 75374

Mike Vanhooker 214-725-5621  
Jim Stanford 817-232-1891  
[mike@BuildYourStation.com](mailto:mike@BuildYourStation.com) [jim@BuildYourStation.com](mailto:jim@BuildYourStation.com)

### Communications Technologies, Inc.

Broadcast Engineering Consultants  
AM FM TV LPTV  
Cellular/PCS Site Analysis

P.O. Box 1130, Marlton, NJ 08053  
Phone: (856) 985-0077  
Fax: (856) 985-8124  
Internet: [commtechrf.com](http://commtechrf.com)

Clarence M. Beverage  
Laura M. Mizrahi

### FASTER... MORE ACCURATE RADIO COVERAGE

- Real Time 3-D Displays
- Interference calculations
- Cost effective mapping
- Fully integrated databases
- Used by the FCC
- Latest standards built-in

**RADIO SOFT**

Visit us on the web at [www.radiosoft.com](http://www.radiosoft.com)  
109 West Knapp Ave., Edgewater, FL • (386) 426-2521

RCA BTF-5-E1 5KW single phase FM. Continental Communications. 314-664-4497. Email: [contcomm@fiastl.net](mailto:contcomm@fiastl.net).

Cunningham CM 30-50 type approved AM tube xmtr, adjusts 0-50W power, rack mount, measures 8.75" x 19" w x 12" d, weighs 20lbs, special heavy duty case & other professional features, new, \$900. James Cunningham, KEOR, Rt 2 Box 113B, Stonewall OK 74871. 580-265-4496.

Harris FM 25K. Good condition, cleaned, repaired, \$16,500/BO. Paul Wolf, WAYJ, 1860 Boy Scout Dr, Fort Myers FL 33907. 941-458-3777.

Harris MW1A transmitter, needs repairs, \$4000; (3) 19" x 6' equipment racks, \$100 ea; Gates #80 control board, \$200. WSSG, 116 W Mulberry St, Goldsboro NC 27530. 919-734-1300.

Ramsey AM-25 hobby broadcast transmitter, FCC Part 15, 540 to 1710 kHz PLL, can be jumped for 1W, \$125. Gene Whittenberger, Whittenberger Studio, POB 396, Mexico IN 46958. 765-985-2224.

LPB AM-30P xmtr; LPB transmitter coupling unit model TCU-30 and all manuals, \$800. James Sealey, WMAF, 850-973-3233.

## DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

**CORNELL-DUBILIER  
MICA CAPACITORS**

FROM STOCK

**JENNINGS VACUUM  
CAPACITORS**

FROM STOCK

**JENNINGS VACUUM  
RELAYS**

**SURCOM ASSOCIATES**  
2215 Faraday Ave., Suite A  
Carlsbad, California 92008  
(760) 438-4420 Fax: (760) 438-4759  
e-mail: [link@surcom.com](mailto:link@surcom.com) web: [www.surcom.com](http://www.surcom.com)

...country, top 40, news, urban, talk, jazz, the classics, mixed bag...

RADIO! The beat goes on!

**CROUSE-KIMZEY  
OF ANNAPOLIS**  
tops in broadcast equipment  
1-800-955-6800  
ask for Kathleen  
[kkannapolis@worldnet.att.net](mailto:kkannapolis@worldnet.att.net)



**POWER TUBES**  
**REBUILT**  
 -----  
**1/2 THE COST**  
**OF NEW!**

**ECONCO**

TEL: 800-532-6626  
 NTL: +1-530-662-7553  
 FAX: +1-530-666-7760  
 www.econco.com  
 SE HABLA ESPAÑOL



**TUBES**

**Want to Sell**

**FOR THE BEST PRICE**  
 & 24 Hr service on transmitting tubes & sockets/parts, new & rebuilt call Goodrich Ent. at 402-493-1886 day or night, FAX 402-493-6821.

**AMPEREX, EIMAC, SVETLANA**  
 3CX400A7/8877, 3CX3000A7, 3-500ZG, 4CX250B, 4-400, 4CX400A, 807, 833C, ETC.  
 Westgate 800-213-4563.

**D And C Electronics Co.**

**NEW TUBES**  
 We have the alternatives for all your needs, at the lowest prices, direct from OUR STOCK!!!  
 EIMAC, SVETLANA, PRO-TEK®, EEV and many others.  
 (352) 688-2374  
 PH: (800) 881-2374  
 FAX: (352) 683-9595

SE HABLA ESPAÑOL  
 WE EXPORT  
 VISA/MASTERCARD ACCEPTED

TUBES, Eimac, Svetlana  
 800-430-6683  
 Fax: 905-469-4291  
 www.hard-to-find.net  
 ams@hard-to-find.net

Since 1947 Since 1947

Eimac Thomson Freeland EEV  
 Burle Svetlana RCA ARS  
 4CX15000A - EEV  
 4CX250B - Eimac  
 3CX800A7 + more

New & Rebuilt Tubes  
 Export Shipping  
**ARS Electronics**  
 USA 800-422-4250 Ca 800-422-4277  
 Same Day World Wide Shipping

**EMPLOYMENT**

**HELP WANTED**



**MARKET ENGINEERING MANAGER**

Challenging opportunity for an experienced broadcast engineer to oversee engineering operations of Atlanta radio stations, 99X and Q100.

Minimum 5 years major market broadcasting experience with a strong working knowledge of digital audio & high power transmission systems. Excellent supervisory & communication skills required. Must be able to formulate both capital & operating budgets. SBE certification with knowledge of FCC rules is necessary. Degree in electronics or related field is a plus.

Responsible for engineering operation of two solid Atlanta radio stations, as well as supervision of the engineering staff & IT manager.

Susquehanna Radio Corp. is a growing ESOP company offering excellent compensation & benefit programs. Benefit package includes medical/dental/vision insurance, life insurance, generous paid time off programs, educational assistance, 401(k) savings plan, adoption assistance & some relocation assistance.

Interested candidates should forward resume & salary history to: Regional Engineering Manager, 6810 N. Shadeland Ave., Indianapolis IN 46220 or Email to: [Mtumer@indyradio.com](mailto:Mtumer@indyradio.com) or Fax to: 317-558-7199. Additional details about the company can be found at [www.suspfz.com](http://www.suspfz.com). An EEO Employer.



A subsidiary of Susquehanna Plattsgraff Co.  
 Experience. Stability. Vision.

Without advertising a terrible thing happens...  
**NOTHING**

**POSITIONS WANTED**

12 years at college radio playing oldies. It was fun & I miss it. Now seeking same PT radios of St. Louis. Dennis Holenmiller, 4612 Theiss Rd, St Louis MO 63128. 314-894-8194.

PD wanting challenges. Love Country, Oldies & AC. Oklahoma, Kansas & Texas. Email Jerry at [jerry\\_mccall@hotmail.com](mailto:jerry_mccall@hotmail.com).

19 year old DJ with great ambition fresh from American Broadcasting School, not scared of the mic, willing to go anywhere. Garrett, 580-928-1194.

American Broadcasting School grad, team player, skilled on-air, production, quick study, ready for any format. Andrew Mendoza, 817-732-1969.

Dependable team player. Experienced in play-by-play, on-air, digital production & copywriting. Ready for sports casting gig! Call Dustin, 972-230-2403.

Enthusiastic, reliable rookie with professional attitude seeking career in radio broadcasting, willing to relocate. Jeff, 972-393-5425.

Friendly, industrious, FCC commercial 1st class w/radar, amateur, extra radio licensed, CE, asst CE, seeking FT, PT, contract work, AM/FM, cable, TV, within 75 mile radius of Metro NYC area. 718-969-5224 or write: Mitchell Rakoff, 81-12 Roosevelt Ave #702, Jackson Heights NY 11372-6746 or email: [mitchellrakoff@yahoo.com](mailto:mitchellrakoff@yahoo.com).

Green, American Broadcasting School grad seeks high-paying glamour, chick-side-kick morning show, will except janitorial. Laura, 405-525-5656.

Multi-talented highly motivated individual looking for opportunity with great radio station as on air talent. Group or talk show, morning or afternoon. Tom King, 972-557-6524.

Put me on the air! Young talent looking to enter broadcasting. Music background & training in radio. Can do it all. Jared, 918-293-2955.

Recent bilingual graduate with strong voice & superior talent. Will relocate, call for an aircheck. Peter, 972-768-4022.

Recent broadcasting grad, rookie, but willing to travel, looking for on-air DJ or sports. Ash, 405-314-9732.

Recent grad prefer sports broadcasting. Hard worker, willing to learn, can relocate. Matt, 817-447-0371 or [mattmcrayer50@hotmail.com](mailto:mattmcrayer50@hotmail.com)

Recent graduate from American Broadcasting School seeking employment. If you're interested in a friendly & outgoing talent, call David, 405-348-6133.

Rookie broadcaster with maturity, time & patience plus the voice. Howard, 405-737-8746.

Rookie jock ready to break into broadcasting. Willing to travel, any format is fine with me! Robert, 214-381-7891.

Run your employment ad on our web site for only...  
**\$2 per word!**  
**www.RWOnline.com**  
 Call Simone Mullins for all the details at 703-998-7600, Ext. 154.

**SPACE IS AVAILABLE!**  
 ★★★★★★  
 Advertise today and reach key broadcast professionals.  
 For more information, call 703-998-7600, ext. 154.

**Radio World**

5827 Columbia Pike, 1st Floor ▪ Falls Church, VA 22041  
 PHONE: 703-998-7600 ▪ FAX: 703-671-7409

Classified Advertising Rates Effective January 1, 2001

	1x	6x	13x	26x
1-9 col inch (per inch)	\$95	90	85	80
10-19 col inch (per inch)	\$80	70	60	50
Distributor Directory	\$120	115	110	105
Professional Card	\$90	85	80	75
Station/Studio Services	\$175	150	125	100
Classified Line Ad	\$2/word			
Blind Box Ad	\$15 additional			

Call Simone Mullins, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

**ACTION-GRAM**

**EQUIPMENT LISTINGS**

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World?  
 Yes  No

Signature \_\_\_\_\_ Date \_\_\_\_\_

Contact Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company/Station \_\_\_\_\_  
 Address \_\_\_\_\_  
 City/State \_\_\_\_\_  
 Zip Code \_\_\_\_\_  
 Telephone \_\_\_\_\_

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS  WTB  Category: \_\_\_\_\_  
 Make: \_\_\_\_\_ Model: \_\_\_\_\_  
 Brief Description: \_\_\_\_\_  
 Price: \_\_\_\_\_

\*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by lister.  
**Broadcast Equipment Exchange**  
 PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 • Fax: 703-998-2966

*Who Said There's No  
**FREE LUNCH?***

*announcing  
**ZERO**  
commissions*

*(Nothing, Nada, Zilch, FREE!)*

on

**Radio World**

**auctions**

Your On-line auction  
site for used broadcast  
and professional audio  
and video equipment.  
Log on today for great  
deals on great used gear!

**www.radioworld-auctions.com**

\*A new service from the Publishers of Radio World,  
TV Technology, Pro Audio Review and Audio Media

# ADVERTISER INDEX

This listing is provided for the convenience of our readers.  
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEBSITE URL
46	Air Corp	See ad for contact information
45	Allied	www.ocwhite.com
42	Altronic Research	www.altronic.com
31	Aphex Systems	www.aphex.com
43	Armstrong Transmitters	www.armstrongtx.com
45	ATI	www.atiguys.com
33	Audio Precision	www.audioprecision.com
30	AudioScience	www.audioscience.com
16	audioTXCommunicator	www.musicamusa.com
2	Auditronics/Wheatstone	www.auditronics.com
48	Autogram Corporation	www.autogramcorp.com
30	BALSYS	www.balsys.com
47	Belar	www.belar.com
8	Bext	www.bext.com
39	Bradley Broadcast	www.bradleybroadcast.com
45	Broadcast Devices, Inc.	www.broadcast-devices.com
12	Broadcast Electronics	www.bdcast.com
49	Broadcast Richardson	www.broadcast-richardson.com
11	Broadcast Software Int'l (BSI)	www.bsiusa.com
45	Broadcast Tools	www.broadcasttools.com
28, 29	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
45	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
36	Conex Electro-Systems	www.conex-electro.com
10	Crown Broadcast	www.crownbroadcast.com
26	Digigram	www.digigram.com
45	Econco	www.econco.com
17	ENCO Systems	www.enco.com
46	Excalibur Electronics	See ad for contact information
46	Freeland Products, Inc.	www.freeland-inc.com
30	Ghostwriters	www.radio-mall.com
45	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
30	Grace Broadcast Sales	www.gracebroadcast.com
1	Harris	www.harris.com
19	Harris	www.harris.com
21	Henry Engineering	www.henryeng.com
15	Inovonics	www.inovon.com
26	Inovonics	www.inovon.com
48	J Squared Technical Service	jsquared@cdsnet.net
18	Kintronic Labs	www.kintronic.com
14	Klotz Digital AG	www.klotzdigital.com
48	LBA Technology	www.lbagroup.com
43	Lynx Studio Technology	www.lynxstudio.com/rw
46	Mager Systems	www.magersystems.com
23	Management Data	www.mdata-usa.com
37	MARTI	www.martielectronics.com
25	MediaTouch	www.imediatouch.com
27	Netia	www.netia.net
46	Nott Ltd.	www.tjantenna.com
40	Omnia, a Telos Company	www.omniaaudio.com
20	Orban	www.orban.com
35	Prime Image	www.primeimageinc.com
46	QEI	www.qei-broadcast.com
32	Radio Computing Service (RCS)	www.rcsworks.com
22	Radio Design Labs	www.rdlnet.com
15	Radio Frequency System (RFS)	info@rfsbroadcast.com
5	Radio Systems	www.radiosystems.com
3	S.C.M.S.	www.scmsinc.com
38	Scott Studios	www.scottstudios.com
6	Sine Systems	www.sinesystems.com
41	Syntrillium Software	www.cooledit.com
9	Telos Systems	www.zephyr.com
13	Telos Systems	www.telos-systems.com/smartsurface
55	Wheatstone	www.wheatstone.com
56	Wheatstone	www.wheatstone.com

## ◆ READER'S FORUM ◆

## AFTRA

Regarding the March 1 article by Ken R. ("AFTRA Looks Beyond Strike") ... the photo in the article shows clenched fists, a placard saying, "It Pays to Advertise ... but Advertisers Don't Pay!" and the news that "a committee was established to investigate a plan to monitor radio stations for commercials."

Advertisers do, indeed, pay. They pay a lot of money not only to non-union free-lance voice-over talent, but they, likewise, help keep AFTRA's pension and welfare ship afloat.

If AFTRA wants to "monitor radio stations for commercials," then I have to assume they're gearing up to become America's Voice-Over Police.

All of this propaganda reminds me of some of the historical accounts on the start-up of Russian Bolshevism and German Nazism.

Perhaps it's time to look beyond the American Federation of Radio and Television Artists.

*Richard W. Fatherley  
V/O Announcer/Narrator  
AdVoice  
Kansas City, Kan.*

I found Ken R.'s AFTRA article interesting. At the end of the first page, the story went from talking about the commercials' strike issues to AFTRA contracts with radio stations as if they were the same.

Maybe something was omitted in editing, but the free-lance production contracts for AFTRA and SAG — A1 for AFTRA Radio, A2 for AFTRA TV (TV spots shot on videotape) and S2 for SAG TV (TV spots shot on film) — are quite separate and different from individual station contracts.

Free-lance and station contracts are not negotiated together, and their rates and issues are usually quite different. Interestingly, while some in radio management say they don't like working with AFTRA, many middle managers secretly support AFTRA because as the AFTRA salary and benefits go up, it gives middle managers a reason to ask for their own raises.

Even more interesting: as a result of rough treatment by sales and general managers of their account executives, some AEs have made inquiries about organizing the sales department. Their issues typically are the sometimes arbitrary "reorganizing" and redistribution of client lists, large accounts that mysteriously become house accounts and elusive sales incentives that seem to dis-

appear about the time the AE reaches the specified goal.

*Ty Ford  
President  
Technique Inc.  
Baltimore*

## BEAN

I recently read a letter from the editor (RW, Feb. 1, "Engineer Hams Launch BEAN") concerning the formation of the Broadcast Engineers Amateur Radio Net and its ambition to start a weekly HF Amateur Radio Net for broadcast engineers.

It might interest your readers to know that the Society of Broadcast Engineers has operated just such an HF net for something on the order of 16 years now. It's called "Chapter 73, the Chapter of the Air." It meets monthly on the second Sunday of each month, 14.205 MHz, 0000 hours GMT (4 p.m. PST, 7 p.m. EST). The net control station is WA7BGX (yours truly).

The net is open to *all* amateurs in the broadcast profession; SBE affiliation is *not* required. The primary purpose of the net is to provide a chapter meeting for those SBE members who have Amateur Radio licenses and live in an area that precludes attending a "live" meeting.

Participation in the net provides attendees holding SBE Certification the same recertification credit as attending a live meeting. More information on the HAMNet is available at the SBE Web site [www.sbe.org/hamnet.html](http://www.sbe.org/hamnet.html) and general information on the SBE is available at [www.sbe.org](http://www.sbe.org)

*Hal Hostetter  
Senior Engineer (CPBE)  
KVOA Television  
Tucson, Ariz.*

## Bollack museum

Great article on the Bollack Museum in Farmington, N.M. ("Playing Tribute to a Radio Giant," RW, March 1).

But KOB's old 50 kW transmitter isn't the only thing there of interest to broadcasters and electronic geeks. Tommy has thousands of square feet of old AM and TV transmitters, consoles, communication equipment, accessories, telephony equipment from years gone by, old street lighting systems, transmit and receive antennas of all different flavors, insulators, old test equipment ... and most of the stuff is in excellent condition, ready to turn on and use.

The crown jewel of the collection, of course, is the KOB transmitter, with its art-

## Radio Theater Revival

Is it possible that theater or spoken-word productions could play a bigger role in radio? Since the switch to TV as a form of family entertainment, radio or audio theater has been something of an oddity or rarity. But is it gone?

No. "Theater for the mind" is currently produced on NPR stations, independent stations and for straight-to-audio CD or cassette. Now, with satellite radio, the whole medium may find a rebirth.

Granted, the possibility of a massive audience giving up nightly TV viewing to tune into radio drama is slim to none. However, the audio theater/spoken-word industry is currently at \$200 million per year and growing, according to the 1999 Audio Publishers Association's Listener Habits and Practices survey.

In addition, organizations such as the National Audio Theatre Festivals are offering workshops in audio theater. This year's NATF workshop will be held from June 18-24, at William Woods University in Fulton, Mo. The workshop seminars will discuss topics ranging from independent Webcasting to advanced audio techniques.

Sue Zizza, executive director of NATF, said the workshop expects to draw 60-70 participants. For more information, visit [www.natf.org](http://www.natf.org)

Events like these stoke the fire for radio theater, but how does it stay lit? NPR and independent stations are one outlet. Listeners can hear programs such as "A Prairie Home Companion" with Garrison Keillor and "This American Life" from Ira Glass every week. Sue Zizza's own show, "Radio Works," has 60 stations playing her program. And NPR Playhouse has 25-30 affiliates.

But why should all this matter to commercial radio? Because of Web radio programmers like SciFi.com's "Seeing Ear Theatre" and subscription radio services like XM Satellite and Sirius Satellite.

Sirius will have 100 stations: 50 music, 50 talk. Ten will feature some sort of audio theater. The company plans a Radio Classics channel, which uses the Radio Spirits Archive, playing programs like "Jack Benny" and "The Shadow." Its SciFi channel has rights to the "Tales From the Crypt."

The service's A&E channel plans to air mysteries from the BBC and various dramas. And, for those long hauls, the trucker channel will play action dramas.

While it's not likely that radio will be taken over by radio theater productions anytime soon, it does seem that listener interest might be on the climb. Will commercial radio start to invest in alternative types of spoken-word programming as a result?

We think they should. We're not expecting stations to switch to all-theater, but creative PDs might find ways to succeed with theater programs — on Sunday afternoons or weeknights after 8 p.m., or possibly one day a week during drive time, for example.

Spoken word and radio theater generate a loyal listening audience. Don't overlook its potential.

— RW

deco nameplates and cobalt blue glass and flying wing accents.

*Bruce Anderson  
Director of Engineering  
Four Corners Broadcasting  
Durango, Colo.*

## O'Donnell remembered

Thanks to Peter King for the moving remembrances of Tim O'Donnell. ("ABC's O'Donnell Remembered," Feb. 14).

I listened to Tim in upstate New York long before he migrated to ABC. He was the "Smilin' Irishman," playing tunes from the WOTT-Hot Tunedex in Watertown in 1962, and a summer fill-in at WTLB in my hometown of Utica in 1963.

When he made the jump to ABC a few years later, I always remembered him as a cordial young gentleman who let a teenage punk like me hang out in the studio to learn

things. Your article filled in a few blanks in my knowledge of his distinguished career, and I'll always be proud and thankful that I knew him "back in the day."

*Dan O'Neil  
Senior Account Executive  
WNAV(AM)  
Annapolis, Md.*

## Write to Us

RADIO WORLD  
READER'S FORUM  
P.O. Box 1214  
Falls Church, VA 22041

[radioworld@imaspub.com](mailto:radioworld@imaspub.com)

## —EDITORIAL STAFF—

Paul J. McLane	ext. 117	Editor
Sharon Rae Pettigrew	ext. 126	Managing Editor
Leslie Stimson	ext. 129	News Editor/Wash. Bureau Chief
Laura Dely	ext. 198	Business Editor/GM Journal
Bernie Cox	ext. 183	Associate Editor/Studio Sessions
Thomas R. McGinley	—	Technical Adviser
Alan Peterson	—	Technical Adviser
T. Carter Ross	ext. 120	Editor-In-Chief (International)
Marguerite Clark	—	Editor (International), Milan
Christine Joaquim	ext. 138	Managing Editor (International)
Rogelio Ocampo	ext. 121	Latin America Editor in Chief
Karina Gerardi	ext. 137	Latin America Editor
Renata Beck	ext. 196	Latin America Assistant Editor
Michael Hedrick	ext. 146	Editorial Assistant
Linda Sultan	ext. 141	Editorial Assistant
Peter Finch	—	Editorial Assistant, Milan

## —EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, Read Burgan, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Ty Ford, Scott Fybush, Harold Hallikainen, Paul Kaminski, Peter King, Mel Lambert, Mark Lapidus, Carl Lindemann, Lynn Meadows, Naina Narayana, Tom Osenkowsky, Ken R., Rich Rarey, Bruce Rogow, Bob Rusk, Randy Stine, Steve Sullivan, Travis the V/O Guy, Barry Umansky, Tom Vernon.

## Radio World

Vol. 25, No. 9 April 25, 2001

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245  
E-mail: [radioworld@imaspub.com](mailto:radioworld@imaspub.com) • Web site: [www.rwonline.com](http://www.rwonline.com)

## —ADVERTISING SALES REPRESENTATIVES—

Sales Mgr., US Southeast & Mid-Atlantic: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: <a href="mailto:jdcasey@compuserve.com">jdcasey@compuserve.com</a>
US Northeast & Central: Sandra Harvey	765-966-0669	Fax: 765-966-3289	e-mail: <a href="mailto:ads4sales@aol.com">ads4sales@aol.com</a>
US West: Dale Tucker	916-721-3410	Fax: 815-352-1698	e-mail: <a href="mailto:dtucker@ns.net">dtucker@ns.net</a>
Classified Ads: Simone Mullins	703-998-7600 x154	Fax: 703-671-7409	e-mail: <a href="mailto:smullins@imaspub.com">smullins@imaspub.com</a>
Germany, Austria: Dagmar Hanle	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: <a href="mailto:dhanle@imaspub.com">dhanle@imaspub.com</a>
France: Silvia Di Stefano	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: <a href="mailto:sdistefano@imaspub.com">sdistefano@imaspub.com</a>
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: <a href="mailto:rcalabrese@imaspub.com">rcalabrese@imaspub.com</a>
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: <a href="mailto:callem@msn.com">callem@msn.com</a>
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: <a href="mailto:wwg@imaschina.com">wwg@imaschina.com</a>
Latin America: J.O. Lima e Castro	+55-11-3873-1211	Fax: +55-11-3673-1499	e-mail: <a href="mailto:limcas@uol.com.br">limcas@uol.com.br</a>

## NEXT ISSUE OF RADIO WORLD MAY 9, 2001

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcomed for review: send to the attention of the appropriate editor.

## —ADMINISTRATION &amp; PRODUCTION—

Stevan B. Dana	President/CEO
Carmel King	VPI/Group Publisher
Marlene Lane	Editorial Director/COO
Chuck Inderrieden	CFO
Eric Trabb	Sales & Marketing Director
Lisa McIntosh	Production Director
Annette Linn	Production Department Manager
Davis White	Production Publication Coordinator
Kathy Jackson	Ad Traffic Manager
Christopher Duerk	Senior Graphic Designer
Julie Wielga	Marketing Manager
Sheryl Unangst	Circulation Director
Robert Green	Circulation Manager
Alexander Sisson	Accounts Receivable

Radio World (ISSN: 0274-8541) is published bi-weekly by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600; Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Michelle Inderrieden, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 2001 by IMAS Publishing (USA), Inc. All rights reserved.

—Printed in the USA—

# THE WHEATSTONE D-5000

---

## DIGITAL AUDIO CONSOLE

**HIGH TECH** — FOR LESS!



*This new D-5000 audio console from WHEATSTONE gives you our top-of-the-line D-600 digital technology—at a modest price!*

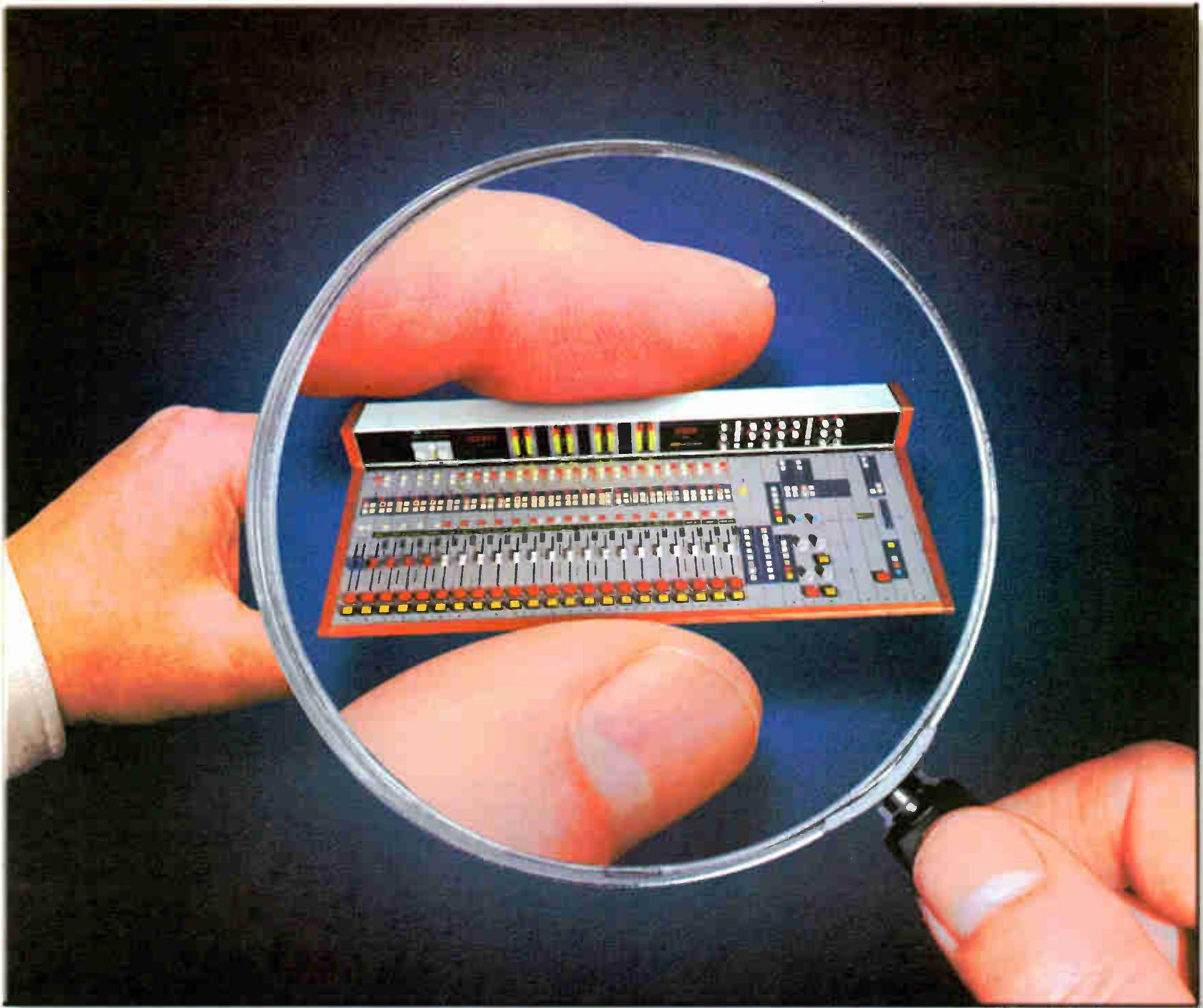
- Totally modular design lets you hot-swap all modules for on-air servicing; even DSP and CPU functions reside on easily changed modules.
- Traditional user interface with clean layout and familiar control surfaces.
- Available with up to 26 input modules (any mix of analog and digital).
- 4 stereo mix busses, each with digital and balanced analog outputs.
- Flexible mainframe layout options.
- Inputs can be field-converted from analog to digital (and back) through a simple daughterboard change.
- Choice of 32, 44.1 or 48KHz console clock rates (can be synced externally).
- Serial port allows true integration with routers and automation systems.
- Dedicated phone module with DSP generated MXM—two modules can be combined for up to 4 MXM sends.
- 8-character alphanumeric source displays above each fader.
- All channel fader, display and switch settings are addressable via the serial port for remote control and router/automation communication.
- Exclusive VDIP™ software lets you configure console with a laptop PC (no pulling modules, installing jumpers or setting dipswitches). Once configured console runs standalone.

 **Wheatstone Corporation**

tel 252-638-7000/fax 252-635-4857/sales@wheatstone.com/www.wheatstone.com

copyright © 2000 by Wheatstone Corporation  
specifications and features subject to change without notice

# *PACKED WITH* *FEATURES*



## *FEATURES YOU'LL NEED FOR DIGITAL RADIO*

Features like PRESET SNAPSHOTS, direct ROUTER SOURCE ACCESS, AUTOMATION SYSTEM INTEGRATION and easy SOFTWARE CONFIGURATION. You can choose from 32, 44.1 or 48KHz clock rates to accommodate your system standard—and with four stereo outputs plus two stereo aux sends (each with simultaneous digital and analog outputs), automatic mix-minus support for

up to four callers, individual channel EQ and dynamics processing plus eight-character source/cut ID displays, you'll be able to handle ANY format.

With the D-700 your digital console, your digital hard disk, your automation system, and your station's audio router can work as ONE! **CONTACT WHEATSTONE, THE CONSOLE EXPERTS!**

 *Wheatstone Corporation*

tel 252-638-7000 / fax 252-635-4857 / sales@wheatstone.com / www.wheatstone.com

copyright © 2001 by Wheatstone Corporation  
specifications and features subject to change without notice