



*****3-DIGIT 857
S101903 D08 0002
BARRY MISHKIND 742
2033 S AUGUSTA PL
TUCSON AZ 85710 7905



On the Range

EV's ENG 618 shotgun mic can take the heat.

Page 55

Radio World

The Newspaper for Radio Managers and Engineers

October 25, 2000

INSIDE

NEWS

▼ Broadcasters aren't impressed with FCC changes in the low-power FM rules.

Page 5

▼ How should terrestrial stations respond to satellite radio?

Page 8

ENGINEERING

▼ Tips from John Bisset's Transmitter Workshop.

Page 25



▼ Dick Fry takes a look at FM antennas with reduced sidelobes.

Page 26

GM JOURNAL



▼ New Northwest Broadcasters pursues a smaller-market acquisition strategy.

Page 36

▼ Clint Formby's 14,000 broadcasts.

Page 46

STUDIO SESSIONS

▼ Earle Augustus and Rob Austin of Barnstable; Travis on the ups and downs of the voiceover biz; and we try out the Short/cut 2000.



In This Issue

NewsBytes Now
Every Business Day
at www.rwonline.com

NEWS ANALYSIS

AM Expanded-Band Limbo Near End?

by Naina Narayana

WASHINGTON The FCC's 13-year effort to reduce congestion in the overcrowded AM band is expected to be complete in the coming months, pending another appeal process.

This is good news for many broadcasters who have postponed their migration into the expanded AM band (1610-1710 kHz) because of the unresolved allotment plan.

When 710 radio stations expressed interest in moving to the expanded AM band in the early 1990s, they hoped to reach bigger audiences and experience less interference. By the time the FCC released its third allotment plan in 1997, 88 stations were eligible to apply for construction permits.

One final appeal

One final opportunity to file appeals against the commission's allotment plan for the expanded AM band remains following the commission's rejection of the most recent appeal by WGN(AM) asking for a new allocation plan.

See AM, page 6 ▶

THE HAB
RADIO SHOW

Product Wrap-Up

Page 10

**Performance
Dependability
Service**

Simply the Best Broadcast Transmitter for 54 Years!

Continental Electronics

www.contelec.com 800.733.5011

NEWSWATCH

KSJO Fined \$14,000

Clear Channel Communications station KSJO(FM) in San Jose, Calif., is apparently liable for \$14,000 in fines by the FCC for airing allegedly indecent material on two occasions.

The first bit was a joke that aired on Aug. 25 in which a little girl asks her parents about sex in the shower. The station said the material was not explicit. The commission disagreed.

The second fine was levied after air personalities on the morning show discussed the proper way to perform oral

sex. The station said the guest, Dr. Natasha Terry, is a nationally recognized sex therapist and that she kept her discussion clinical.

The FCC said the DJ's invitation for Dr. Terry to use a prop was intended to be "pandering" and that the material appears to be indecent because it contains language that describes sexual and/or excretory organs in patently offensive terms.

Both bits aired between 6 a.m. to 10 p.m., outside the hours indecent material may be aired.

KSJO had 30 days to either pay the penalty, or seek its reduction or dismissal.

Nearly 500 More Apply for LPFMs

WASHINGTON The next "window" of dates during which the FCC is expected to accept applications from those who want to own low-power FM stations should be announced by the end of October. That third filing window is expected to be around the end of November.

The FCC received 473 low-power FM applications in the second filing window. That compares to the more than 700 it received in the first round of applications.

The preliminary breakdown for this latest group is as follows: Connecticut (38), Illinois (84), Kansas (36), Michigan (87), Minnesota (63), Mississippi (22), Nevada (23), New Hampshire (28), Puerto Rico (20), Virginia (58), Wyoming (14).

Non-profit community-based organizations and state and local governments filed LPFM applications in the filing window held Aug. 28 to Sept. 1.

See NEWSWATCH, page 3

Index

| | |
|--|---------|
| NAB RADIO SHOW | |
| Product Wrap-Up | 10 - 23 |
| FEATURES | |
| Warning: Transmitter Overload | |
| by John Bisset | 25 |
| To Sidelobe or Not to Sidelobe | |
| by Richard J. Fry | 26 |
| 'Clear' Channels No More? | |
| by Mark Durenberger | 30 |
| GM JOURNAL | |
| New Northwest Builds Business | |
| by Robert Rusk | 36 |
| Indecency: Short-Term Thrills | |
| by Harry Cole | 36 |
| IBOC Doubts; Other Net Newbies Rule | |
| by Carl Lindemann | 43 |
| Macnee Did Radio, Then 'Avengers' | |
| by Robert Rusk | 45 |
| Radio's Longest-Running Broadcaster | |
| by Robert Rusk | 46 |
| Broadband Users Like Net Radio | |
| by Laura Dely | 52 |
| STUDIO SESSIONS | |
| Folksy Style Suits Memphis Duo | |
| by Ken R. | 55 |
| Take Aim With an EV Shotgun | |
| by Carl Lindemann | 55 |
| 360 Systems Short/er in 2000 | |
| by W.C. Alexander | 56 |
| V/O Business Ups and Downs | |
| by Travis | 60 |
| BUYER'S GUIDE | |
| Harris Transmits From Conde Nast | |
| by John Lyons | 65 |
| Nautel Powers Pottsville | |
| by Argie D. Tidmore | 65 |
| Cleveland, Tenn., Takes the Crown | |
| by Phil Baker | 66 |
| Armstrong Serves Pago Pago | |
| by Larry Fuss | 68 |
| Bext Equipment Does It All | |
| by Steve Fuss | 70 |
| OPINION | |
| | 78 |

AUDITRONICS 4.0 NuStar

It's the NEW CONSOLE you've been asking for, with the trustworthy heritage you need — featuring a digitally controlled engine for your equipment room, so you can centralize all your electronics.



Modular serial control surface

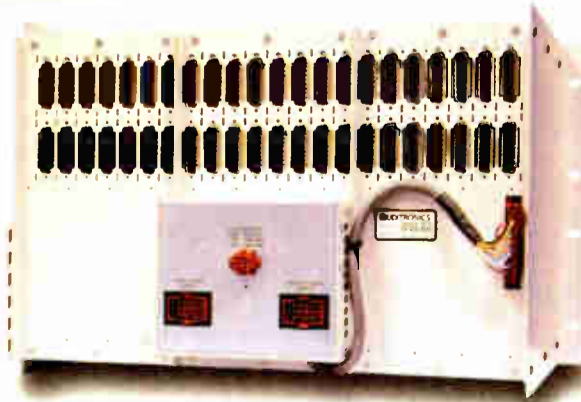
The Control Surface is JUST RIGHT!

Your operators won't need any training here: large brightly lit switches, 4 stereo program busses, and 4 internal mix-minus busses give it power. Each module has a rotary encoder with 8-character alpha display that can select any of the remote sources (up to 128) so you can get any job done.



All engine components are hot-swappable (maximum 128 stereo sources), letting you expand and service your NuStar without disrupting your entire system.

Centralized wiring has insulation displacement DB-25 connections so your installation and prewire go smoothly.



CONTACT US FOR MORE INFORMATION!

600 Industrial Drive, New Bern, NC. 28562
tel 252-638-7000/fax 252-637-1285/sales@wheatstone.com



PAGE 1/2

Dalet Webcasts
the World

Enthusiastic
Webcasters

PAGE 3

On Air Now!
Making streaming
Easier

PAGE 4

Dalet News
Trade Shows
Ride the Tiger

SUCCESS STORY

Dalet Webcasts the World

"Dalet is a pioneer in web application research. They are the perfect partner for us because they offer the right Internet broadcasting solutions."

Jorge Hernan Pelaez
Morfeo, Miami, US



Webcasting is a rapidly growing medium with 100 new web radio stations created each month. Audiences are demanding innovative professional quality multimedia content, new advertising models must be supported, integration with e-commerce is essential, and operations must be reliable and scalable.

Dalet is a leading global provider of professional quality tools designed to address the added complexities involved with webcasting. From Australia to North America to Europe, webcasters around the world have selected Dalet software to help drive their webcasting operations. Satellite Music Australia is launching 10 Internet webcast channels via their

website, www.satellitemusic.com.au. Using Dalet software, they will be able to offer synchronized audio, text and video to audiences worldwide. E-commerce links will also be enabled, offering audiences the opportunity to purchase CDs, concert tickets and related merchandise.

Morfeo.com, based in Miami, is the Internet's first Latin American radio network that provides global access to the latest local news, sports and Latin music in English, Portuguese and Spanish. Morfeo.com has selected Dalet to automate their production and broadcast operations. Flash FM, ITN and Ride the Tiger in the UK, RSG in South Africa and Alo.com in Mexico are using Dalet's On Air Now! to synchronize rich media content with audio.



"We investigated all the possible technology options and it became obvious that Dalet had the most complete solution with On Air Now!. One advantage is that it allows us to operate 2 digital channels from 1 workstation – a major cost saving over our previous system,"

Greg Solomon,
Chairman of SMA, Sydney, Australia



Maximum Scalability & Reliability

Scalability and reliability are a serious challenge when offering a larger number of channels ranging from 100 to several thousand streams. Dalet has incorporated the following capabilities :

- Simultaneous users can manipulate and share multimedia content easily
- Automated processes optimize operations and workflow
- Specialized techniques, developed through close collaboration with IBM and Compaq, allow for more than 100 channels of linear audio to be streamed simultaneously without affecting audio quality
- High density streaming reduces costs and space by allowing a single broadcast workstation to generate up to 8 channels of content
- A fault tolerant Dalet Broadcast Engine and numerous redundancy options minimize broadcast interruptions ■

Webcasting Software

Dalet provides the core functionalities necessary for any webcaster to acquire, edit and broadcast multimedia content. Dalet Multimedia Content Warehouse is an extremely scalable database capable of storing over 30 Terabytes of text, audio, and visual content. Integrated workflow and automation tools allow webcasters to produce and broadcast with ease. A remote DJ feature also enables other sites to contribute content and manage broadcasts from distant sites. Dalet supports both Real Networks and Microsoft Windows Media for digital broadcast over the Internet.

Increase Revenue

Dalet's tools and applications enable broadcasters to get the most from their audiences. Audio programming is synchronised with text and images to offer rich media content, integrated promotion and e-commerce capabilities. E-commerce and integrated promotion capabilities – such as purchasing CDs and related merchandise - offer webcasters additional revenue sources. Niche channels – referred to as narrowcasting – allow advertisers to target audiences with greater accuracy. Targeted ad insertion is also available through our partnership with Hiwire.

Alo.com producer uses On Air Now! to stream music and associated information. Mexico



On Air Now!

Making Streaming Easier

Today's Internet technology allows audiences to receive e-commerce enabled rich media webcasts. On Air Now! is a first of its kind software package that provides a single integrated platform for creating, managing, scheduling and streaming content over the Internet. This approach is not only cost effective, but it improves workflow tremendously. E-commerce links can also be incorporated into the programming, thus offering webcasters an additional revenue-generating opportunity.

How Does it Work?

Dalet Asset Manager helps populate Dalet Multimedia Content Warehouse, from which the multimedia playlist is determined. On Air Now! then gathers the content and combines the various media elements – audio, text and video – and prepares it for encoding. Any media server – such as Real Networks or Microsoft Windows Media can work with On Air Now! to digitally encode the content. The stream is then transmitted across the Internet. At the receiving end, the content is decoded and separated into

the various media elements by the player. The media elements are then broadcasted in accordance to the playback instructions that were encoded in the stream.

Simple to Use

On Air Now! is a great asset to any broadcaster wishing to stream multimedia content over the Internet. Integrated workflow streamlines operations and simplifies the technicalities of Multimedia broadcasting.

Distribution & Promotion for Music Labels

Private Internet broadcasts allow artists and record companies to form their own radio webcasts promoting their music. Webcasts can be targeted to their audiences with e-commerce links, which enable audiences to purchase or download songs, album art and music videos.



Narrowcasting

The Internet allows for targeted content delivery at a reasonable cost. As such, broadcasters can extend their brands of music over the Internet and offer niche content by delivering multiple programming channels. On Air Now! enables them to do this automatically with their existing library.

Increases Revenues

Using On Air Now! helps increase revenue in a variety of ways: rich media content increases audience attraction and retention, and targeted narrowcast ad delivery allows broadcasters to charge higher advertising rates. E-commerce provides an alternative revenue source since related merchandise such as CDs, videos, and concert tickets can be offered for sale in conjunction with the programming ■

Dalet Asset Manager

Dalet Asset Manager allows broadcasters to manage Multimedia Content that is stored in the Dalet Multimedia Content Warehouse. Soundtracks, CD covers, pictures, links to fan club websites, biography and e-commerce links can now be associated to the song being played. To manage the Multimedia content, broadcasters enter data in a form with different fields such as text, hypertext and video. Multiple objects – whether they are pictures, audio, or video – can be assigned to one title.

Key On Air Now! Features

- Synchronized delivery of multimedia content: audio, text, images and links
- Supports customized layouts and web interface designs
- Fully automated for maintenance free operations
- Multiple protocol support
- Integrated promotion, broadcast and e-commerce tools

Late Breaking News



Dalet – London

Ride the Tiger is a new music and lifestyle web venture, funded by Chrysalis Plc, a leading UK media company, that delivers a non-stop music mix perfectly tailored to users' tastes. In addition to providing music, Ride the Tiger will provide users with Internet Jockeys' (IJs) and audio elements such as sweepers and promotions. Unlike a jukebox or CD changer, there will be no gaps between tracks and a "live radio type experience" will be produced.

Dalet Ltd. was chosen to provide Ride the Tiger with the Audio Management Subsystem (AMS). It utilizes Dalet's On Air Now! software, sending XML code containing the associated metadata (artist name, album name, event code) to the web management system, which in turn is displayed on the web while the audio item is being played.

New Arrivals



Dalet welcomes
new Sales
& Marketing personnel

Dalet – Paris

■ **Tristan Southgate** is a new Business Development Manager. Before joining Dalet, Tristan worked for the Financial Times Information in Singapore and the Philippines.

Dalet – New York

■ **Matthew Mankiewich** joins us as a TeamNews Product Specialist. Matt has freelanced as a sports writer, news reporter and has experience in technical support and broadcast engineering.

■ **George Matassov** is now Director of New Business Development. Previously, George was Manager of Computer Systems at ABC Networks where he was a Project Manager.

■ **Christine Negroni** comes to us as a TeamNews Product Specialist. Christine is a seasoned journalist and has worked as a correspondent for CBS News and CNN.

Events

We will be at the following trade shows and invite you to stop by our booths.

- Sept. 8–12, IBC, Amsterdam, NL, Booth: 3.230
- Sept. 13–16, RTNDA, Minneapolis, Booth: 1637
- Sept. 13–16, WebCommerce, Paris, FR
- Sept. 20–22, NAB Radio Show, San Francisco, Booth: 906
- Sept. 26, TV/Internet, Programming, New York
- Oct. 3–4, Interactive Music Xpo, Los Angeles, Booth: 731
- Oct. 10–12, Streaming Media Europe, London, UK, Booth: 814
- Oct. 26, Radio Day, Köln, GM
- Oct. 30 – Nov. 01, Broadband, Paris
- Nov. 8–9, SBES, Birmingham, UK, Booth: 80
- Nov. 14–17, News World, Barcelona, SP, Booth: RS6
- Nov. 15–17, Interactive Publishing Conference, Zürich, GM
- Nov. 21–22, WAP Convention, Paris,
- Dec. 05–07, Online Information, London, UK
- Dec. 12–14, Streaming Media West, San Jose, CA, Booth: 2021

Tel: + 1 212 825 3322 • Fax: + 1 212 825 0182

Tel: + 33 1 40 38 01 39 • Fax: + 33 1 42 05 18 66

Tel: + 44 208 516 7750 • Fax: + 44 208 516 7751

Tel: + 34 91 458 19 88 • Fax: + 34 91 457 64 95

Tel: + 52 5 513 49 30 • Fax: + 52 5 513 22 89

Tel: + 65 3256 009 • Fax: + 65 2220 460

NEW YORK

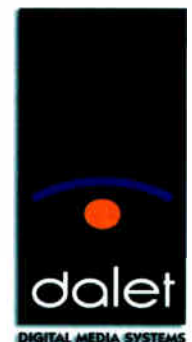
PARIS

LONDON

MADRID

MEXICO

SINGAPORE



Studer Closes California HQ

by Randy J. Stine

SAN LEANDRO, Calif. In an effort to streamline its North American operations and cut costs, Studer Professional Audio has closed its top U.S. administrative office in San Leandro, Calif. President John Carey also has left the company and is now vice president, business development for Klotz Digital America Inc.

The Aug. 31 closing spurred industry rumors of a possible Studer sale. The company is owned by Harman International Industries Inc. The parent firm earlier this year sold Orban Inc. to Circuit Research Labs Inc. (RW, Jan. 5).

Speaking on the condition of anonymity, a Studer spokesman said the company is "not for sale" and that it was Carey's decision to leave.

The spokesman called the management shuffle a "small internal matter." Carey had been president since 1997. Philip Hart, president of Harman International, has been named Studer's interim managing director.

STUDER
professional audio equipment

H A Harman International Company

Studer maintains sales offices in Los Angeles, New York and Nashville, Tenn. The company's sales/repair office in Toronto remains open, said the spokesman. Studer's world headquarters

are located in Zurich, Switzerland.

Bruno Hochstrasser, Studer's president of international sales, said the company would remain focused on the broadcast and post-production market.

"(Studer) will continue to concentrate on selling digital and analog mixing consoles and digital routing systems," Hochstrasser said.

Hochstrasser said Studer will "be very active in the United States, even more so than in the past. (Studer) will launch a major marketing plan this fall."

The Broadcasters General Store mainly supplies parts for Studer support, Kerstin said.

"The new tape deck market has dried up a great deal. There is still a need for tape machines, but a much smaller one than just five years ago."

The late Willi Studer founded Studer Professional Audio in 1948. His namesake company manufactured tape decks and sold them under the labels Revox and Dynavox.

Studer sold his company to Harman International in 1994.

At Klotz, Carey will oversee the research and development of Klotz Digital's growth strategies, ranging

John Carey moves to Klotz, where he will oversee various business development initiatives.

Dave Kerstin, president of the Broadcasters General Store, a Studer dealer, said Studer has struggled recently while trying to break into the mixing console market. "You have some very well-known names in that arena," such as Wheatstone and its Auditronics line, said Kerstin. "I think (Studer) has had a hard time breaking through."

from OEM partnerships to implementation of the company's X4P firmware for audio/media content exchange over the Internet.

His appointment was effective Sept. 1. At Studer, Carey repositioned and rebuilt the organization, changing the company's focus from tape machines to high-end digital mixing systems.

NEWSWATCH

► NEWSWATCH, Continued from page 2

Dawson to Participate In CFA Testing

Does the Crossed-Field Antenna work as advertised?

A company promoting the AM antenna has signed an agreement with DTR/H&D J.V. to supervise testing of a demonstration antenna being built in England. Consultant Ben Dawson will supervise the testing, which is to be completed by Christmas.

Crossed Field Antennas Ltd. said it hopes the demo antenna will answer questions raised about the performance of the device.

DTR/H&D J.V. is a joint venture of duTreil, Lundin & Rackley, Inc. and Hatfield & Dawson, LLC. CFA called them two of the most highly respected U.S. broadcast consulting firms.

"There has been ongoing skepticism concerning whether this antenna actually works," said Robert E. Richer, president of Crossed Field Antennas Ltd. "Although there are CFAs in operation in various countries ... we felt it was important to resolve all issues relating to this unique transmitting system."

"Crossed Field Antennas Ltd. decided to select DTR/H&D J.V. to supervise these tests because of its impeccable reputation as a top engineering firm with unquestionable integrity," the company stated. Richer said tests will follow FCC standards.

"Ben has been following the development of the Crossed-Field Antenna for a number of years, and we know that he will be absolutely objective and thorough in his testing," Richer stated.

The technology, yet to be approved by the FCC, promises to let AM stations transmit without towers. Instead, a drum-like device approximately 20 feet high is used. Its developers claim that a CFA will produce more field strength than the tower that it replaces. They claim it offers broader input impedance bandwidth characteristics as well.

This approach appeals to AM managers who would avoid the expense and zoning issues related to tower systems. But skeptics have challenged its

promises and demanded more data and real-world results.

For background including an earlier *Guest Commentary* by Ronald D. Rackley discussing the need for testing, visit the Crossed-Field listing in the Reference Room of www.rwonline.com

Maximum Penalties To Increase

WASHINGTON The FCC has increased the top amount it can penalize broadcasters to adjust for inflation.

The agency is required to review its penalties every four years. Now the FCC can fine stations up to \$27,500 for each day of a violation, with a maximum penalty of \$300,000 for any single violation.

The base amount, or the bottom end of the scale, is unaffected.

Radio Markets Questioned

WASHINGTON FCC Chairman Bill Kennard wants his colleagues to redefine how many stations constitute a market. Commissioners Susan Ness and Gloria Tristani agreed.

Ness said a deal such as the Clear Channel/AMFM merger, with a combined total of 900-plus stations, results in high levels of concentration.

"We have seen transactions in which a single company proposes to acquire 70 percent or 80 percent of the radio revenues in a marketplace," Kennard told attendees of the convention of the National Association of Black Owned Broadcasters in September.

"This is not what Congress intended in the '96 (Telecom) Act. I hope I'll have your support in urging my colleagues at the FCC to adopt new rules to close this loophole."

Commissioners Harold Furchtgott-Roth and Michael Powell disagree and say it's not time to revamp radio ownership rules.

Separately, Kennard said he intends to fill out his commission term, to June 2001, whether or not he remains chairman after the presidential election.



All the Punch without the Price

Starting below
\$200 / MONTH!

VAULTXPRESS™ knocks your competition out of the "radio ring" by empowering you to sound like the heavyweights without having to pay a heavyweight price!

VAULTXPRESS™ manages all your radio studio needs in a single nonproprietary PC-driven environment — combining production, automation, news, voice tracking, satellite feed interfaces, audio previewing, voice recording applications and Internet technologies. VAULTXPRESS™ is built around world renowned AudioVAULT® technology, so your small radio operation will compete with the heavyweights without paying a big price!

VAULT XPRESS VAULTXPRESS™ offers:

- VERY User Friendly Interfaces
- Competitive Upgrade Packages
- Same AudioVAULT® Software Without the Price!
- Pick and Choose the Studio Software You Need
- Completely Open System Design — NO PROPRIETARY HARDWARE!
- Seamless Integration With Traffic and Music Systems
- Includes Software and Computers!
- In-Depth Training and 24/7 Support

Limited Time Offer!

CALL 888-232-3268
TODAY FOR A LIVE DEMONSTRATION!



Leaders look to BE!
Broadcast Electronics • Quincy, Illinois
888.232.3268 • 217.224.9600
www.bdcast.com • www.AudioVAULT.com

What Is It About a Radio Station?

There's just *something* about a radio station.

Station memories. Everyone's got them. What are yours?

In childhood I had always thought it would be fun to be a news announcer, or a singer or a DJ — something involving a microphone.

As a teenager, I'd get together with my friend Jim and listen to the country-music jocks on 1050 WHN in New York play their tunes, and wonder how they chose the songs. Why did we suddenly notice that we were hearing a certain Don Williams song from two years earlier played more frequently?

Had Lee Arnold stepped into the music library and found a dusty old record that Del DeMontreaux or Larry Kenney had left lying about?

We knew nothing of rotations or music research. I just knew that I liked listening to the Mets and to country music at a time when my friends were into Fleetwood Mac or the Stones.

How thrilled I was one day when I called the station and actually got on the air. This must have been 1976 or '77. I'm sure my voice was breaking, thanks to nerves as well as hormones.

My prize for being a faithful listener: a leather WHN belt buckle. I later gave the prize to my high-school girlfriend as a keepsake. I wonder if she held onto it — what I wouldn't give to have it now.

★ ★ ★

I remember the first time I walked into a radio station.

It was WXDR(FM), then a 100-watt station with studios on the third floor at the University of Delaware Perkins Student Center. It was the fall or early winter of 1979.

I was a sophomore, a kid who had arrived at the U. of D. the year before with the idea of studying engineering. But once I had landed in Newark — that's "NOO-ark," not at all like the New Jersey pronunciation — I had found that my abilities were in words rather than hard-core numbers, so I switched to a communications course of study.

But I hadn't quite figured out what kind of communicating I wanted to do.

So that day in 1979, as I reached the top of the stairs and came into the hallway, I could hear music drifting from the open station door in front of me. Inside the little office, I could see posters and papers stuck on the walls everywhere. Rows of LPs peeked out, beckoning, friendly.

Through a double-paned window on my right, a DJ was spinning alternative music and working the knobs on his mixer. (It was a Collins board with rotary pots, but I sure as heck didn't know that at the time.)

I took a deep breath, crossed the threshold and asked the first person I saw if the station could use a volunteer.

They could, and before long, I was doing weekly early-morning newscasts, learning that a career in radio often means a career of getting up before the sun.

Inside the little office of WXDR, I could see posters and papers stuck on the walls everywhere. Rows of LPs peeked out, beckoning, friendly.

Soon I was running the newsroom, and covering Blue Hen baseball and women's basketball games, and hosting a classical music show, and serving on the station's student board. I was the one who opened the envelope with the notice from the FCC that our power increase had been approved.

I won't forget my first election night as a radio reporter. The coolest part: the great big "God sounder" music effects we used to open our newscasts that night. How the locals must have howled to hear these deadly earnest journalism students using a music intro that would have made CBS blush.

WXDR taught me to appreciate varied forms of music and musical tastes, to work with student volunteers as well as long-time townie jocks whose shows had been on the station for years.

The station is now WVUD, the Voice of the University of Delaware. But to me

it will always be WXDR — which, as most Blue Hen students believed, stood for seX, Drugs, Rock and roll.

★ ★ ★

It was a time when everything about a radio station was fascinating to me.

I would drive up I-95 in the late evening, and sit in as my friend Robin Bryson did the overnight shift on WDEL(AM) and WSTW(FM) in Wilmington.

He patiently answered question after question as I kept him company at 2 or 3 in the morning:

"What are those buttons you're pushing? What are these blue things that look like eight-track tapes? Why does that wall of tape machines say 'Rocky II' on the front? Why do you go outside to look at the towers once in a while? How do

you know what the weather is going to be? How do you know which songs to play? Do the same people call you night after night? What if you put a caller on the air and he curses?"

I'd rip the wire for him, excited to be helping out, not knowing that I would soon be working at the station myself as the afternoon news anchor for several years.

And when I would drive home, Robin's voice would keep me company; and I would think of all the truckers and insomniacs and late-night lovers who were out there listening too.

Robin's still there, 20 years later, keeping tabs on traffic in the Wilmington area. My friend is an institution.

I recall the hectic pace of the newsroom at WILM(AM), where I did a two-week internship at Sally Hawkins' station.

I remember my first paying radio job,

From the Editor



Paul J. McLane

weekend newsman at WNRK(AM) in Newark ("NOO-ark"), where I learned how to make friends with the state police over the phone; where I once got a tip and hurried out to a roughneck bar to interview Curtis Sliwa of the Guardian Angels; where I would step out the back door of the station on autumn nights and watch the sun set behind the corn, over fields where townhouses have since grown.

The memories unfold.

I see myself interviewing Pete duPont, governor of the state of Delaware. Attending the first press conference in the huge boardroom of the DuPont Company. Standing in the WDEL transmitter room and marveling at the mysterious equipment that Scotty Moyer, Bill Blatz and Joe Jones kept running.

Sitting through my first murder trial. Groping my way through the smoke in the burning house at the State Fire School in Dover.

Crouching down along the curb at a Thanksgiving parade and asking the kids who they were waiting to see. The answer, of course: "Santa Claus! Santa Claus!"

Their voices play back in my head, as fresh as the day I taped them.

I recall crawling in the dark spaces of dormitories at George Washington University, installing carrier current equipment; and helping Dan Braverman install Part 15 equipment for summer camps in the Poconos; and looking at plans for the spectacular new XM Satellite Radio facility in Washington, D.C., earlier this year.

Radio memories. Everyone's got them. What are yours?

AutoPilot
FOR WINDOWS
automatically keeps your stations on course...

Switch Transmitters

Change Pattern

Maintain Power Levels

"The ARC-16 handles multiple sites with ease and has been sturdy and reliable. Combined with AutoPilot, it gives me the ability to set up complex control and monitoring routines. Because of the Burk we were able to comply with the unattended operation rules right from the start."

Rick Levy
Broadcast Signal Lab
Boston, MA

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

BURK
TECHNOLOGY

Phone: 1-800-255-8090 Email: sales@burk.com
www.burk.com

GUEST COMMENTARY

Sensitivity To Degrade With LPFM?

by Fred Krock

"Interference to existing stations by low-power FM (LPFM) may be much worse than anticipated," according to receiver designer Wayne C. Ryder.

"Modern FM-band receivers are specified to have adequate sensitivity for use in far fringe areas of a station's coverage. However, measurements have shown that in a dense, high-signal level environment, the apparent sensitivity of the receivers degrades by several orders of magnitude," said Ryder.

Documentation

Documentation appears in a paper by Ryder, "SUPRX: A High-Performance FM Band Broadcast Receiver for Audio and Digital Applications," scheduled for publication this fall in "RF Design" magazine.

Information from this paper was supplied courtesy of the author.

In the June 21 *RW*, I wrote a commentary about reception problems that can be caused by LPFM stations. I noted that receiver front-end overload caused a lot of reception problems.

I knew from experience that a problem existed, but I didn't know how serious it could be. Ryder's paper quantifies the degradation.

Ryder devised test procedures that simulate real-world listening conditions.

Ryder made his measurements to help develop a way to evaluate performance of a receiver design under test in a repeatable way. Ryder devised test procedures that simulate real-world listening conditions.

Although these measurements were made for a different purpose, they do show clearly how the performance of typical FM receivers is affected when a number of strong signals are present.

Former FCC rules for adjacent-channel signal protection were in effect when these measurements were made. They do not show the additional degradation that may result from standards relaxed by the FCC to allow LPFM stations.

"Conventional measurement techniques such as two-tone intermodulation testing do not adequately measure high-order intermodulation distortion," said Ryder. "Heavily processed

See LPFM, page 8 ▶

FCC Fine-Tunes LPFM Rules

by Leslie Stimson

The FCC has addressed many details that were previously left unclear in the rules released in January to create a new class of low-power FM service. Officials say some of the new stations may be on the air by the end of the year.

channel-spacing requirements, including those for 3rd-adjacent channels.

FCC Chairman Bill Kennard said he was "profoundly disappointed" by the statements. "It is a sad day when National Public Radio advocates a policy that would deny the public new radio service."

During a panel on the future of radio

nesses of non-commercial stations over that of commercial stations in the commission's changes on the LPFM issue.

While saying the FCC made a mistake in not spending more time collaborating with public broadcasters on the issue, Sen. Ron Wyden, D-Ore., told NAB attendees the LPFM issue need not be fractious.

As part of the LPFM rule changes, the FCC has spelled out the process to resolve interference complaints.

After LPFMs are on the air, if an existing station receives interference complaints from 1 percent of its listeners in its protected coverage area, the mechanism to resolve the dispute kicks in.

FCC field agents would try to help the existing station identify the interference source and resolve the problem. If the stations involved can't resolve the problem, the FCC would begin a modification procedure to resolve the dispute within 90 days.

NAB continues to appeal what it says is the FCC's refusal to acknowledge stations' listeners beyond their protected service contours. Oral arguments are set for Nov. 28 in the U.S. Court of Appeals for the District of Columbia Circuit.

Keith Larson, associate bureau chief for engineering in the FCC's Mass Media Bureau, said the commission recognizes stations have listeners outside their protected service contour, but needs to balance that against providing a new radio service.



From left: FCC Chairman Bill Kennard, FCC Commissioner Gloria Tristani

The changes create a procedure to resolve interference complaints from listeners of existing radio stations and add additional protection for existing FMs that provide radio reading services to the blind.

The FCC did not require LPFMs to provide 3rd-adjacent channel protection to existing stations and vice versa.

"It's clear the FCC is trying to pick off LPFM opponents one by one, but they still haven't addressed the interference concerns of millions of radio listeners and this order doesn't change NAB's position," said NAB spokesman Jeff Bobeck.

In response to requests from National Public Radio and the International Association of Audio Information Services, formerly the National Association of Radio Reading Services, the commission adopted an exception that provides additional protection to radio reading services transmitted by FM subcarriers (SCAs).

Pending an SCA receiver performance study for radio reading services, the FCC will require LPFMs to meet 3rd-adjacent channel-spacing standards to protect existing stations providing these services.

Sources said this would affect a small percentage of the LPFM allocations, because the reserved, non-commercial portion of the FM spectrum is so tightly packed that most of the LPFM allocations would be on the non-reserved, commercial portion of the band.


While NPR and the AAIS were pleased with the process for resolving interference complaints, they said the changes do not guarantee the signals for radio reading services nor translators would be protected. NPR is concerned that interference from LPFMs will hinder its translator's ability to receive and retransmit signals. Likewise, the reading services are worried about interference to their SCA receivers.

Both organizations support S-3020, companion legislation to a House-passed bill that would allow the FCC to allocate frequencies for LPFMs, but retain current

on the last day of the NAB Radio Show, attendees referred to the "preferential" treatment given the FM subcarrier busi-

Simplicity

Quality, Value, Dependability

This I understand.  If it burns out, I screw in a new one. My son's radios are the same way - everything

inside is made so  you can 

just put in a new one. He never said it wouldn't

break! But, if it does, you can

fix it in a jiffy. Such a bright



boy! Now if only he could figure out a

way to remember to call his

mother once

in a while!



radio SYSTEMS

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

AM

► Continued from page 1

In August, the FCC rejected the station's appeal. It was filed in 1997 with the U.S. Court of Appeals, asking the commission to rework the allocation plan using a different configuration to determine whether WGNV would receive an expanded-band allotment.



After the appeals court sent the case back to the FCC in 1998, the agency conducted a computer analysis of the plan and determined that WGNV would not have received an allotment even if the agency adopted the technical changes.

After the summary of the FCC's order is entered into the Federal Register this fall, WGNV would have

60 days to appeal to the D.C. Circuit Court, according to Peter Doyle, deputy chief of the FCC audio services division. If no appeal is filed, the proceeding will become final, he said.

The likelihood the proceeding will soon be finalized appears strong. WGNV President and Owner York Klebe said he does not plan to file another appeal, but was researching the station's options once the expanded AM proceeding is finalized and the FCC determines whether additional frequencies are available.

"Ultimately, we concluded that even if the prior criteria were applied, we wouldn't have gotten an allocation," he said. "We're hopeful to see if there are additional frequencies available down the road."

The finalization is especially important for broadcasters who have already launched radio stations on the expanded band.

Since March 1997, when the FCC issued a Public Notice, 88 stations have been eligible to apply for allotments in the AM expanded band. At that time, 67 AM stations filed construction permit applications. Since then, 26 stations have begun operating on their expanded-band frequency, said Doyle.

He believes a number of remaining stations have been waiting for the litigation by WGNV to be resolved.

John Garziglia of Pepper &

Corazzini L.L.P. has represented two stations that built in the expanded portion of the band, WJDM, Elizabeth, N.J., and KDIA, Vallejo, Calif. Garziglia said construction delays for other expanded-band stations could be caused by several factors.

"Some may feel that it is simply not a good business proposition to build the station now, preferring to wait until the construction permit is almost expired prior to spending the money and effort to put the expanded-band station on the air."

Doyle said the commission will need to consider whether an extension of the dual-frequency period is warranted, but is committed to working with AM broadcasters to achieve the successful migration to the expanded band.

Expanded service areas

"My perception is that many expanded-band station owners are very pleased. The relatively high power of these non-directional facilities and the very limited number of stations operating in this portion of the band have

The finalization is especially important for broadcasters who have already launched stations on the expanded band.

He has known a number of broadcasters with CPs who feel no urgency, particularly when the CP time period is now three years.

Others, he said, may be receiving advice from their own lawyers that the commission's requirement to complete construction within the three-year period will not begin to take effect until the expanded-band proceeding is final.

According to commission rules, broadcasters are also allowed to operate both their existing AM station and their expanded-band station for a period of five years from the time their construction permit is issued. This could present a potential timing problem for those broadcasters who were issued construction permits in 1997 and 1998 and are choosing to restart their three-year permit after the finalization, said Doyle.

resulted in expanded services areas for many broadcasters," he said.

"Based on these technical advantages, we expect most stations to build and keep their expanded-band stations, even if the option to operate with two frequencies is limited."

In a 1999 order, Doyle said, the agency extended certain construction permits, including all expanded band permits, to at least Dec. 21.

Expanded-band stations that will need additional time to construct will be entitled, upon request, to an extension based on the several appeals that were filed to the 1997 allotment plan order.

Though the process to establish the expanded AM band has been troublesome, several stations that have migrated have had positive experiences

See AM, page 7 ►

Broadcasting History?



Digigram's VX sound cards are the affordable way to produce full 24-bit audio on your PC or Mac desktop or laptop using your favorite software.



Digital Audio Networking Solutions

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

We've been listening...

to your request for a nitrogen pressurization system that

- Meets the requirements of today's demanding new technologies.
- Is competitively priced with typical air dryers.
- Is small, compact and easily installed.

Our response... the DSN₂.

Litton

Life Support

1-800-548-8662

Website: www.littonls.com

Email: nbuckhahn@littonls.com



AM

► Continued from page 6

gaining listeners, reception range and the ability to offer another programming format on the AM band.

In Warner Robins, Ga., WRNC(AM) gained access to 200,000 additional listeners in the Macon, Ga., metro area after it gave up its license for 1600 kHz in 1998 in favor of the 1670 frequency.

At 1600 kHz, the station, which is owned by Taylor Broadcasting and is in the process of being purchased by Clear Channel Communications, only reached 57,000 listeners in Warner-Robins.

Successful move?

But the move has not been completely successful. After spending \$100,000 and installing a new transmitter, the station has experienced problems because the transmitter is located near a group of doctors' offices, several of which own medical equipment, including sonogram machines. The machines do not function properly because of the neighboring RF, said WRNC General Manager Rick Humphrey.

After the proceeding is complete, there may be opportunities for additional licensing in the band.

To compensate, Humphrey said, the station operates at 1 kW between the hours of 9 a.m. and 5 p.m. while the doctors' offices are open, and 10 kW at night. The operation, the opposite of a daytimer, allows WRNC to be heard as far away as Mississippi, Ohio and Texas at night.

Now the station is preparing to make another move in an effort to operate at higher daytime power. The FCC recently accepted WRNC's application to move its transmitter site to a neighboring town and the station was awaiting word on the commission's final decision at the end of September.

Humphrey said it has taken a long time to get permission for changes because of a lack of established procedures for expanded-band stations. "There's so many things (the FCC) didn't have the rules in place for in the expanded band."

The litigation between those stations that did not receive an allotment and the FCC has hindered the progress of the expanded band, Humphrey said adding that he hopes the proceeding will be resolved soon.

"We're risking a lot," he said. "We've sort of bet everything on (the FCC allowing) us to move."

Elsewhere in the country, other stations have decided to simulcast new

and existing formats. Outside of Denver, KDDZ(AM) at 1690 kHz shares the same owner, ABC, and Radio Disney programming, tower and transmitter with KADZ(AM) at 1550.

Both stations are powered down at night, boosting KDDZ's reach in outlying areas, according to Rhonda Sheya, general manager of KDDZ and KADZ. Simulcasting in a congested radio market such as Denver enables them to reach more listeners, she said.

Moreover, the costs are minimal. Because ABC purchased the station after the expanded-band station was already set up and both stations share the same programming, equipment and marketing campaigns, the expenses are low, Sheya said. For now, the management will continue simulcasting until the end of the stations' dual-frequency

operating authority and has not yet made a decision on what to do with the stations in the future.

Despite marketing both stations since 1998, Sheya said, a majority of listeners still listen to KADZ because it was established first.

Reception

She is not worried about listeners not being able to pick up KDDZ's signal with older car radios that do not receive stations in the expanded AM band. "As people get new cars, I think time will straighten that out."

Sources were confident that all listeners would eventually be able to hear signals in the band as consumers replace their old receivers. The expanded-band capability became standard in most car radio, portable

and fixed receivers in the mid 1990s.

After the proceeding is complete, there may be opportunities for additional licensing in the band — possibly giving a number of the more than 700 AM stations that initially applied for a space in early 1990s another chance to secure an allotment.

The FCC has yet to determine what it will do with the remaining frequency allocations and will likely take up that question a year after the proceeding is finalized, Doyle said.

"It's premature to deal with those questions right now," Doyle said. "There are many different ways we can decide how to license additional stations."

Is the AM expanded band a success? Tell us your thoughts at radioworld@imaspub.com

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

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

Radio Gets Crowded in the Dash

by Leslie Stimson

SAN FRANCISCO After 11 years of preparation, satellite-delivered digital audio broadcasting will be here soon.

Terrestrial stations can make sure they survive the competitive threat of satellite DAB and other new technology coming in the car by improving content and tightening formats, said Lee Abrams, senior vice president of programming for XM Satellite Radio and a radio format guru.

said Abrams.

Abrams said formats on XM will be "authentic." On the blues channel, he said, listeners will practically be able to smell the whiskey and cigarettes.

All-Monica channel?

Both services also stress the flexibility of their programming, able to change it quickly. For example, XM could have an all-Monica Lewinsky dirt channel, joked Abrams.

Representatives of Sirius and XM

XM plans to have its service operational and receivers in the market this spring, Abrams said.

Sirius plans to have receivers in the market in the same timeframe.

While XM and Sirius are each spending about \$1 billion to build and launch



Elana Sofko of Sirius



Jim Minarik of Clarion

Frank Sinatra is God. Frank is in prison on 1590 kHz on the AM dial.

— Lee Abrams
XM Satellite Radio

Both satellite services, Sirius Satellite Radio and XM, promise superior program content compared to that of existing radio.

For example, Abrams said, music now relegated to the AM band will be revitalized on XM's service.

"Frank Sinatra is God. (But) Frank is in prison on 1590 kHz on the AM dial."

detailed their launch schedules during a panel at the NAB Radio Show, "New Media & Autos: Is the Free Ride Over?"

Sirius plans to launch its third satellite in November and begin operations in January 2001, said Elana Sofko, director of Talk/Sales Partners for Sirius.

satellites, deploy their terrestrial repeaters and pay for the construction of their facilities, they need receiver manufacturers to get their signal to listeners.

Clarion Corp. of America is working with both companies to develop three-band receivers (AM/FM and either XM or Sirius). While both companies have signed a receiver interoperability agreement, the first receivers to reach consumers will only accommodate one or the other.

Panelists predicted interoperability in second-generation receivers, but they were vague on when that might

occur. Sofko said interoperable receivers might be available "two years down the road."

Interoperability is important for auto and receiver manufacturers. The trend is to integrate many technologies performing different functions into the dashboard, said Clarion President/CEO Jim Minarik. He said one option, in-vehicle computing, would not likely be a huge part of the products sold for manufacturers until about 2015 when costs drop.

He said Clarion is looking at multiple delivery methods to the car. Clarion will support broadcasters, satellite-delivered DAB and "any other new technology consumers want" in the car, he said.

Minarik said broadband Internet capabilities in the car are at least four years away. Hardware manufacturers will need greater data capacity to deliver the kind of services they want in the car, including improved voice-activation and computing capabilities.

THOUGHT IT

Blue 5c™

\$1,295

- Cool Stuff Award Winner
- Industry First in Design
- Remotes, Web, LPFM
- Compact 16" x 13" Size
- 5 Stereo Channels
- 10 Stereo RJ-45 Inputs
- Muting & Remote Starts
- Save Now...\$1,295



BOUGHT IT

Dynamax™

\$2495 to \$7395

- True Modular Design
- Digital & Analog Boards
- 6 to 18 Channels
- 26" or 38" Steel Base
- Monitoring & Cueing
- Durable Lexan Overlays
- Active Balanced I & O
- Save Now...Add Later!



At LPB, we've been thinking and buying our way to console excellence. We first thought-up the award winning Blue® on-air console, and then bought-up industry renowned manufacturer Fidelipac, maker of the Dynamax on-air console line.

Also ask your dealer about... Fidelipac Legends' studio warning lights (over 10,000 sold worldwide since 1987!).

LPB

Put It On-Air!

LPB Communications, Inc.
Tel.: 610-644-1123
Fax: 610-644-8651



Visit our redesigned site today at www.lpbinc.com for a quick and friendly e-tour.

LPFM

► Continued from page 5
high-modulation density signals typical of FM broadcasting today may add artifacts to a frequency occupied by a weak station because of receiver front-end nonlinearities."

Ryder tested six modern FM tuner/amplifiers. With only a signal generator as a source, he found that the receivers required signal strengths ranging from 10 to 30 microvolts to produce an audio output signal-to-noise ratio of

earlier to produce the same 30 dB signal-to-noise ratio.

In his first tests, he used an external antenna as the source for interfering signals. An antenna is not an ideal source for interfering signals.

"Using an antenna will not produce valid repeatable results if the antenna moves in any way or if signal propagation conditions change," Ryder said. Even with this limitation, test results were dramatic.

Ryder found that the same receivers that required signal strengths ranging from 10 to 30 microvolts with no other signals present now required signal lev-

Interference to existing stations by LPFM may be much worse than anticipated.

— Wayne C. Ryder

30 dB. This 30 dB figure was assumed to be the minimum required for satisfactory listening.

Ryder then connected an antenna to the receiver under test in a typical suburban environment. Strength of other signals present ranged from 2 to 20 millivolts. Using a signal generator, Ryder measured the signal strength required on the same unoccupied frequency used

els of 2 to 5 millivolts (2,000 to 5,000 microvolts). The amount of sensitivity degradation caused by signal levels present in a typical suburban location shows clearly.

Krock is engineering supervisor for KQED-FM in San Francisco.

RW welcomes other points of view to radioworld@imaspub.com or write to us at the address on the inside last page.

**MILLION DOLLAR
SOUND FOR
UNDER \$4,000***

Introducing Omnia-3, the all-digital audio processor that offers all the clarity, punch and raw power of the original Omnia. At an amazingly affordable price.

Omnia-3 includes standard features not found anywhere else—like 48kHz sampling, three-band processing, digital audio inputs and outputs, integrated composite clipper, and a removable PC card that simplifies software changes.

Impressive features aside, it's the sound that will blow you away. No other audio processor sounds as good as Omnia. That's why leading broadcasters the world over choose Omnia to boost ratings and crush the competition.

For this much power—on the dial and in the marketplace—you'd expect to pay twice the price. But now, you don't have to.

For the name of your Omnia dealer, contact us at +1 216.241.3343 or visit www.omniaaudio.com.

With Omnia, you lead. And others follow.

Omnia
A Tascam Company

CUTTING EDGE
201 SUPERIOR AVENUE CLEVELAND, OH 44114
TEL: +1 216.241.3343 FAX: +1 216.241.4103
E-mail: info@omniaaudio.com

CUTTING EDGE EUROPE
JOHANNISSTRASSE 6 D-85354 FREISING GERMANY
TEL: +49 81 61 42 467 FAX: +49 81 61 42 402
E-mail: info@omniaaudio.com

*\$3,580 (US) MSRP for Omnia-3fm model. Prices may be slightly higher outside the U.S. due to duties, freight and other costs.

THE NAB
RADIO
SHOW

NABzone
MEMBERSHIP • RESOURCES • BENEFITS

IT MATTERS WHERE
YOU GET YOUR NEWS

abc
NEWS
RADIO

Product Wrap-Up

Here is a look at some of the many products and services that were on display at The NAB Radio Show in San Francisco. We'll have more in the next issue.

The following *Radio World* staff and writers contributed to this section: Paul Cogan, Bernie Cox, Laura Dely, Scott Fybush, Lyssa Graham, Carl Lindemann, Bill Mann, Paul McLane, Sharon Rae Pettigrew, Ken R. and Leslie Stinson.

BE Opens Vault2



Broadcast Electronics introduced Vault2. Vault2 is a Windows-based digital audio system solution that is cross-compatible with several other audio systems such as AudioVault, VaultXpress and WebVault. In addition, Vault2 can work in a studio environment where mixed hardware, software and scalability are necessary considerations.

For information contact Broadcast Electronics in Illinois at (217) 224-9600 or visit www.bdcast.com

Comrex Delivers the Matrix

The Comrex Matrix is a POTS/ISDN/wireless codec. The base model is a 15 kHz POTS codec for audio on a single plain telephone line. The unit is compatible with Vector and HotLine POTS codecs.



Optional accessory modules enable the Matrix to operate on circuits other than POTS. Current options include ISDN and GSM wireless services.

The ISDN accessory contains ISO/MPEG Layer III, G.722 and Turbo G.722. The GSM module connects the unit to GSM wireless phones for audio on a cellular circuit.

The model has an optional battery kit consisting of a NiMH battery, charger and mounting bracket. The base unit also includes a store and forward feature for use when a circuit won't maintain a stable connection for live broadcasting.

For information contact Comrex at (800) 237-1776 or visit www.comrex.com

Wheatstone Rolls Out Furniture, Wiring System

Wheatstone introduced a line of value-engineered furniture and a plug-and-play interface system designed to simplify console wiring.

The Wiremax strip panel is a studio interface system designed to simplify connection of equipment to consoles. The wiring system is mounted in the wiring bay in order to do away with the need for 66-type punch blocks.

The two-sided strips are the same dimensions as the console modules and have steel faceplates, connectors, labeling and a tie strap. Wheatstone supplies the strip panels, console-to-strip wiring and hardware.



The face of each strip panel contains the type of connector required for each piece of studio gear: XLR, RCA, Phoenix connectors or RJ connections and punch block type connectors.

The Eclipse Series of studio furniture, also introduced at the convention, features wood-trimmed flush laminated countertops, steel equip-

ment racks with built-in ventilation grills, larger wire passages, removable swing-down doors, oversized access doors and a large wire-management area with removable concealment door.

Among the featured products was the Wheatstone D-600/700 digital console with modular design, analog and digital inputs and outputs, 99 security-controlled presets that can recall bus assigns, source selection and a variety of settings, plus a serial protocol for automation interface.

Also displayed: the Wheatstone D-5000, Auditronics NuStar 4.0 and Audioarts Engineering D-70 digital consoles.

For information contact Wheatstone at (252) 638-7000 or visit www.wheatstone.com

BSW Gives Away Prizes

As part of its Three-Day Sale, BSW gave away more than \$8,000 in products to customers who registered for a drawing during the NAB Radio Show.

Prizes included a \$2,000 gift certificate from Comrex toward the purchase of one of its products, audio cards from Digital Audio Labs and Digigram, compact mixers from Mackie and JK Audio, and several other products from a variety of manufacturers.

A list of winners and products given away can be viewed at the BSW Web site at www.bswusa.com

For information call (800) 426-8434 or visit the Web site shown above.

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

Comedy, Hip Hop Programs From NBG

"Shaken, Not Stirred" is the latest syndicated show from NBG Radio Networks. This hour of comedy is written and produced by Johnny Seattle and Scotty Crane.

Also new in syndication is "The Katfish Kris Kelly Show."

For information call (503) 802-4624 or visit www.nbgradio.com

Olympia Mixes and Maximizes Audio

Olympia Management Director of Sales Jim Withers announced two products at The NAB Radio Show. InterMax is Internet file transfer software used to distribute customized audio to client stations.

"You can share all kinds of files, not just audio, over the Internet, eliminating the expense of shipping, dedicated WANs and long distance," said Withers.

InterMax allows transfer of any format audio files, logs, production elements, music scheduling files, PDF files and word processing files.

"The other product we're very excited about is MixMax, a six-channel stereo mixer," said Withers.

For information call (314) 345-1030 or visit www.radiomax.com

RCS Develops Insertion Software

RCS partnered with the software and Internet companies Activate and Engage and announced two software products that enable broadcasters to insert targeted advertising into Internet audio streams.

The products, InSert and SplitStream, automatically switch away from a commercial or promotional spot and insert alternate material in its place.

InSert is intended for replacing one broadcast signal or stream with another prior to the audio encoder, most typically when "covering" a terrestrial station's local commercials with a separate feed more suited for the Net. SplitStream can send different ads to individual listeners simultaneously.

Either ad insertion system can be combined with the RCS product RadioShow, an Internet audio player and graphic synchronizer. RadioShow is "branded" by the content provider, which enables interactive advertising and provides animated graphics and e-commerce capability to any broadcast or Webcast facility.

For information contact RCS at (914) 428-4600 or visit www.rcsworks.com

PSi Intros Converter

Prophet Systems Innovations introduced the Audio Format Converter, which converts audio files into formats compatible with PSi's NexGen Digital Broadcast and AudioWizard digital audio software systems.

The AFC takes an audio file and processes it, compressing it from a PCM file to MPEG Layer II. The system can convert the file back to PCM.

The level of compression, silence trimming, DAT file creation or editing, and system settings are configurable. Audio can be previewed and a detailed log is available of the AFC processing. The file can be normalized to system requirements and it integrates with the PSi CD/Extractor.

For information contact PSi at (800) 658-4403 or visit www.prophetsys.com

Musicam USA Makes Superlink

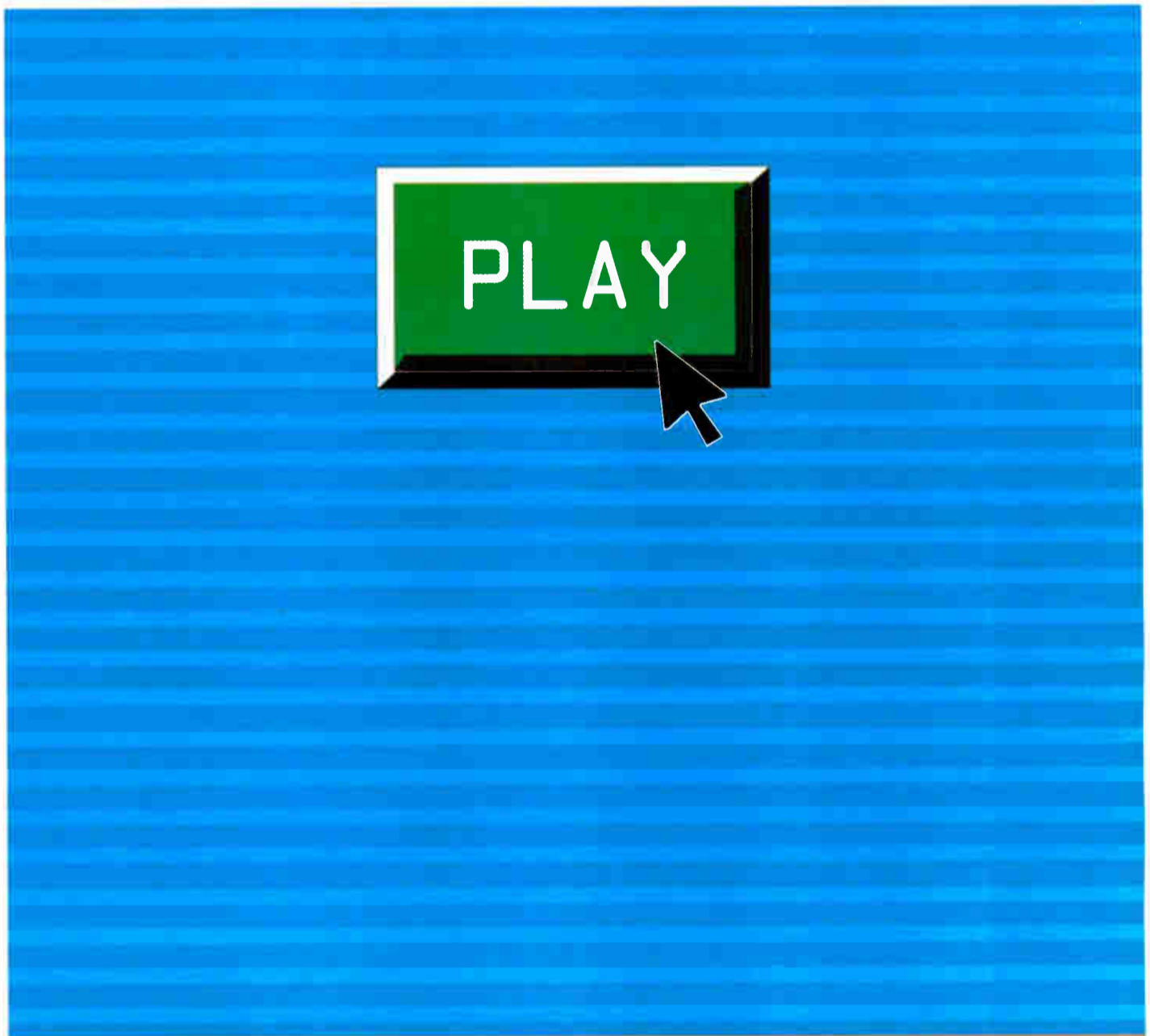
SuperLink from Musicam USA is a codec, a linear uncompressed STL and a network audio server with multi-format streaming audio.

Up to four hot-swappable hardware modules plug into the rear panel. Users may choose from modules to configure their unit. SuperLink recognizes the presence of these modules and displays their functions as menu choices.

When SuperLink is configured as a codec, available algorithms are CCS/Musicam-enhanced MPEG Layer II, MPEG Layer III, G.722, G.711, J.41 (384 kbps mono) and AAC. When used as an uncompressed STL, the system supports bit rates to 2.048 MB and incorporates Linear (J.57) coding.

A single chassis can transmit two separate stereo feeds, or four mono feeds over T1 or E1. With Insert capability, additional channels are supported. Drop and Add allows the user to build networks.

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



Yes, it's really this easy.

Intuitive, intelligent digital delivery—

DAD_{mp3}2. Easy to learn, easy to use. Simple to expand as you grow.

Looking is hard, the choice is easy.

DAD_{mp3}2—from ENCO Systems

Smarter. Faster. Better.



800. ENCO. SYS

www.enco.com

MP3.com Touts Radio Services Program

The MP3.com Radio Services Program offers a station the opportunity to create an online presence, increase brand awareness and expand its revenue base.



The program connects stations with MP3.com and the power of Web-based music services. MP3.com provides dynamic, format-specific content and services to listeners, under a station's brand, on its Web site.

Listeners are drawn to the site by content updated regularly, including free music downloads, music-management tools, local music charts, e-commerce opportunities, event information and one-hour independent-artist radio shows, at little or no cost to the station.

For information send e-mail to radioprogram@mp3.com

NSN Offers Independent Link

NSN Network Services promoted the SuperCarrier service, which provides audio and data distribution for radio networks, sports teams, music shows and syndicated programming. Delivery is via Satcom C-5, transitioning to the new "Radio Bird" GE-8.

The network operations center provides 24/7 technical support for network clients. Turnkey affiliate hardware, satellite and terrestrial backhaul packages are available.

NSN also lets stations launch programming formats with Independent Link's satellite distribution, in which the uplink equipment is located at the station's facility. NSN promises a superior syndicated show with low-cost CD quality stereo or mono audio transmission.

For information about SuperCarrier contact Sean Tietjen at (212) 445-3938 or e-mail to stietjen@nsn.net. For Independent Link, contact Kelly Hethcote at (970) 524-0384 or khethcote@nsn.net



REMOTE MANAGEMENT FROM ANYWHERE

CONTROL IS GOOD. IP2 IS BETTER.

IP2port uses standard TCP/IP networks and software for remote management and control of real-world devices:



- Create control panels using web browsers and receive alarm notification via e-mail.
- Access your equipment from any dedicated network or dial-up Internet connection.



IP2port™



AZTEC
RADIOMEDIA

Digigram Group

Aztec Radiomedia America
Tel: +1 703 875 9100 - Fax: +1 703 875 9161
E-mail: america@aztec-radiomedia.com

www.aztec-radiomedia.com

Netia Intros Stream In

Stream In is a stand-alone solution for Internet broadcasting from Netia. The program automatically handles audio and video data acquisition, conversion, storage and transfer to a target URL. Users specify automatic or manual mode, live or pre-recorded content, the target URL, encoding format, compression and other parameters. Stream In encodes and pushes the data to the target server.

The French TV channel M6 has been using Stream In since March for its "Six Minutes" regional news. The Web surfer now has access to round-the-clock viewing of local news from the main French towns (www.m6.fr). Fun TV has chosen Stream In for live Net broadcasting of certain programs (www.fun.tv).

For information contact Netia's North American sales office at (877) 699-9151.

CLBN and Rich Media

CLBN's synchronized rich media ad insertion technology, a patent pending process, provides an additional revenue stream for broadcasters and a new interactive medium for advertisers.



Its technology inserts the spot into the stream prior to encoding, which delivers a "unified and efficient" stream. Also, ads placed within the stream use interactive rich media, consisting of audio synchronized with logos, animation and/or video.

CLBN also combines a technologically advanced audio/video stream, demographic and psychographic profiling via DemoTrak, an online back-end tracking, auditing and billing technology. Partners are Foundry Networks and Akamai.

For information, call (469) 737-4450 or visit www.clbn.com

Dataworld Maps AM, FM Stations

Dataworld offered for sale its AM and FM map books. The books, updated this past spring, give a page-by-page view of station coverage on each AM and FM frequency.

The company also offers access to its frequency and allocation studies through a pre-paid Internet account, as well as its DataXpert software on CD-ROM.

For information contact Dataworld in Maryland at (800) 368-5754 or check out the Web site at www.dataworld.com

Jampro Exhibits New Multi-Station FM Antenna

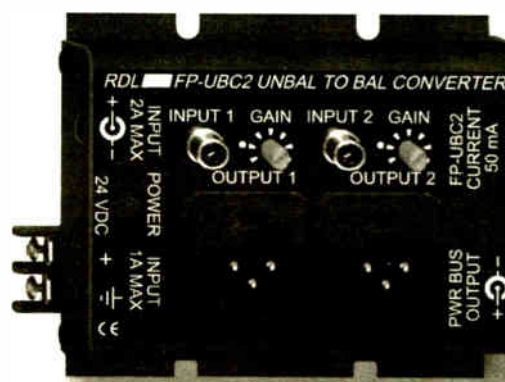
Jampro showed its new JSWB Circular Polarized FM Broadband Sidemount Antenna. The antenna is designed to reduce tower-space needs for multi-station clusters.

The antenna can handle three separate FM signals, with as much as 12 MHz spacing between them.

An installation is now on the air serving two stations in Aberdeen, S.D.

For information contact Jampro at (916) 383-1177 or visit www.jampro.com

7 NEW Flat-Pak™ products from
Radio Design Labs® are the hit
of the show!



Flat-Pak Series FP-UBC2

- ✓ Stereo Unbalanced to Balanced Audio Conversion
- ✓ Connectorized Audio Converter
- ✓ Low Noise and Distortion
- ✓ Front Panel Adjustments
- ✓ Cabinet, Shelf or Rack Mounting
- ✓ Convenience of RDL® FLAT-PAKs

RDL's Flat-Pak Series provides a new level of package convenience with connectorized inputs and outputs. Radio Design Labs is getting the job done with Audio Conversion, Audio/Video Distribution, Composite and S-Video Distribution, Digital Format Conversion plus DC to DC Voltage Conversion in a nifty new series. Get the complete story from RDL today!



Toll free (800) 281-2683
Local (805) 684-5415
Document Server (800) 391-0017
Europe (+31) 20-6238 983
Web Page www.rdl.net



Telos Digital Talkshow Systems

It takes you by surprise: the occasional phone call so clear and clean, you'd swear your caller was in the very next room. What if your callers could always sound this close and personal? Introducing the new generation of digital talk show systems from Telos. With intuitive, easy-to-use controls that help make your talk segments smooth and error free (whether you're juggling a few calls or a few dozen) and the latest advances in digital phone hybrids from the company that invented them. Never have your callers sounded so consistently loud and crystal clear – it's the next best thing to having them there. Don't just talk to your audience... get intimate.

Talk radio is suddenly intimate

Telos Systems. Connected.



Telos TWOx12™ Integrated Talkshow System

Using POTS or ISDN lines, the TWOx12 handles up to 12 callers on two built-in digital hybrids. The intuitive phone controller tames even the wildest talk shows.

Telos
S Y S T E M S
www.telos-systems.com

TELOS SYSTEMS NORTH AMERICA: +1.216.241.7225 • TELOS SYSTEMS EUROPE: +49.81.61.42.467

eFusion Adds Push to Talk

eFusion's Push to Talk service creates a real-time link between a station Web site and its audience. The technology gives online listeners instant access to a station. With Push to Talk buttons on the site, listeners with one phone line don't need to disconnect from the Internet to call the talk line. When listening to their favorite show on the radio or on the Web, a click on the Push to Talk button will initiate a call from your Web site and let listeners share their opinions with producers and hosts.
For information call (888) 4EFUSION or visit www.efusion.com

Test Music in Listener Homes With Kelly

Why pay the expenses associated with asking listeners to participate in auditorium music testing when they can do nearly the same thing at home?
Stations can hire Kelly Music Research to conduct its Living Room Music Test methodology for determining music preferences in listeners' homes.
New at NAB this year, said CEO Tom Kelly, is targeted regional music research that allows clients to check other stations in their states or regions.
Kelly's software products allow stations to create research tools to help themselves build market share on a tight budget.
For information call (610) 446-0318 or visit www.kellymusic.com

Majestic KD Kanopy



KD Kanopy offers the KD Majestic 100, a lightweight aluminum-framed special-event or remote canopy tent with sizes ranging from 8x8 to 10x20.
An aluminum frame and Dynidom fittings create a strong and stable portable booth. The canopy frame is rust-resistant and easy to transport.
KD Kanopy has an introductory package including a KD Majestic 100, a side panel and two rail curtains for \$745, regularly \$869. A wheeled heavy-duty carry bag and stakes are available.
For information contact the company at (800) 432-4435 or visit the Web site at www.kdkanopy.com

NSN Keeps Your Network UP!

Building the world's most advanced satellite delivery platform available to the radio industry.

Call us to find out why both the small regional and the nation's largest networks utilize NSN.

800-345-VSAT(8728)
303.925.1708
email: sales@nsn.net
www.nsn.net



A Clear Channel Communications Company

BuySellBid.com



BuySellBid.com is a provider of Internet classifieds content, featured on more than 1,600 radio station Web sites. Its classifieds cover every category in local newspapers including jobs, cars and real estate. In September, BuySellBid.com featured more than 4 million multimedia classified ads.
Selected Clear Channel, Infinity/CBS, Disney/ABC, Entercom and Saga stations feature BuySellBid.com classifieds on their local Web sites.
For information contact Skip Tash at (703) 684-4427 or visit www.BuySellBid.com

Akoo.com Sets Your Music Free



Akoo.com's new Kima lets consumers enjoy their favorite streaming media content virtually anywhere, anytime and free from a computer.
The Kima sends audio from a PC to any stereo or portable radio with 1,000 feet. A small base unit connects to a PC sound card or any audio source and retransmits the signal via Akoo.com's wireless technology to a second small receiving unit. The signal is received at 88.3 MHz or connects to the auxiliary input on a stereo or portable radio.
Akoo.com's Web page features programming from 4,000 radio stations as well as several thousand music videos and movie trailers. The Radio Akoo Network comprises nine commercial-free digital music channels.
With a click on the "my akoo" feature on the site, users can customize a playlist. The "akoo dial" automates the playlist with a click of a button and opens the player required, including Real Player and Windows Media Player.
For information contact Akoo in Illinois at (888) 566-2566 or visit www.akoo.com/kima

APT Upgrades Codecs

Audio Processing Technology displayed the latest versions of its apt-X-based telecommunications codecs. The full-duplex NXL384 and BCF384 are suitable for existing AM/FM broadcast applications and with an end-to-end delay of less than 10 ms.
The NXL, available with either analog or digital I/Os, is capable of delivering full-duplex 22.5 kHz stereo audio over X21 formatted nailed up digital networks at bit rates up to 384 kbps.
The bit rate of the BCF has also been extended out to 22.5 kHz stereo operating at 384 kbps. Again an X21 interface enables direct connection to any permanent network such as a fractional T1 circuit or any other suitable satellite or microwave link. An integral four-channel IMUX and TA can deliver 15 kHz stereo at 256 kbps over ISDN.
Both the NXL and BCF units can be locked to a central reference signal. Additionally they offer an auxiliary data function for transporting remote control and radio text/DLS data. A five-position Alarms port enables remote monitoring of critical internal functions. Uniquely the BCF offers serial data I/O ports for the connection and remote control of up to nine units.
For information call +44 28 9037 1110, fax +44 1232-371-137 or visit www.aptx.com

Intelli PRIMA REMOTE and the CDQ PRIMA...



- Intuitive Windows remote control software for your CDQ Prima
- Onscreen phonebook stores unlimited entries - and imports speedials direct from your Prima
- Audio/Visual alerts of incoming connections
- Auto-detects MPEG L2/G.722 calls and reconfigures Prima for bitrate/samplerate/mode
- Instant access to encoder/decoder settings from main screen

The most user friendly controls for the CDQ Prima that we've ever seen!

INSTANT ONLINE PURCHASE & DOWNLOAD \$150 AT:
www.intelliprima.com
30-day evaluation version FREE

SAS Goes to 32KD

Sierra Automated Systems developed the 32KD, a switcher that can grow to thousands of inputs by thousands of outputs.
The 32KD has fiber optic inner-connectivity, mixing capabilities and digital signal processing. It is computer controlled and automated.
The unit aids consolidated radio facilities by cutting down on the amount of wires needed.
For information call (818) 840-6749 or visit www.sasaudio.com

ERI IBOC Products On Display at NAB

IBOC equipment was the centerpiece of the Electronics Research Inc. display at The NAB Radio Show.
ERI's combiner was being demonstrated on-air as part of iBiquity Digital's IBOC tests in San Francisco.
The company also showed its Roto-Filler half-wave spaced FM antenna. It has a reduced downward and sidelobe radiation that prevents interference to other services on the same tower as well as reducing multipath.
For information contact ERI in Indiana at (812) 925-6000 or visit www.eriinc.com

IBOC Headlines Shively Labs Offerings

In-band, on-channel DAB products are the latest offerings from Shively Labs. The company demonstrated its new IBOC/analog injection system with filtering at the show.

The system is the first to be endorsed by iBiquity Digital Radio, and was being used in the IBOC demonstration on KLLC(FM) during the convention.

Shively also promoted its line of FM antennas and transmission systems.

For more information contact Shively in Maine at (207) 647-3327 or visit the Web site at www.shively.com

Moseley Demonstrates Filter

Moseley showed its new bandpass-cavity filter, designed to reduce interference between broadcasters and wireless services sharing the same tower.

The company also showed its Starlink SL9003Q digital STL, which allows broadcasters to use both a traditional 950 MHz link and a T1 line for backup. The STL offers four channels of uncompressed digital audio.

For information contact Moseley at (805) 968-9621 or visit www.moseleysb.com

Activate Makes Webcast Possible 24/7

Activate provides a range of Webcasting services, to enable stations to communicate with their audiences via the Net, including live 24/7 and regularly scheduled programming.

Via its private-label Webcast network, stations can offer Webcasts and on-demand media content hosting. Listeners can have access to studio concerts, artist interviews and station events.

Activate's analysis tools help stations measure who is watching, when and for how long, in real time. With the ActiveAudio feature, stations can update site audio content such as weather and ski reports, sports updates, movie reviews, horoscopes and messages from local talent, with a phone call.

For information contact Activate in Washington state at (206) 830-5300 or visit www.activate.com



WarpRadio.com Barters Streaming

With its "Start Streaming Program," WarpRadio.com streams radio programming 24/7, in exchange for two minutes of ad inventory per day.

Its live audio streaming includes licensing fees, support from a technical troubleshooting team and a position on the WarpRadio portal.



WARP-RADIO.COM

The portal provides listeners with a national directory of radio stations on the Web site, which allows the user to search, find and listen to the station or music format of their choice.

New, specialty programs and events in collaboration with Paul McCartney's MPL Communications Inc. and LiveOnTheNet Inc. are available to users.

The company announced a partnership with the Associated Press that will allow WarpRadio affiliates to insert AP news at top of every hour, with more AP products available soon under terms of the deal.

For information contact WarpRadio in Colorado toll free at (877) 932-7234 or visit www.WarpRadio.com

Buyandsellitall.com Taps Classified Cash

Stations can get into the classified ad business by enhancing their Web sites with "Buyandsellitall.com."

This is a turnkey system that places a classified ad section into an existing Web site. Last year, classified ads generated \$18.6 billion in revenues. Stations can begin tapping into the revenue streams that traditionally have gone to newspapers.

www.buyandsellitall.com finally start making money with your web site

All the technical details, including the design and database management, are part of the package along with credit-card processing and customer service. Statistics on the classified usage are available to stations in real time.

For information contact Buyandsellitall.com in Ontario at (905) 624-9035 or visit www.buyandsellitall.com

Live365.com Brings Webcasts to the Car

Live365 introduced a wireless Internet MP3 player for Windows CE devices. A demo of the wireless Internet radio at the show took place in the Moscone Center driveway using a standard Sprint PCS phone and a Hewlett Packard Jornada Pocket PC running Live365's player.

The portable setup was connected to the car stereo in the company's Cruiser PT to yield a 14.4 audio stream. The player is offered as a free download from the company site.

Live365 also said the 18,000+ Webcasts that are part of its Internet broadcast community will become part of Arbitron's InfoStream reporting service.

For information, contact Live365 at (650) 345-7400 or visit www.live365.com

BSI Introduces Automation System

The BSI Series 300 is a turnkey digital automation, voice-tracking and production system for medium to large facilities.

It is expandable, allowing unlimited air or production workstations. Hard-drive automation, satellite interface, multi-studio voice-tracking, 64-track production, backup, and remote access and control are included at no extra charge.

The workstations are built around Dell PowerEdge 2450 components, AudioScience and Antex audio hardware and Microsoft Windows 2000. At \$26,999, it includes production- and air workstations and 50 GB of hot-swappable hard drives and dual redundant power supplies.

Series 300 includes BSI's WaveStation digital automation, WaveCart cart machine replacement, Stinger instant playback software, WebConnect Pro remote access program and Cool Edit Pro 64-track digital editing software.

Users can add accessories such as CircuitWerkes DR10 dialup switcher, BSI relay Switcher Kit or Trigger Kit to expand capabilities for satellite or remote operation.

For information contact the company in Oregon at (541) 338-8588 or visit www.bsiusa.com

What Do You Want To Hear From Your Net Stream...

THE SOUND OF MONEY



Add revenue to the sweet sound of radio on the Web. AdAcoustics' patented, turnkey solution inserts one-to-one targeted audio ads into your online ad stream. Seamlessly and without a download. Start earning with AdAcoustics. Don't let another ad dollar go.

To harness the economic power of the Internet
Contact: AdAcoustics (914) 235-2099
info@adacoustics.com www.adacoustics.com



RDS Aids Productivity

Traffic, billing and accounting can all be automated using any of the systems offered by Register Data Systems.

System 7 accommodates up to 200 sales people and up to 999 clients per station. It tracks up to 73 months of billing history by category and offers an unlimited number of logs.

Other RDS products include the Replicator, which delays the airing of satellite-delivered programs and will work with telephone autocouplers. It is a companion to its Phantom digital audio systems, but will function with most on-air digital systems.

RDS provides upgrades and tech support to its clients.

For more information contact the company in Georgia at (800) 521-5222 or visit the company Web site at www.registerdata.com





Orban/CRL President and CEO Jayson 'Jay' Brentlinger, center, enjoys Orban's 30th anniversary party with founder and CE Bob Orban, left, and new VP James Seemiller. CRL acquired Orban from Harman International Industries this summer.

Orban Celebrates 30 Years, New Products

Orban showed its digital audio processor, the Optimod-FM 8400, with more than five times the DSP power of its 8200 predecessor plus new features.

The "intelligent" peak limiting system and look-ahead compression allow "the cleanest, loudest sound available without the distortion, trashed baseband and pilot tone modulation common in other processors."

Free remote management software supports communications over TCP/IP and features a PC card slot that will accept an optional modem or Ethernet card for network connections. The operating software can be updated over the Net.

Orban also demo'd the Webcasting version of the Optimod 6200 digital audio processor, the Optimod 6200S.

The unit eliminates TV features from the 6200, which was designed for digital TV and radio as well as streaming audio. It costs about 15 percent less.

And the latest version 3.0 software for the Audicy digital audio workstation, including support for five new types of digital effects, is shipping with new systems. Purchased separately, the price is \$450 per single license, with discounts for multiples above five. Any new full system purchased since November 1998 qualifies for a free upgrade with proof of purchase.

For information call the company at (510) 351-3500 or visit www.orban.com



Sound Advice.

1. Demand **UNCOMPRESSED** 16-bit linear audio in your all-digital air chain. Compression means compromise and we just won't hear of it.
2. Select a digital STL that can be configured with **UP TO TWO PAIRS** of linear stereo audio. It's like getting two radios for the price of one.
3. Exercise your **FREEDOM OF CHOICE**. Choose 32, 44.1 or 48kHz audio sampling. It's your broadcast—select the rate that works best for you.
4. Choose a digital STL that **CAN ADAPT TO ANY RF ENVIRONMENT** with user-defined 16, 32 or 64 QAM rates. (Flexibility is always a good thing.)
5. Purchase a 950 MHz RF STL. The channel allocation is free, and the money you save over a T1 STL goes straight to your bottom line.

Moseley's Starlink SL9003Q is the only 4-channel digital studio transmitter link on the market with all these features. Not just an STL, a sound investment.

Moseley

111 Castilian Drive • Santa Barbara, CA 93117-3093 • Tel: (805) 968-9621 • Fax: (805) 685-9638 • www.moseleysb.com

Forever Young Appeals to Boomers

Forever Young is a 24/7 music program service aimed at adults 40 to 64. It consists of non-rock hits and favorites from the 1960s and '70s. The music is delivered to affiliate stations via hard-drive. Voice tracks, promos, jingles and other elements are delivered on CD or over the Internet to affiliate stations.

Forever Young is produced by 4everadio partners in Dallas. The principals are Lynn Christian, Charlie Whitaker, George Kravis and Dick Gary. Associates are Dwight Case and Bob Dunn of 21st Century Broadcasting, the company that manages the marketing effort.

For information call (214) 363-7588, visit the Web site at 4everadio.com or e-mail Foreverradio@aol.com

Build Your Net Brand With BRS

BRS Media is a multimedia e-commerce company that helps stations build and brand on the Net.

The e-commerce firm offers stations services including AM and FM domain name registration, streaming ad-insertion and a Web-radio directory of stations broadcasting on the Net.

BRS' online divisions also include Webcast AM/FM with Webcasting solutions for interactive Web and Web radio (www.web-radio.fm), a portal for tuning in radio on the Web.

For information contact BRS Media Inc. in San Francisco at (888) 697-2860 or visit www.brsmedia.fm

Antenna Concepts Offers Two Trackers

Ultra Tracker and Ultra Tracker 2 are single-lobe antennas designed to fight terrain issues.

Both antennas use energy more efficiently to help eliminate phase cancellation.

Ultra Tracker features 1.1:1 VSWR or better, power ratings from 3 to 60 kW with inputs from 1-5/7 to 6-1/8 EIA flange, a minimum -20 dB side lobe suppression with -30 dB and -40 dB suppression available.

See a related article by Randy Pugsley, technical director at KOIT-AM-FM, in **Radio World**, March 15.

For information contact the company in California at (530) 621-2015 or visit www.antennaconcepts.com

Kerbango Radio to Ship by End of Year



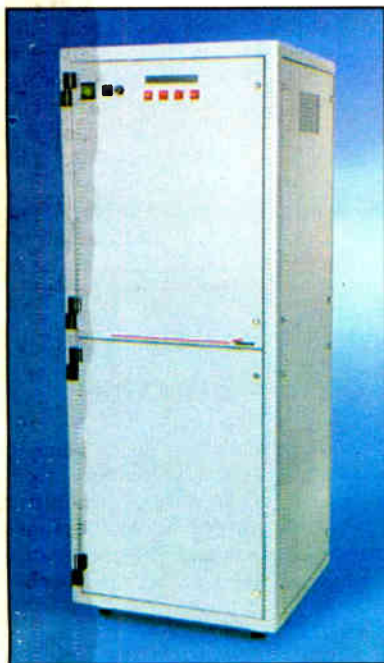
3Com revealed details of the planned shipping version of its stand-alone Internet radio. The 100E is an Internet appliance designed to receive thousands of Internet radio stations without the aid of a personal computer. It features an Ethernet input enabling it to connect to any broadband network including DSL, cable modems and office LANs.

Tuning is by the Kerbango Tuning Service, a database of audio streaming stations. Each station is scanned at least once an hour to ensure tuning. The radio features a built-in AM/FM tuner and clock functions.

The price is \$299, with no additional monthly fees beyond one's usual ISP charges. Shipping target is year's end.

For information email info@kerbango.com or visit www.kerbango.com

Andrew Introduces NXT2000 DryLine Dehydrator



Andrew Corp. offers the NXT2000 DryLine Automatic Nitrogen Membrane Dehydrator for 100- to 1,100-cubic-foot broadcast transmission systems.

The NXT2000 delivers a constant supply of dry gas under pressure to a transmission line, ensuring signal quality and low VSWR as well as reducing the system's susceptibility to component damage from voltage breakdown and corrosion.

It forces pressurized air through a membrane-drying cartridge where moisture and oxygen are separated from the nitrogen and then vented to the outside.

The unit comes with a remote pressure sensing system that activates and deactivates the compressor

For information contact the company in Illinois at (708) 349-3300 or visit www.andrew.com

MeasureCast Delivers Overnight Ratings

The MeasureCast Streaming Audience Measurement Service provides next-day audience reports that pair demographic data with true audience size. Webcasters, advertisers and media buyers are among the intended consumers.

The company says this information is essential to making educated advertising purchases in streaming broadcasts.



Launched in August, MeasureCast provides streaming measurement services to some 1,500 Internet broadcasters. Its

first customer was the world's largest Internet broadcaster, BroadcastAmerica.com.

Reports are available to customers within 24 hours of a Webcast.

For information contact MeasureCast at (503) 241-1469 or visit www.measurecast.com

Sonicbox Inc. Launches Ad Insertion for iM Band

Sonicbox offers Net radio software, hardware remote tuners and its iM Tuning Service. It says listeners can tune easily to a variety of stations for enjoyment on their stereos from anywhere in the home.

The iM Band gathers listeners and stations to form a mega-cluster of stations in which even small streamers get value for their spots on par with conglomerates.

At The NAB Radio Show, the company announced its "Run Spot Run" ad insertion technology, which creates a revenue engine for their Internet radio station partners on the iM Band.

RSR is a flexible software tool that enables stations to generate NTR through targeted advertisements. With RSR, ads can now be inserted over local spots on a per-user basis, allowing clients to reach a specific demographic.

For information call (650) 967-4842 or visit www.sonicbox.com



GotMerch: E-Commerce for Radio

GotMerch told attendees about its e-commerce and custom merchandising solutions for radio Web sites. It offers branded Web stores, merchandise, promo support, giveaways and online sales expertise including site design, merchandising, fulfillment and customer service.

It has services to generate NTR, help you communicate with your audience and expand audience reach. Stations profit on station merchandise that sold through the store and via revenue splits on GotMerch items.

There are no set-up, hosting or monthly fees.

For information, visit www.gotmerch.com/radio or call (904) 645-9669.

Burk Habla Español

Burk Technology's ARC-16 is a transmitter remote control for one or more studios and remote locations. Now it can be purchased with Spanish-language display.



Burk also offers the SP-16 Status Panel that connects to the ARC-16 and provides a continuous display of all status channels at a remote site. Up to two SP-16s can be installed at each ARC-16 studio unit location.

For information call the company in Massachusetts at (978) 486-0086 or visit www.burk.com

WebPresence Inc. Helps Manage Radio Web Sites

WebPresence Inc. is a hosted Internet applications and services provider. With its suite of webNTR.com applications, it promises it can transform radio stations into vertical portals.



The Radio Advertiser Guide, Radio Events Calendar, Radio Message Forum and Radio Listener Registration are designed to help stations increase the value of airtime sold and generate non-traditional revenue through banner ads, sponsored content, and direct e-mail campaigns.

WebPresence's flagship webNTR.com application is the Radio Advertiser Guide, which lets listeners find an advertiser they heard on the air with just a visit to the radio station's Web site. There, they can find advertisers by name, product category or time the spot was broadcast. Listeners can print a coupon, along with a map and driving directions, and take it to the advertiser's retail location.

For information call (978) 287-4858, x2012 or visit www.webntr.com

Inovonics Shows Omega_FM Processor

Rather than an array of application-specific DSP chips, the all-digital Inovonics Omega_FM processor employs "CPU numeric manipulation" to perform audio processing and stereo encoding.

The company said this technique offers simplicity, flexibility and what corresponds to the shortest program signal path with negligible time delay.

Omega_FM features gain-riding AGC, parametric EQ, multiband leveling and compression, split-spectrum peak control and advanced composite processing.

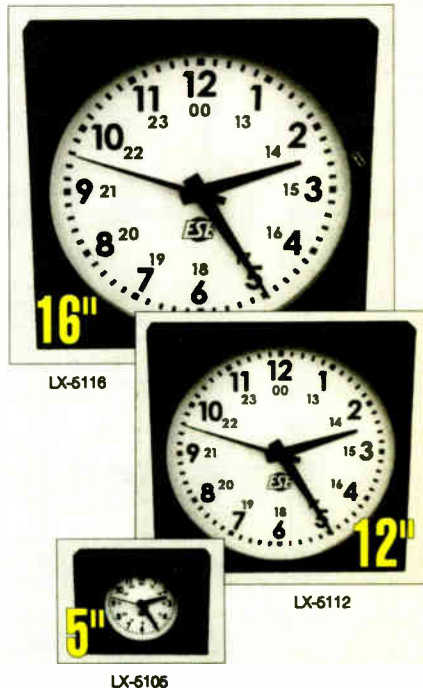
Inovonics showed its Model 711 Full-Function RDS/RBDS "Dynamic" Encoder, made under license from Aztec Radiomedia. It complies with CENELEC and NRSC RadioData standards.

The Universal Encoder Communications Protocol standard enables rapid programming and continuous revision of the transmitted data by way of an RS-232 serial data stream.

For information call (831) 458-0552 or visit www.inovon.com

ANALOG CLOCKS

"5100" Series



The LX-"5100" Series can read Time Code (ESE, SMPTE/EBU & ASCII), as well as operate as Stand-Alone or Impulse Clocks. These clocks are loaded with many features, here's just a few...

FEATURES:

- Self-setting time code readers
- 5", 12" & 16" models
- Sweep & Step second hand modes
- Lighted Dial and Rack Mount options
- Time Zone Offset
- 3 Year Warranty

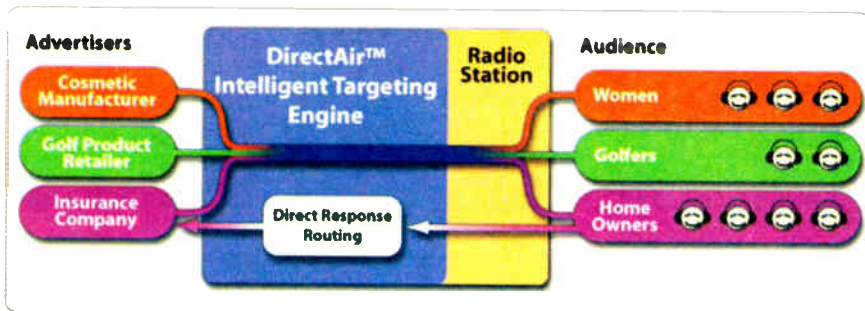


www.es-web.com

310-322-2136 • FAX 310-322-8127
142 SIERRA ST., EL SEGUNDO, CA 90245 USA

DirectAir Rolls Out

DirectAir, a streaming revenue provider, introduced its patent-pending DirectAir Service for Net radio broadcasters. The company promoted its neural-net-based intelligent Commercial Insertion Technology. The Commercial Filter enables sophisticated targeting. Listeners can filter commercial categories each time they tune in. DirectAir's filter transforms commercials into relevant information. It provides targeting capability beyond basic demographics, integrating the best of direct mail, qualified prospect targets, with the strength of radio streaming over the Internet.



Features of its turnkey service include advanced personalized content, intelligent targeting filter, interactivity, personalized interactive player, guaranteed reach and frequency, Web-based campaign management and audience measurement and commercial delivery reports.

For information visit www.directair.ws or call (512) 335-6609.

BIAfn Updates Media Access Pro

BIA Financial Network's Media AccessPro 3.0 is an enhanced version of the broadcast database software.

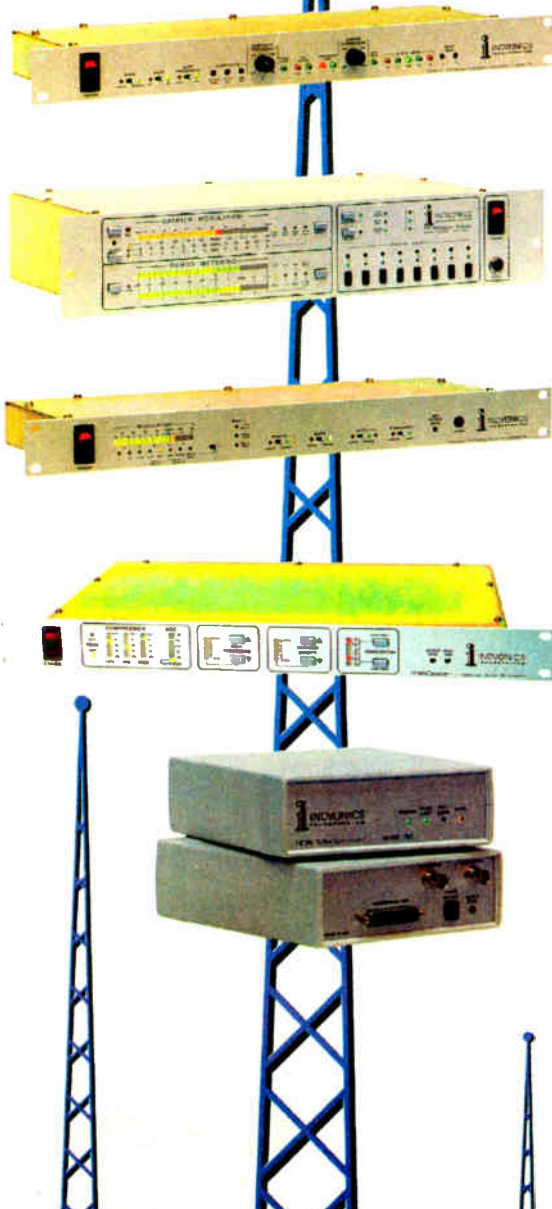


MAPro 3.0 offers actual shares and persons for various demographics other than individuals 12 years or older, as well as customizable quick search fields for more than 500 fields of data; customizable contact fields; categorized field list for stations, owners or markets; a keyword search; active e-mail links to station personnel or owners; and hyperlinks to radio and TV Web sites.

For information contact Francine Moore at (703) 818-2425 or visit www.bia.com

No Tradeoffs Only Top Performance...

...at a cost savings means real value in any broadcast market. But don't take our word for it or let our 25-plus years in the business cloud the issue. Try these or any of our first-quality products at your station at no risk with our no-fault, 30-day return policy,



"David-II" FM PROCESSOR/STEREO-GEN

Famous the world over for surprisingly competitive and clean audio at a budget price. Digital synthesis design gives great specs and terrific sound.

FM MOD-MONITOR WITH PRESELECTOR

Off-air modulation measurement with easy-to-read display, 8 station presets, alarms and multipath indicator. A companion tunable subcarrier monitor/demod is also available.

OFF-AIR AM MOD-MONITOR

Features a built-in, tunable preselector, two sets of peak flashers, program and carrier-loss alarms and an RS-232 interface. An active outdoor antenna is optionally available.

WEBCASTER INTERNET PROCESSOR

Designed from the start for the limited bandwidth and throughput of current 'streaming' audio services. Crisp for audio dial-up modem connections.

RDS/RBDS "MINI-ENCODER"

Quickly program it with any PC to transmit station call letters, format and other identifiers, translator frequencies, promos/slogans, phone number, etc.

Visit us on-line: www.inovon.com

Inovonics, Inc.

1305 Fair Avenue • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554



MusicBooth Goes One on One

The MusicBooth announced plans to introduce its patented AdAcoustics technology, enabling advertisers to deliver targeted, one-on-one audio messages within broadcast and Webcast radio streams to live radio and Web listeners.



The technology lets advertisers integrate targeted commercial messages seamlessly into audio and audio/video programming streamed over the Net.

Stations that had been limited to streaming their on-air local ads can customize ads to individual listeners, regardless of market. AdAcoustics removes broadcast ads from the streaming content "on the fly" and replaces them with personalized messages more likely to appeal to particular listeners.

The company has signed an agreement with Interep, which will sell targeted audio advertising for the AdAcoustics Network.

Using anonymous information such as the user's zip code, gender, age, purchasing and Web preferences, AdAcoustics allows advertisers to deliver personalized messages to listeners about products or services. For example, a broadcaster could deliver a message about the release of Ricky Martin's new album to one listener while it promotes Mariah Carey to another.

For information call (914) 235-2099 or visit the company Web site at www.musicbooth.com

News Updates Every Business Day



<http://www.rwonline.com>

SONY

MD

The first two call letters you'll want to remember.

The first two call letters you'll want to remember for your radio station are MD; and the first company to think of for MD is Sony. You already know the many benefits that the space-saving, shock resistant MiniDisc format provides such as instant access to tracks, fast editing and the ability to rerecord over a million times. What you may not know is that Sony offers a complete line of MiniDisc products that feature the latest generation of ATRAC which allows for better sonic performance than any of the previous generation of MD units. So make the call for MD at 1-800-472-7669 ext. RW.

MDS-E10 Pro MiniDisc Recorder • Introducing the MDS-E10, a 1U-high rack-mountable pro MD recorder offering advanced technology with excellent audio performance, and utilizing the newest ATRAC-"R" circuitry. It has SPDIF and optical digital I/O as well as unbalanced analog I/O. Its many features include 10 programmable Hot Starts, auto cue and auto pause, vari speed and a PC keyboard input. In addition to basic editing, the MDS-E10 adds RAM Edit, A-B Erase capabilities and long-record in the ATRAC-3 Record mode. A sound performer for any studio.

MDS-E12 Pro MiniDisc Recorder • A new addition to the MiniDisc lineup, the MDS-E12 offers all the great features of the MDS-E10 plus some major extra step-up features such as: balanced analog XLR I/O; RS-232C Serial Interface; a Parallel Control Port (GPI); and Control of Record Play relay, which allows multiple units to be cascaded for sequential play or record operation. It's the step-up your studio needs.

MZ-B50 MiniDisc Portable Recorder/Player • This recorder means business, combining the excellent sound quality of digital technology with the portable size and convenience of the MiniDisc format. It's the perfect recorder to take on the road for on-location interviews and remote news coverage. Features include a built-in stereo microphone and speaker, remote control index marking for quick search, Voice Operated Recording (VOR) and a long recording time of up to 148 minutes in mono.

MDS-B5 MiniDisc Recorder/Player • This half rack model is for professional use, maximizing the advantages of MD media, ATRAC and memory technology. The Direct Duplication Link allows you to make a complete copy, including text at 4x speed, and the RAM-TOC Edit lets you decide whether or not to save your edited recording. Hot Start up to 10 tracks and select the next track for playback while listening to the current selection. It's an MD must-have for any radio station.

MZ-R70 MiniDisc Walkman Recorder • Travel-sized and ready-to-go, this MD Walkman recorder slips easily into a jacket pocket for the ultimate portable playback and recording unit. It features automatic and manual digital record level controls. It has dual headphone jacks, provides up to three hours of recording time on a single AA alkaline battery, and includes remote control with edit functions and titling. It also includes a built-in Sampling Rate Converter and a supplied Digital Connecting Cable for connecting to a preamp, CD or DAT machines, making this model the perfect choice to travel from studio to location.

1-800-472-7669 ext. RW
www.sony.com/proaudio



©2000 Sony Electronics Inc. All rights reserved. Reproduction in whole or in part without written permission is prohibited. Sony, the MiniDisc logo and Walkman are trademarks of Sony.

World Radio History



MDS-E10



MDS-E12



MZ-B50



MDS-B5



MZ-R70

Telos Partners With GMV

Telos formed a partnership with software development company GMV Network. The agreement makes audio Webcasting through the Telos Audioactive compatible with any MP3 audio media player.

The purpose of the partnership, called the AudioEdge Solution, is to eliminate the need for a station or other audio content provider to select a single proprietary system such as the Real Player 7 or Microsoft's Media Player.

The company also promoted its specialized telco and codec systems. The Telos TWO interfaces to digital phone services, creating a digital path from the telco CO to the studio. Each unit contains two digital hybrids in a 2 RU space. AES/EBU and analog inputs and outputs are provided, as well as Ethernet connectivity.

The TWOx12 Multi-Line Talkshow System lets users connect to digital ISDN telephone lines as well as traditional analog POTS lines. It features call setup, 12-caller capacity, icon-based visual call management and Caller ID support.

The Series 2101 Multi-Studio Talkshow System uses ISDN PRI/T-1 or ISDN PRI/E-1 digital phone lines. The basic system handles up to 24 callers but can be expanded to as many as 120 callers depending upon service availability.

For information contact Telos in Ohio at (216) 241-7225 or visit www.telos-systems.com or www.audioactive.com

Fairlight Fuses CoSTAR



Fairlight brought the Fusion digital audio mixer for broadcasting applications to San Francisco. Among the features are three multi-channel ports with 56 ins and outs on each port, up to 96 digital or analog inputs per frame, 42 summing busses and six stereo monitoring paths.

Also new from Fairlight is the CoSTAR digital audio storage and playback system designed to manage audio and text.

The system has software modules for central storage and archiving, acquisition/editing, data management, CD-R management, scheduling, playback and systems management.

Fairlight On Air configures each system for each client.

For information contact the company in California at (323) 465-0070 or visit www.fairlightonair.com

True Digital Performance

Analog Price



Logitek ROC-10 and ROC-5 Consoles Give You All The Flexibility You Need

- ◆ True DSP-based digital mixing and routing
- ◆ Combine analog and digital signals as needed
- ◆ Fully assignable faders allow you to control multiple sources, save valuable space
- ◆ Attractive low-profile design maximizes studio visibility

ROC consoles are ideal for applications where studio space is limited. You get the full functionality of a digital console with a friendly, easy to use control surface. "Mix and match" control surfaces as needed; all mixing and audio routing is done at the powerful Serial Sound Audio Engine.



Call today for more information

5622 Edgemoor
Houston, TX 77081
800.231.5870 (North America)
tel: 713.664.4470
fax: 713.664.4479

Logitek

Digital With a Better Difference

Visit us at www.logitekaudio.com

SpotTaxi.com Partners With Radio Suppliers



SpotTaxi.com is an Internet-based radio advertising distribution and management system for terrestrial and Internet radio. It is Central Media Inc.'s new anchor application.

At the Radio Show, SpotTaxi.com announced on-air system partnerships with Scott Studios, Broadcast Electronics, Enco Systems and

MediaTouch in order to streamline the receiving, processing and airing of radio spots. It also announced strategic alliances with Digidesign and AdOutlet.com.

Additionally, SpotTaxi.com announced the release of two enhancements, including a significant upgrade to its Downloader/Decoder application, as well as multiple service enhancements to its Web site.

SpotTaxi.com provides integrated traffic instructions, simplified billing services and e-mail delivery of streaming audio advertising to facilitate the agency-client approval process. Via its automated and integrated offline facility at the Airborne Express hub in Ohio, the SpotTaxi.com system offers next-day delivery to any offline station in the country, for the same price as its Internet delivery service.

For information visit www.SpotTaxi.com

You Wanted Speed... NOW You've Got It



Short/cut 2000
PERSONAL AUDIO EDITOR

360 Systems' new Short/cut 2000 Editor features split-second editing. If you're still cutting tape, or using cumbersome software programs for call-ins, contact your dealer for the high-speed Short/cut 2000 story. If you already own a Short/cut, jet over to

www.360systems.com

or call (818) 991-0360 to **order your upgrade** and take advantage of our special 30-day money back guarantee.

360 Systems
PROFESSIONAL DIGITAL AUDIO

Management Data Eyes Convergence

Management Data Media Systems is a developer and integrator of broadcast systems for radio, television and the Internet, with offices in the United States and Europe. Its four divisions design more than 150 modular and scalable IT products.


MANAGEMENT DATA
MEDIA SYSTEMS INC

DigaSystem by David offers radio production, transmission and administration from single workstations to WANs and VPNs. DABS 3.0 by Simon is a centralized database solution with connectivity for hundreds of clients and archiving up to 2 petabytes.

Configurations are available with multi-track editor, intelligent database replication, newswire services, automated scheduling, rotation, traffic, billing and browser based applications.

WebAntz specializes in Internet based Webcasting, e-commerce and portal technologies.

For information visit <http://mdata-us.com> or call Tom Richardson at (540) 341-8550.

DirectX Release for Cool Edit 2000

Syntrillium Software released a free plug-in that enables Cool Edit 2000 to use DirectX plug-ins. With this plug-in, registered Cool Edit 2000 users can use effects from companies like Waves, TCIWorks, Arboretum and other manufacturers of DirectX plug-ins.

Cool Edit 2000 offers MP3 encoding, more than 20 effects, 24/96 support, top-quality resampling and real-time effects preview. Its list price is \$69. Other modules include Studio Plug-In, Audio Cleanup Plug-In and Pro EQ Plug-In. Each lists for \$49.

The DirectX support plug-in is available from Syntrillium's Web site at www.syntrillium.com/cooledit

For information contact the company at (480) 941-4327 or visit www.syntrillium.com

SiteShell Teams With Verio

SiteShell Corp. and Verio said they will partner to provide new private-label Net products to SiteShell's radio affiliates and their listeners.



The products announced are e-commerce, Web hosting and domain name registration, available at first on a co-branded basis and set to be released on a private-label basis in early 2001.

The companies said station affiliates will have the ability to provide listeners with the services necessary for hosting Web sites, including e-commerce virtual storefronts, e-mail accounts and other services.

SiteShell is the home of the BlueDot WebSite NetWork. Verio is the world's largest Web hosting company.

For information call (203) 929-9101 or visit www.siteshell.com or www.verio.com

Marantz Goes Flash

Marantz Professional introduced the PMD680 portable flash audio recorder.



The unit records 16-bit digital audio using PC Card media — flash memory cards. Audio files can be transferred to a computer for editing, archiving or uploading to the Net. The Type III PC Card slot accepts both compact flash cards (with adaptor) and ATA-sized PC Cards.

It records audio in MP2 format — the

voice-optimized version of MP3 audio compression. Various compression settings are available to extend recording times on smaller-capacity PC Cards. It can record uncompressed PCM digital audio as .WAV or Broadcast Wave .BWF files.

An EDL system enables the user to place reference marks and create playback sequences. It can record through the built-in microphone, an external mic or telephone line.

The PMD680 has a retail price of \$1,499 and is available from Marantz Professional authorized dealers.

For information contact Marantz at (630) 820-4800 or visit www.marantz.com/db

Klotz Unveils Micro Engine and Modules

Klotz Digital introduced its Vadis 220 digital micro engine in San Francisco. Equipped with a fiber-optic interface, the product has 24-bit format conversion and DSP for metering and mixing. It is compatible with the Vadis platform with access to functions by DiAN fiber-optic interface with 64 I/O channels.

The company introduced a mic preamp module for the Vadis platform. It features 24-bit A/D conversion, balanced insert points, 48 V phantom power and 101 dB S/N.

Klotz showed its Paradigm 16 console and the D.C.II on-air console at the show. The company answered questions about the Vadis 880 digital audio/media platform and the X4P Network for secure transmissions over the Internet.

Also, John Carey has joined the company as vice president of business development.

For information call (678) 666-9900 or check out the Web site at www.klotzdigital.com

Scott, Computer Concepts Merge

Scott Studios Corp. and Computer Concepts Corp. announced their merger at the Fall Radio Show. Existing products of both will continue to be sold and supported.

Other features shown at the NAB include SS Enterprise, which allows remote control of 48 Scott Systems over the Internet, second-generation ad substitution for Internet streams and new features in the SS32 touch screen system.

For information call (800) SCOTT-77 or visit www.scottstudios.com

One Question, Three Answers

An actual email thread, June 8-11, 2000 on broadcast.net

Thursday, June 8, 2000
To: bsi-l@broadcast.net
Subject: BSI Experiences?

We are a small AM station considering implementing BSI software to automate our station. It seems to have all the functionality that we would need. Is this a good solution? Thanks for your input.

- John

Sent: Sunday, June 11, 2000
To: bsi-l@broadcast.net
Subject: Re: BSI Experiences?

John,

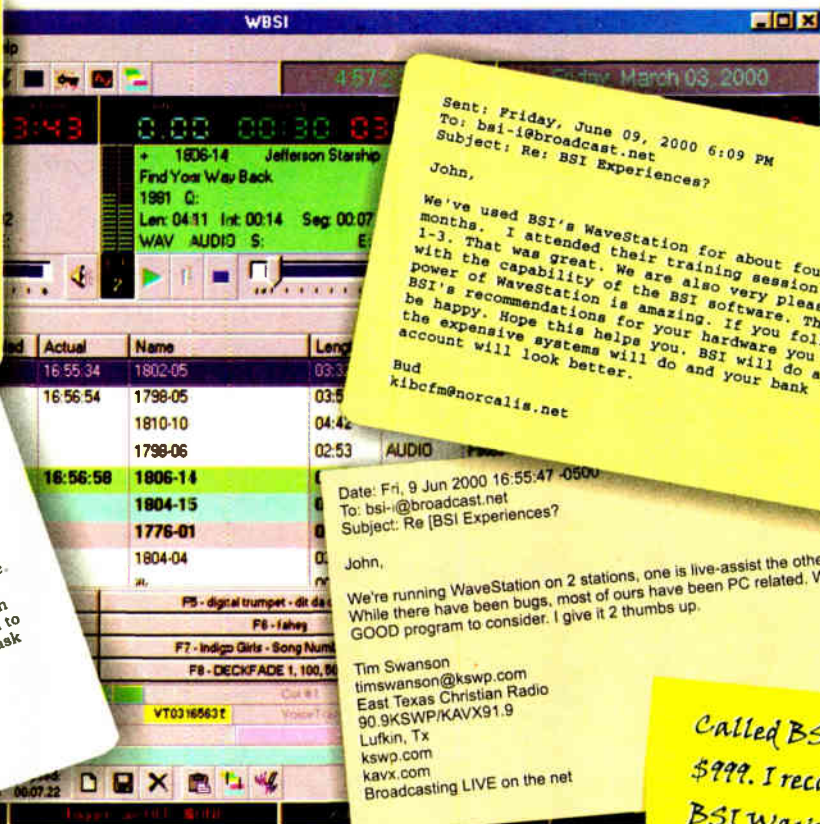
We started using WaveStation in January and are extremely pleased with it. It's been running glitch free.

We use it weekdays in live assist to play our spots, PSA's, etc. and on weekends in full-automation. At 1p.m. both days, we lock the door and leave. WaveStation plays programs recorded earlier, picks up some programs live from satellite...joins news live at the top of the hour...records a couple of sports updates for playback a few minutes later...fades programs out...runs fill music...fades fill music, etc.

We currently have only one computer set up for WaveStation. We will probably purchase a second one in the not too distant future.

Perhaps it's a sad commentary on life, but WaveStation is much more reliable and dependable than the human beings we used to use...and "Wave Station," as we call the system here, doesn't ask for vacations or pay raises.

By the way, we are a small town AM station also.
Bob Ketchersid
WYXI, Athens, TN



Sent: Friday, June 09, 2000 6:09 PM
To: bsi-l@broadcast.net
Subject: Re: BSI Experiences?

John,

We've used BSI's WaveStation for about four months. I attended their training session June 1-3. That was great. We are also very pleased with the capability of the BSI software. The power of WaveStation is amazing. If you follow BSI's recommendations for your hardware you will be happy. Hope this helps you. BSI will do all the expensive systems will do and your bank account will look better.

Bud
kibcfm@norcalis.net

Date: Fri, 9 Jun 2000 16:55:47 -0500
To: bsi-l@broadcast.net
Subject: Re [BSI Experiences?]

John,

We're running WaveStation on 2 stations, one is live-assist the other fully auto. While there have been bugs, most of ours have been PC related. WaveStation is a GOOD program to consider. I give it 2 thumbs up.

Tim Swanson
timsawanson@kswp.com
East Texas Christian Radio
90 9KSWP/KAVX91.9
Lufkin, Tx
kswp.com
kavx.com
Broadcasting LIVE on the net

Called BSI... it's only \$999. I recommend we get BSI WaveStation. Plus their tech support is free!
JS

- More than 2500 systems installed worldwide
- Software or complete systems starting at \$999
- Windows 95, 98, NT or 2000, free upgrades
- Four-track audio editing
- Traffic & Music import
- SayTime & SayTemp
- Remote VoiceTracking
- Multiple stations on one PC
- Dynamic web page generation
- Linear and/or compressed audio (WAV, MP2, MP3, BWF)



888-BSIUSA1
WWW.BSIUSA.COM
Broadcast Software International

RADIO **broadcast** products



Arrakis Systems Inc.
Condensed Catalog

1200 Console

- NEW - redesigned in 1999
- 5, 10, or 15 channel models
- Fully DC controlled for reliability
- Ultra high audio performance
- Easy connectorized installation
- Modular internal electronics
- Mix minus phone interface



A rugged design with heavy aluminum panels, solid oak trim, 5M operation On/Off switches and full DC control, the 1200 is ideal for On Air, Production, or News applications.

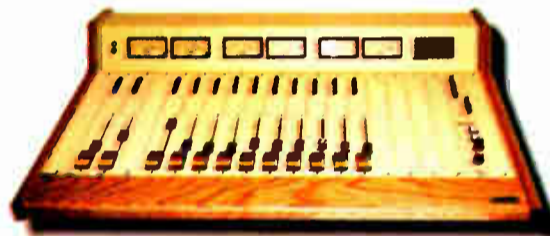
Standard Configurations

| | | |
|------------|-------------|---------|
| 1200 - 5S | 5 channels | \$2,295 |
| 1200 - 10S | 10 channels | \$3,495 |
| 1200 - 15S | 15 channels | \$4,495 |

(call factory for options)

12,000 Console

- NEW - redesigned in 1999
- 8, 18, or 28 channel models
- Fully modular design
- 3 stereo output buses
- VCAs remove audio from faders
- Telephone talkshow module option
- Monitor for control room & 2 studios



Modular, reliable, flexible, and powerful, the 12,000 is found around the world from Tokyo to Paris to New York. The 12,000 is perfect for any size market or any radio application.

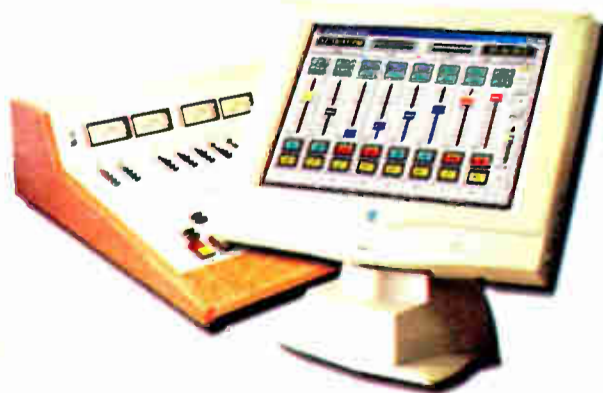
Standard Configurations

| | | |
|------------|-------------|---------|
| 12K8 - 6 | 6 channels | \$4,350 |
| 12K18 - 12 | 12 channels | \$7,075 |
| 12K18 - 18 | 18 channels | \$8,755 |

(call factory for options)

Digital Console

- NEW - Revolution Series
- Digital & Analog Radio Console
- Console, Touchscreen, or Mouse Control
- 3 Program & 2 Telephone Mix (-) outputs
- 12 CH, PC Control \$3,995
- 12 CH Console \$7,995
- 18 CH Console \$12,995



A breakthrough in features, performance, and price, this is a black box digital audio console controlled by a familiar Console -or- PC computer. Powerful, flexible, and designed for ease of use, installation, and service, the Revolution is a Colorado Digital Product.

Available April

How to Buy

Domestic Dealers:

BSW
(Broadcast Supply Worldwide)

(800) 426-8434

CROUZE-KIMSEY

(800) 433-2105

BGS
(Broadcasters General Store)

(352) 622-7700

SCMS
(Southern Coastal Marketing)

(800) 438-6040

BRADLEY BROADCAST

(800) 732-7665

CONTINENTAL ELECTRONICS

(800) 733-5011

RF SPECIALITIES

(contact their regional offices)

For more complete information on any Arrakis product visit our website at:

www.arrakis-systems.com

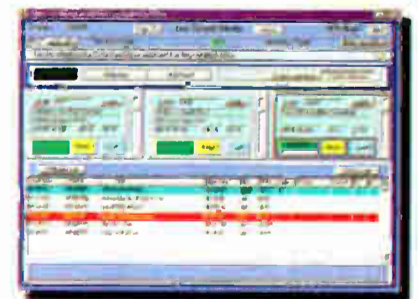
-or-

email to:

sales@arrakis-systems.com

Other Products

Digital



Furniture

OMT Offers Internet Portal

At The NAB Radio Show, OMT Technologies unveiled Broadcastport.com, which features live audio and video, a choice of bandwidths, a customized player, rotating ad banner system, track titling and album art and Internet ad insertion.

"It isn't only for stations using Media-Touch," said Scott Farr, VP, R&D, OMT. "This is a virtual portal for broadcasters. We provide hardware and software for the radio stations, but the real core of Broadcastport.com is the streaming technology."

Features include the ability to include an in-studio Web camera, a live chat room, eShopping and Virtual Office services. The latter allows customers to request appointments, view public events on station calendars, visit personal Web pages and contact management. It allows the station to manage e-mail services, schedule and view appointments, provide ICQ interfaces with instant messaging and manage station expenses.

Also, Kandy Shute has joined the company as vice president of marketing and sales. For information contact OMT/MediaTouch at (888) 665-0501 or visit www.omt.net

Dalet Gets Real With Audio

Dalet Digital Media Systems is integrating the RealAudio encoder into the Dalet5.1 Digital Audio System. This lets Webcasters produce a RealAudio Stream from a Dalet workstation.

With the On Air Now! package, stations will be able to simultaneously broadcast online as well as on-air and the Web template that the program utilizes is user definable.

"The station can create an environment that will be customized to its own needs," said Robin Wang, director of marketing for Dalet.

Dalet plans on releasing other streaming encoders to work with Dalet5.1 and On Air Now!.

"We are developing a version with streaming Windows Media," said Dalet's James Ohana.

Dalet also promoted TeamNews, is designed to collect, edit and manage digital material and then re-purposes it for distribution to the Web, and wireless devices.

For information contact Dalet in New York at (800) 257-1223 or visit www.dalet.com

Harris Offers WebCenter

Harris Corp. introduced WebCenter at the Radio show.

The system is designed for both Webcasting and traditional single-studio broadcast-



ing. It consists of three components — QuikBilt II modular studio furniture, an Impulse 12+2-input digital console and an Enco DADpro32 hard-disk system with Encompass! Webcasting software tools.

For information contact Harris in Ohio at (800) 622-0022 or visit www.harris.com

Harris organized a display of 'the studio of the future' in the convention lobby

Audemat Measures, Controls Broadcast Signals

Audemat showed Fieldstar, an RF field-strength meter that measure up to 99 stations simultaneously. It is designed to compare the field strengths of singular or multiple stations vs. the competition. Fieldstar includes a GPS receiver, RDS decoder and FM receiver. It can be purchased with an optional cartographic display.



Also available is the ITS4 for monitoring conditions at the transmitter site and all signals in the reception area. ITS4 can monitor every station in a market or specific stations.

In conjunction with Fieldstar and ITS4, Audemat released Goldenear, a software program designed to qualify broadcast reception

quality. It measures and records composite signal, pilot, RF RDS, left channel, right channel, L+R/L-R and multipath.

For information contact Audemat at (978) 392-2110 or visit www.audemat.com

Logitek Debuts Three Products

Logitek Electronic Systems showed three accessories to its digital audio console line.

The AE-NETA Network Card for the Logitek Digital Audio Engine permits networking of up to 32 Audio Engines and 64 console control surfaces. Up to 500 stereo audio sources may be shared by the networked equipment.

Supervisor software is an Audio Engine monitoring and control program with scripting capability and external device serial control.



Supervisor works with Numix control surfaces for building custom menus, and

makes custom command building easier for other control surfaces.

Route3, a three channel router selector, depicted above, works with the Logitek Audio Engine to provide access to three router outputs of audio; as a channel is selected, the user can step through all audio sources that are assigned to that channel and select the desired source to its router output. It is a suitable input selector for recording or news desks.

For information visit www.logitekaudio.com or send e-mail to info@logitekaudio.com

Try to control yourself...



Remote Facilities Controller
control transmitter from any telephone
8-64 channels of telemetry and control
programmable control by date and time
optional printer and modem adapters
programmable telemetry alarms
full-featured, affordable, reliable
integrated rack panel
model rfc-1/b



Intelligent Rack Adapter
parallel printer interface
internal modem for data
front panel status indicators
battery backed power supply
rack mountable chassis (1U)
model irak-1



Dual Channel Audio Failsafe
provides contact closure on loss of audio
adjustable from 7 seconds to 4.5 minutes
monitors two audio channels
integrated rack panel
cost-effective, reliable
model afs-2

innovative solutions Sine Systems™
nashville, tennessee • 615.228.3500 voice • 615.227.2393 fax-on-demand • www.sinesystems.com

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



TESTS EVERYTHING BUT YOUR PATIENCE

connect

Q B O X

This compact, rugged box can make your job a hell of a lot easier. Quick-check dynamic mics without firing up the entire system. Use Test tone to confirm connections back to the board without unpacking the mics—or uttering a single “check.”

Trouble shoot snakes and bad cables without moving a muscle. Done testing? Connect it to a snake and bark directions to your crew. Or clip it to your belt and it's a hands-free intercom. Keep your stress levels in check with QBox. Call Whirlwind today.

whirlwind

www.whirlwindusa.com

World Radio History

800.733.9473

Workbench

Radio World, October 25, 2000

Warning: Transmitter Overload

John Bisset

Transmitter overload is something we dread. Although a day spent on transmitters may overload your brain, it's not a bad thing.

I had the pleasure of hosting the fourth annual Transmitter Workshop at this year's NAB Radio Show. The focus on transmitters and maintenance brought good discussions and some really good maintenance tips.



Fig. 1: Inspect tube socket finger stock for broken or bent fingers

We'll start with some of the maintenance tips from our manufacturers' panel. Wendell Lonergan, project leader for Nautel, suggested annual cleaning of the plug blades on the Cinch-Jones connectors used on its Ampfet 1-10 modules with Caig Labs' DeoxIT. Information on the Caig product line can be found at www.caig.com

A film can develop on the plug terminals and the DeoxIT does the best job in cleaning off that film.

Lonergan also recommended an annual inspection of the hardware used in the transmitters — especially in the power supply and RF filter. The hard-

ware should be tightened, including bolts and nuts used with capacitors, inductors and leads. While you are inspecting the hardware, check for any discoloration of hardware or leads, caused by heating.

Nautel replaced its aluminum module fan filters with a two-part plastic filter. The reason was quite interesting. It seems that as flies or bugs were caught in the aluminum filter, their acidic body juices ate away at the aluminum as the bodies decomposed, eventually destroying the filter. The two-piece plastic filter prevents this from occurring.

Another useful maintenance test was to reverse the FWD/REV power leads on the ND-10 transmitter, then bring the transmitter power up slowly. This checks the VSWR protection circuit, a test that should be performed annually.

Dave Agnew is the FM products application engineer for Harris. For owners of the Harris MS-15 or MX-15 exciter, Agnew suggested inspecting the U-1 regulator (on the MS-15) or the Q-1 regulator (on the MX-15) if the fan fails. This component may fail when the fan dies.

For the Harris low-power tube FM transmitters (3 to 10 kW), routine maintenance should include checking the tightness of the cavity hardware. If a PA screen or plate overload occurs, check for a dirty arc gap, a power supply component failure or a bad PA tube.

When replacing the tube in any transmitter, ensure that the tube is seated properly. Check the unit to ensure the screen contact assembly covers the screen ring.

By the way, while the tube is out, check the finger stock in the tube socket.

If more than three or four spring fingers are missing on any one ring, the efficiency of the transmitter can be affected. Remember not to twist tubes when inserting them into sockets; instead, press it into place — rocking slightly if necessary but never twisting. The twisting action will break or bend the contact fingers in the socket.

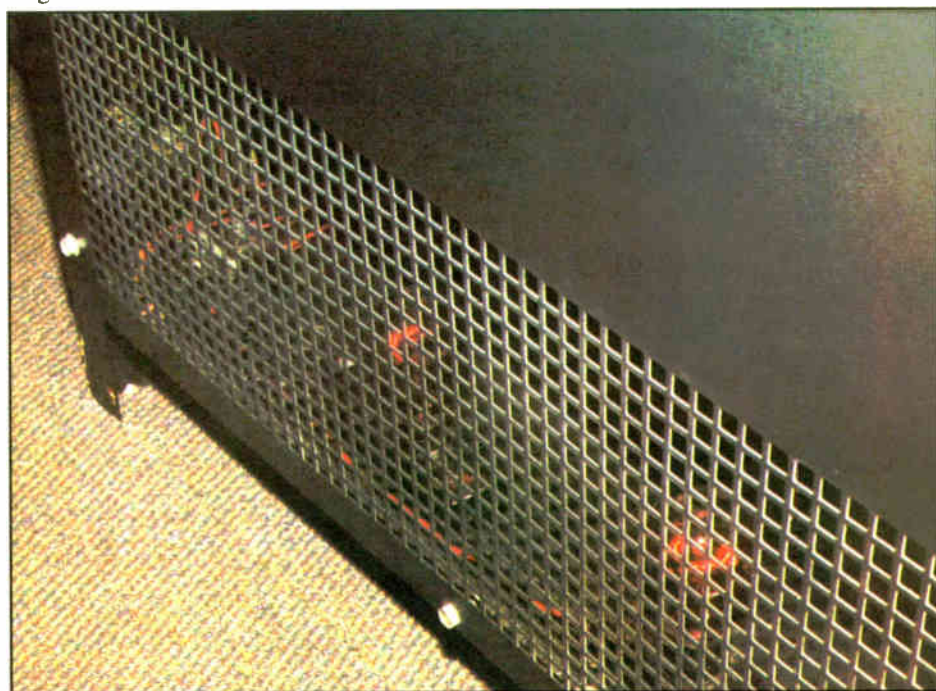


Fig. 2: Lights warn that AC voltage is still present on this high-voltage cabinet

Agnew offered an interesting way to clean plated relay contacts, upon which a file would scrape away the plating metal. Use a piece of brown paper bag, soaked in contact cleaner. The roughness of the paper bag combined with the cleaning power of the contact cleaner thoroughly cleans relay contacts without disturbing the plating.

The issue of the cost of replacement semiconductors for transmitters was also

A discussion of the hazards of working on transmitters reminded me of this neat add-on feature that Deborah Proctor's staff installed at WCPE(FM) in Wake Forest, N.C.

Fig. 2 shows the red glow of two lamps installed in the transmitter high-voltage vault. The reason for this is that killing

See WORKBENCH, page 26 ▶

Now You're Connected

Minilyzer®

Hand held, battery operated, light weight. RCA unbalanced, XLR balanced, headphone output for aural diagnostics, built in mic for polarity tests. Provides Level RMS or Relative, THD + N in dB or %, PPM or vu meter (multinorm), 3rd octave analysis, signal balance error, sweep recording, scope mode. Auto ranging, auto scaling. Measurement speed of 3 readings per second. Compatible with NEUTRIK Minirator.



Easycon®

Available with gold tuning fork IDC or solder contacts. Made of only 3 pieces—and no set screws—Easycon is the fastest way to terminate a cable with an XLR connector on the market today.



BNC

Two new versions now available; push pull and rear twist—these are the first in a series of BNC connectors that will include friction fit styles, chassis mount and PCB receptacles. Ideal for high density applications. True 75 ohm design meets stringent requirements of HDTV/DVD.

www.neutrikusa.com info@neutrikusa.com 732-901-9488

NEUTRIK USA
CONNECTING THE WORLD

To Sidelobe or Not to Sidelobe

Richard J. Fry, CPBE

Antennas with reduced sidelobes in their elevation patterns have been proposed as an advance in antenna designs for FM broadcasting.

As stated in the paper "Sidelobe-free Antenna Arrays" by Ali R. Mahnad, Ph.D., E.E. and Leroy C. Granlund, reducing or eliminating these sidelobes will:

- reduce blanket interference
- better meet applicable ANSI/EPA/FCC requirements regarding RF radiation hazards
- reduce or eliminate "source-induced multipath" from the sidelobes, which are said to produce destructive interference in regions served by the major lobe of the antenna.

the base of the tower out to a horizontal radius of about two-and-a-half miles. For these conditions, radiated fields toward the horizon beyond two-and-a-quarter miles from the transmit site are equal for all three antennas.

The results are plotted in Fig. 1 along with superimposed plots for a half-wave spaced array without sidelobe suppression and a conventional full-wave spaced array. All antennas plotted have the same number of bays, the same maximum ERP and the same height above level ground.

Inspection of Figure 1 shows that, for these conditions, power densities from the sidelobe-free antenna starting somewhere around 1,000 feet from the tower actually are higher than from standard antennas. In fact the densities are greater than 20 dB above the others at some portions of the range.

**POWER DENSITIES FOR THREE SIX-BAY FM ANTENNAS
CALCULATED FOR 6' AGL USING FCC OET BULLETIN 65 METHOD**
Radiation centers = 500' above level terrain, 50 kW maximum ERP each

-Use at Own Risk -

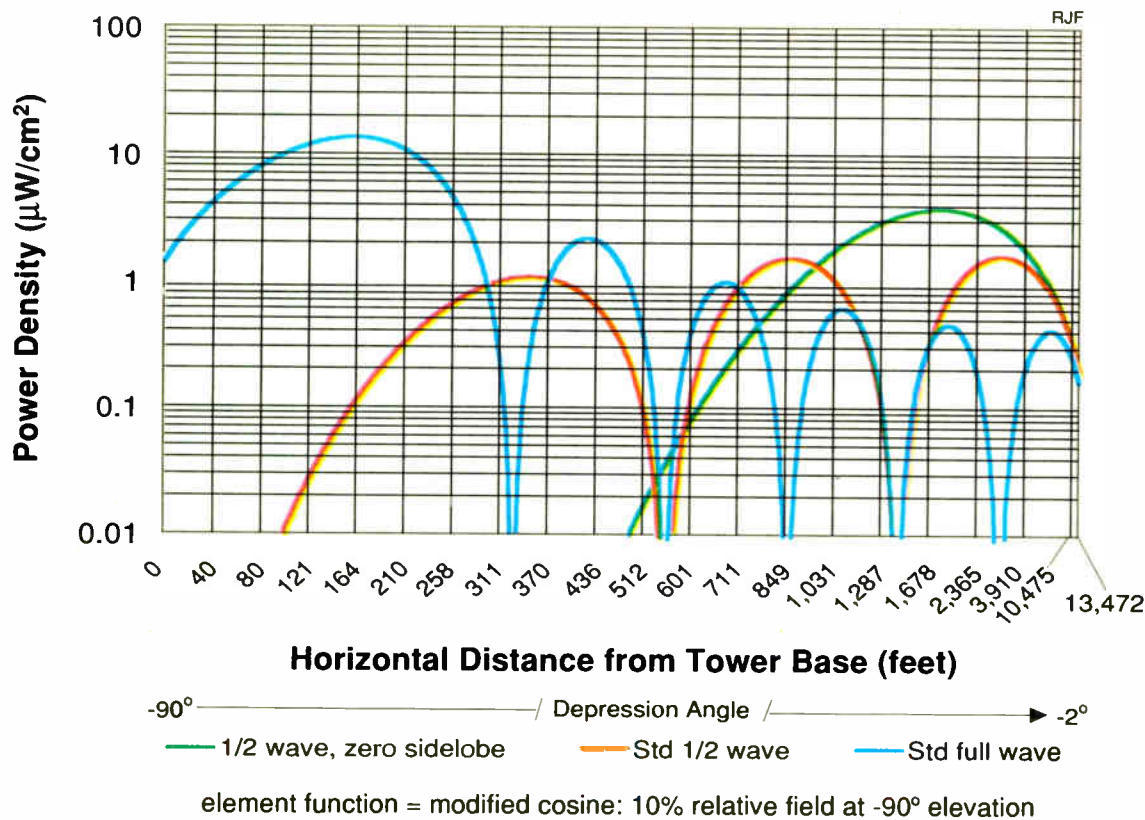


Fig. 1: Power densities for three six-bay FM antennas

To evaluate the performance to be expected from sidelobe-free antennas, calculations were made by the author to show the radiated power density near the tower site for a six-bay, half-wave spaced array having all sidelobes suppressed more than 40 dB.

Effective Radiated Power (ERP) was calculated at 0.1-degree intervals in the antenna elevation pattern and that value was used with the appropriate formulas of FCC OET Bulletin 65. This was used to calculate the power densities expected from

The sidelobe-free antenna has generally less power density near the ground than the other two antennas only within approximately 950 feet of the tower base.

Figure 2 is a graphical representation of the portion of the nearby coverage area where power density from the sidelobe-free antenna exceeds standard antennas. This graphic is the output of a CAD program using equal and linear x- and y-axes and

See SIDELobe, page 29 ▶

Workbench

▶ Continued from page 25
the front-panel transmitter breakers does not remove voltage from the high voltage power supply vault.



Fig. 3: A heavy-duty monitor stand that raises the monitor to eye level, if needed

The red lights warn that AC is still present — the two lights in parallel guard against one light burning out.

★ ★ ★

Looking for a cool monitor stand that will support even heavy monitors? Dick Schumeyer of Harris-Pacific sold the pedestal/stand seen in Fig. 3 to Chris Kelly at the Salisbury, Md., Clear Channel outlet.

The stand will permit the monitor to be placed at copy board level, or raised, as in the photo, so that it's at eye level with the talent.

■ ■ ■

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 e-mail jbisset@harris.com

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
Tel: 626.355.3656
Fax: 626.355.0077



We Build Solutions



On the Move for 90 Years.

In 1910, we sold our first gramophone player. In 1953, we developed the professional use tape recorder for broadcast. In 1972, we launched the digital audio revolution with the world's first PCM digital recorder. In 2000, we introduced the DN-F20R — the first portable IC recorder with no moving parts. Say good-bye to cassettes. Adios to noise, Ciao to fudged field work. The DN-F20R is the only unit you'll ever want in the field. Why? Because your reputation depends on it. This rugged recorder accepts line- and mic-level audio, mono, or stereo and records its data to Compact Flash Ram cards. With slots for 2 cards, it boasts a recording capability of 192 MB X 2. Record with your choice of linear PCM or MPEG 1 and 2 compressed recording modes. Port your files to your PC for easy editing and manipulation. And for a mic connection that holds on for dear life, the DN-F20R offers XLR mic connectors. Plus, we've included a serious 1/4" stereo headphone jack — after all, it's not a toy, it's your livelihood. The next time an assignment puts you on the move, strap 90 years of broadcast innovations on your shoulder, and experience a better way to capture audio.

DENON
The first name in digital audio

Number
One
采田

JOIN THE XM RADIO REVOLUTION!

THE NEXT GENERATION OF RADIO IS COMING!

There's a revolution brewing in the nation's capital – XM Satellite Radio. With up to 100 distinct, living, breathing channels representing every imaginable format, XM will reinvent radio through revolutionary programming, digital-quality sound and coast-to-coast coverage. Starting next year, XM's all digital, 82-studio facility will deliver the most creative radio on Earth.

To help incite this revolution, XM is looking for the most talented Broadcast Operations professionals in the area! If you have at least 3-8 years experience working in a broadcast facility, are familiar with computer networks... and you're looking for a dynamic, team-oriented work environment with opportunities for career growth and development, check out the following openings:

Broadcast Maintenance Technician

Installs, repairs, and maintains all radio broadcast equipment in XM facility, including broadcast consoles, CD/DVD players, computer based broadcast automation systems, and satellite uplink facility. Also reconfigures/upgrades/modifies broadcast systems, when required. Successful candidate must have one or more of the following: A+ computer certification, 3-5 years experience in broadcast facility, experience working in IT Help Desk or installing/configuring. Must also be familiar with trouble shooting Cisco switches, fiber optic and CAT-5 based networks, DVM, cable testers, and scopes. Must be able to support a 24/7 facility, work holidays/weekends and occasional overtime. Must also be able to lift at least 25 pounds.

Studio Maintenance Manager

Supervises XM Broadcast maintenance group, prepares/implements procedures for routine maintenance of equipment, fault isolation and repair of all XM Program Center broadcast equipment and data/control networks. Successful candidate will have prior supervisory experience, demonstrated knowledge of broadcast ops, ability to troubleshoot copper & fiber LAN's. Familiarity of Cisco switches/routers, NT & Unix OS also a must. Knowledge of any one of the following broadcast automation system is necessary: Dalet, RCS, Prophet, or Audio vault.

Broadcast Operations Center (BOC) Technicians

Responsible for quality, routing, and scheduling of audio content for XM's 100 channels. BOC is 24/7. Must have at least 5-7 years experience in broadcast ops. Must also be familiar with digital audio signals, routing, quality control and evaluation.

Enterprise Center Control (ECC) Shift Supervisors

Supervises BOC, NOC and ITOC, responds to technical issues from the Network Management System (NMS). Must have at least 5-7 years experience in broadcast ops or master control supervision at a major market broadcast facility or broadcast network. Familiarity with digital audio signals, routing, quality control and evaluation is also a must.

Network Operations Center (NOC) Controllers

Monitors & controls a satellite uplink facility for program content, a network management system for a nationwide repeater network and backup satellite control center. Responsible for day-to-day operations and anomaly resolution. 4-6 years experience required in one or more of the following areas: communications network ops; spacecraft monitor and control; telemetry processing; ground systems maintenance, or a combination thereof. Must be able to support a 24/7 facility, work holidays/weekends/occasional overtime.



SATELLITE
RADIO

World Radio History

To apply, send us a detailed resume, letter of interest referencing your area of interest, and salary history to:

Email: jobs@xmradio.com

Fax: 202-380-4065

Snail Mail: XM Satellite Radio, Inc.
Attn: Recruitment (RW - 1000)
1500 Eckington Place, NE
Washington, DC 20002

Please reference one of the above areas of interest in subject heading of message.

To get and keep the best and brightest, XM offers competitive compensation and a benefits package that includes health, dental, vision, long-term disability, short-term disability, and life insurances, 401(k) match, Employee Stock Purchase Plan, flexible spending accounts and other perks like free parking, partially subsidized in-house café, and coming soon... XM's own in-house gym!!

For more info on XM, check us on the web at www.xmradio.com!

XM Satellite Radio is an Equal Opportunity Employer.

Sidelobe

► Continued from page 26

shows the true relative areas. The x-axis of Figure 1 is non-linear due to the fixed 0.1-degree depression angle steps used in the power density calculations. This approach gives a better graphical display of the sidelobes.

In this example, the standard antennas outperform a sidelobe-free antenna for control of blanketing and RFR over 99 percent of the coverage area out to a horizontal radius of two and a quarter miles.

The reason for this is that for the same number of bays, the main lobe of a sidelobe-free antenna is significantly wider than a standard antenna and at most close distances radiates higher ERP toward the ground. It also radiates higher ERP at many angles above the horizontal plane — which increases field strengths at airborne receivers. Both of these results are the reverse of popular expectations for the design.

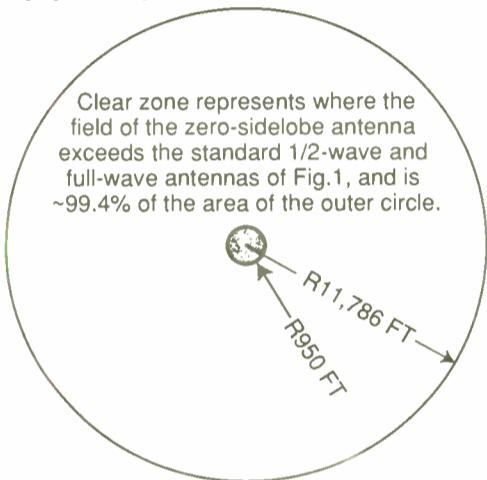


Fig. 2: Area comparison

Can reflections from terrain and objects illuminated by antenna sidelobes cause so-called "source-induced multipath" to areas served by the main lobe of the antenna? To produce serious multipath distortion at a receiver, a reflection must have amplitude that is within about 10 dB of the direct wave and an RF phase that is destructive to that of the direct wave. The capture effect of the FM receiver largely ignores co-channel signals not meeting these criteria.

Consider that a reflection from terrain or objects located where sidelobes can illuminate them can be produced only very close to the transmitting site.

It is unlikely that sidelobe energy arriving at those locations will have the grazing conditions necessary for highest-level reflections toward the horizon. Or that such a reflection will have the path geometry required for it to reach a distant point served by the main lobe of the antenna. Such sidelobe reflections likely would be blocked by terrain and/or man-made obstructions.

Another factor is the reality that a reflecting surface would have to be extremely close to an FM antenna — less than two feet, in general — in order to couple enough energy from the antenna to reradiate it with only 10 dB loss. The sidelobes of a modern FM antenna also have considerably less power than the main lobe.

Both of these factors, together with typical path losses, mean that any energy received from a reflected sidelobe almost certainly will be more than 10 dB reduced from the signal received from the main lobe and will have little or no affect on a distant FM receiver.

Most multipath distortion is caused when the direct ray of the transmit antenna's main lobe is obstructed at the receiving antenna. This occurs while reflected rays from one of more surfaces on a nearly identical azimuth and elevation angle toward the transmit antenna develop the net magnitude and phase delay required to interfere with it. Figure 3 illustrates this point.

We've now explored and compared the issues of sidelobe-free antennas with standard antennas having sidelobes. Though the comparison used a specific set of conditions, these conclusions will be applicable to most other circumstances as well.

Hopefully, this data shows the relative performance to be expected and provides useful information for evaluating and choosing an FM broadcast antenna.

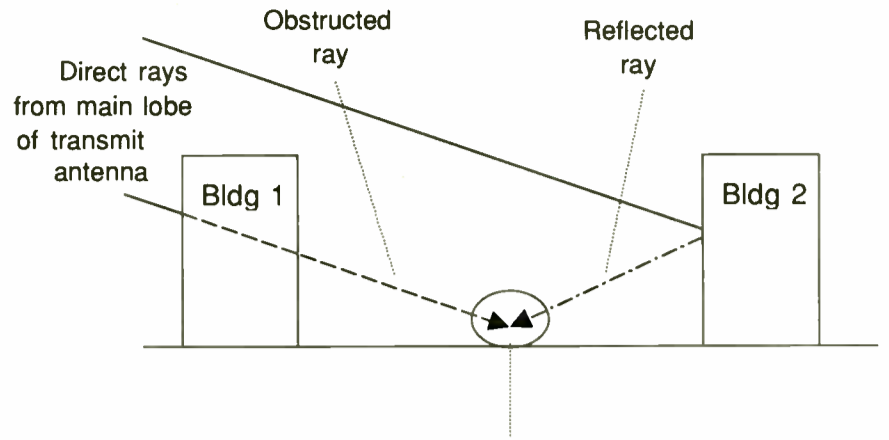


Fig. 3: Typical multipath situation

Richard Fry is an FM applications engineer with more than 30 years of experience with major broadcast equipment manufacturers. Contact him at rfry@adams.net RW welcomes other points of view.

Clearly above the rest with 40 kW of solid state FM power

The Nautel Quantum is quite simply the world's most powerful solid state FM transmitter. The Quantum 20 is a single rack, stand alone 20 kW transmitter.

The dual configuration Quantum 20/20 with up to 44,000 watt capability now offers a practical solid state solution for high power FM stations. Overall efficiency of 68% keeps operating costs and cooling requirements at a minimum.

The Quantum transmitter's built-in redundancy and duplication features contribute to exceptionally high on-air

confidence. Broadband RF Power Modules and IPA Modules each have their own Switching Power Supply Module. Both amplifiers and power supplies can be removed and serviced while the transmitter remains on air.

Low Voltage Power Supplies are duplicated and facilities are also provided for duplication of the Digital Exciter, IPA and IPA Power Supply.

Invest in solid state excellence. Contact Nautel for more information about the new Quantum.



Quantum 20/20



Nautel Limited, Hackett's Cove, RR #1 Tantallon, Nova Scotia Canada B0J 3J0
 Phone: (902) 823 2233 Fax: (902) 823 3183 Certified ISO 9001
 Nautel Maine Inc., 201 Target Industrial Circle, Bangor, Maine USA 04401
 Phone: (207) 947 8200 Fax: (207) 947 3693 Certified ISO 9002
 E-mail: info@nautel.com or visit us on the Web at www.nautel.com



Simply the best engineered transmitters

ROOTS OF RADIO

'Clear' Channels No More?

Mark Durenberger

This is the last in a six-part series of articles about the history of clear-channel radio stations in the United States. The previous part appeared Sept. 27.

When we left our clear-channel story, it seemed obvious the proponents of AM super-power were going to be left out in the cold, and the remaining 1-A channels were going to be duplicated. But the game wasn't over just yet.

The FCC was determined to provide nighttime radio service to under-served

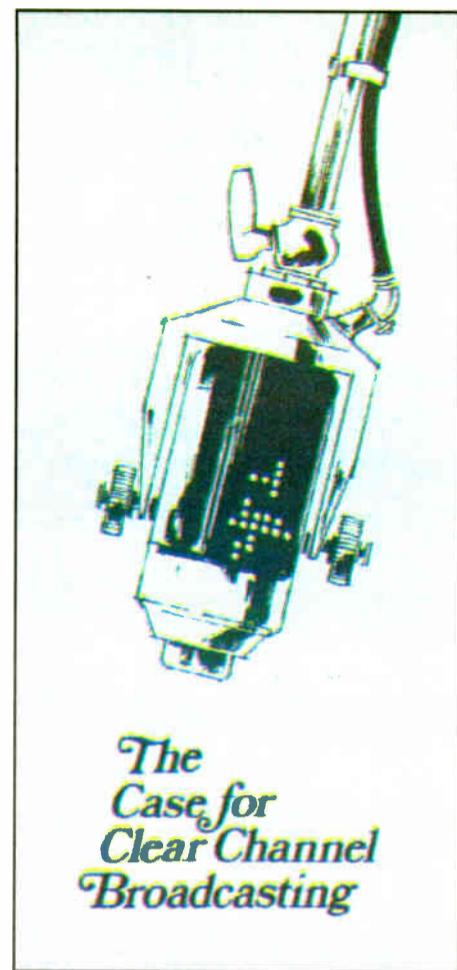
"white areas." Because the so-called "monopoly enjoyed by the AM giants" was a politically-popular target, the unduplicated 1-A clear channels were the obvious hunting ground for new spectrum. As they went on the defensive in the 1970's, the clear-channel broadcasters pulled out all the stops in an "educational" campaign. The message was that duplicating signals on the clears was a nasty business, because such duplication "would destroy badly-needed radio service."

WSM launched its famous "Save the Grand Ole Opry" campaign early in 1979 and organized "Friends of the

Grand Ole Opry." It encouraged listeners to write to their representatives and to the FCC, to protest what the group called "the gravest threat to the Grand Ole Opry in its history."

Some stations even tried an end-run of sorts, writing to their ally Robert E. Lee, who at this point was chairman of the U.S. delegation to Rio, asking that he protect their 1-A frequencies for U.S. super-power operation in the upcoming World Administrative Radio Conference inventory.

In the 1975 docket, the FCC asked whether 1-A stations would apply for increased power if available. Most



The clear-channel stations seek public awareness

**NO SAGS
NO SPIKES
NO SURGES**

STABILINE®

Prevent Transmitter Power Problems with STABILINE® Automatic Voltage Regulators

"Dirty" power, like sags, surges, spikes and brownouts, are typically caused by power line disturbances or inadequate distribution systems. Left unregulated, poor power quality can degrade sensitive broadcast electronics in receiving stations, studios, mobile production vehicles and transmitter sites.

The result? Equipment failure, software integrity loss, reduced tube life, and poor signal quality.

Protect against these and other

power quality problems with WHR Series STABILINE® Automatic Voltage Regulators. STABILINE® AVRs

offer exceptional protection to help radio and television broadcast facilities maintain output voltage to $\pm 1\%$, with a 99% efficiency rating.

STABILINE® Regulators automatically feed voltage sensitive equipment a constant voltage

level even when power line input voltage and system loads vary — with no waveform distortion, high overload capacity and the lowest

added source impedance available.

For severe applications we offer all buck and boost capabilities. Standard STABILINE® AVRs are available up to 1680 kVA, with a wide range of features and unique options.

WHR Series STABILINE® voltage regulators: the preferred choice of broadcasters worldwide, from the name you trust in voltage regulation, Superior Electric. For information, contact Lori Stepp at (860) 585-4598.



WHR Series STABILINE® Automatic Voltage Regulators can prevent power quality problems.

Superior
Electric

respondents told the FCC they would apply for extended power, ranging from 100 kW to 500 kW, and many said they would use directional antennas.

The Clear Channel Broadcasting Service also proposed that, if granted higher power levels, their members would control adjacent-channel interference by employing 5 kHz low-pass audio filters.

Now where have we heard that recently?

Once again the gentlemen from the Hill got involved. Reps. Findley and Van Deerlin proposed that priority should henceforth be given to local service, and that "no U.S. AM operation should be authorized more than 50 kW."

Findley, advised by the Daytime Broadcasters Association, actually said on the floor of the House that "virtually no one listens to the night-time sky-wave signals of clear-channel stations," and therefore "Daytimers should not have to sign off at sundown to protect them."

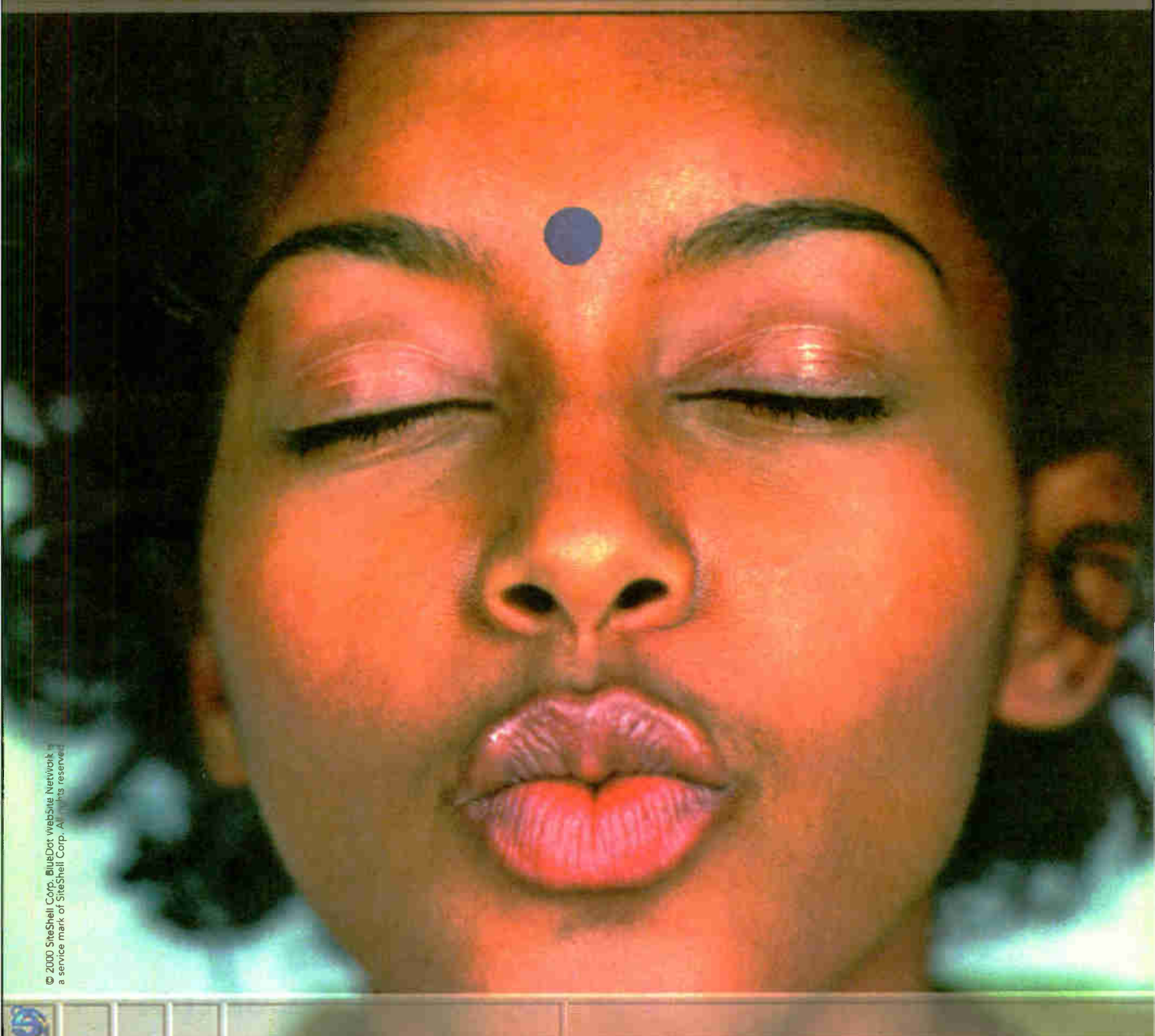
As the record grew, the FCC issued a Further Notice of Proposed Rule Making at the end of 1978. Judging by the progressive language and the public comments of the commissioners, it was obvious they were headed toward a final breakup of the clears.

The last word

In what would be the coup de grace of a 50-year fight, the FCC issued the 1980 Report and Order that assigned a second high-power station on each of the 12 remaining unduplicated 1-A channels.

It also affirmed the protected service contour for the primary station to be the 50/50, 0.5 mV/m sky-wave contour (in the real world, about a 750-mile radius).

More than 100 new secondary stations would be authorized on those 12 1-A clear channels. The original power limit of 50 kW for the 1-A primary stations



© 2000 SiteShell Corp. BlueDot WebSite Network is a service mark of SiteShell Corp. All rights reserved.

repeat after me...no work, just checks. That's the mantra of the BlueDot WebSite NetWork.SM Imagine launching a locally branded website—that targets your audience and format—with no development or maintenance hassles and no monthly update fees. We do all the work to keep your site fresh. We also offer access and admin tools if you want to update station-specific content yourself. We handle streaming from your on-air signal or CD-R, again with no monthly charge. On top of that, we make you a 50/50 partner in a sophisticated e-commerce system. Right on your site. You can even sell our private-label Internet access to earn monthly income. It's as turnkey as it gets. Visit www.siteshell.com or call us at 203-929-9101.

siteshell.com
Home of the BlueDot WebSite NetWork

At CCA You Have The Power

As a CCA customer you can rest assured that you have the power of our commitment to Quality, Value and Superior Service.

You have the power of honest pricing that is based on our cost to manufacture, not the volume of business that you do with our company each year.

You have the power to choose your own level of discount.

At CCA all of our customers have the power of our respect.



Go Blue!

and

Feel The Power.

-Transmitters

-Antennas

-Towers

-Input Equipment

-Monitor and Control

-LTUs / ATUs

-Generators

-Transmitter Buildings

Coming Soon! Solid State FM 1-10kW

WWW.CCA.WS



The Home of "No Hagggle" Prices

Grounded Grid, Solid State/Grounded Grid & Solid State FM Transmitters

| Model | Transmitter Type | Power Output | Frequency Range | IPA Type | PA Type | List Price |
|------------|--------------------|--------------|-----------------|-----------|------------|--------------|
| FM60G | Solid State | 3-60 watts | 87.5-108.1 MHz | N/A | 60WSS | \$ 3,000.00 |
| FM100GS | Solid State | 3-100 watts | 87.5-108.1 MHz | N/A | 100WSS | \$ 3,500.00 |
| FM2500G | Solid State / Tube | 2500 watts | 87.5-108.1 MHz | FM100GS | 3CX3000A7 | \$ 22,995.00 |
| FM4000G1 | Grounded Grid Tube | 4 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX3000A7 | \$ 24,995.00 |
| FM4000G3 | Grounded Grid Tube | 4 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX3000A7 | \$ 24,795.00 |
| FM4000GS1 | Solid State / Tube | 4 kW | 87.5-108.1 MHz | FM700SS | 3CX3000A7 | \$ 25,995.00 |
| FM4000GS3 | Solid State / Tube | 4 kW | 87.5-108.1 MHz | FM700SS | 3CX3000A7 | \$ 25,795.00 |
| FM5000G1 | Grounded Grid Tube | 5 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX3000A7 | \$ 25,995.00 |
| FM5000G3 | Grounded Grid Tube | 5 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX3000A7 | \$ 25,795.00 |
| FM5000GS1 | Solid State / Tube | 5 kW | 87.5-108.1 MHz | FM700SS | 3CX3000A7 | \$ 26,995.00 |
| FM5000GS3 | Solid State / Tube | 5 kW | 87.5-108.1 MHz | FM700SS | 3CX3000A7 | \$ 26,795.00 |
| FM8000GZ1 | Grounded Grid Tube | 8 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX6000A7 | \$ 26,995.00 |
| FM8000GZ3 | Grounded Grid Tube | 8 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX6000A7 | \$ 26,795.00 |
| FM8000GS1 | Solid State / Tube | 8 kW | 87.5-108.1 MHz | FM700SS | 3CX6000A7 | \$ 27,995.00 |
| FM8000GS3 | Solid State / Tube | 8 kW | 87.5-108.1 MHz | FM700SS | 3CX6000A7 | \$ 27,795.00 |
| FM10000G1 | Grounded Grid Tube | 10-12 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX10000A7 | \$ 27,995.00 |
| FM10000G3 | Grounded Grid Tube | 10-12 kW | 87.5-108.1 MHz | 3CX800A7 | 3CX10000A7 | \$ 27,795.00 |
| FM10000GS1 | Solid State / Tube | 10-12 kW | 87.5-108.1 MHz | FM700SS | 3CX10000A7 | \$ 28,995.00 |
| FM10000GS3 | Solid State / Tube | 10-12 kW | 87.5-108.1 MHz | FM700SS | 3CX10000A7 | \$ 28,795.00 |
| FM15000G1 | Grounded Grid Tube | 12-15 kW | 87.5-108.1 MHz | 5CX1500B | 3CX10000A7 | \$ 28,995.00 |
| FM15000G3 | Grounded Grid Tube | 12-15 kW | 87.5-108.1 MHz | 5CX1500B | 3CX10000A7 | \$ 28,795.00 |
| FM20000G1 | Grounded Grid Tube | 20 kW | 87.5-108.1 MHz | 5CX1500B | 3CX15000A7 | \$ 54,995.00 |
| FM20000G3 | Grounded Grid Tube | 20 kW | 87.5-108.1 MHz | 5CX1500B | 3CX15000A7 | \$ 43,995.00 |
| FM25000G1 | Grounded Grid Tube | 25 kW | 87.5-108.1 MHz | 5CX1500B | 3CX15000A7 | \$ 56,995.00 |
| FM25000G3 | Grounded Grid Tube | 25 kW | 87.5-108.1 MHz | 5CX1500B | 3CX15000A7 | \$ 44,995.00 |
| FM30000G3 | Grounded Grid Tube | 30 kW | 87.5-108.1 MHz | 5CX1500B | 3CX20000A7 | \$ 49,995.00 |
| FM45000G3 | Grounded Grid Tube | 45kW | 87.5-108.1 MHz | FM8000GZ3 | YU1195 | \$ 64,995.00 |
| FM50000G3 | Grounded Grid Tube | 50 kW | 87.5-108.1 MHz | FM15000G3 | YU1195 | \$ 69,995.00 |

Digital Audio Broadcast Compatible

Plate Modulated AM & Short Wave Transmitters

| Model | Transmitter Type | Power Output | Frequency Range | IPA Type | PA Type | Modulator Type | List Price |
|-----------|----------------------------|--------------|-----------------|----------|-----------|----------------|---------------|
| AM10KWF | Plate Modulated AM | 10 kW | 500 KHz-2 MHz | 4-400 | 4CX15000A | (2) 4CX5000A | \$ 62,995.00 |
| AM10KWFHF | Plate Modulated Short Wave | 10 kW | 2-22 MHz | 4-400 | 4CX15000A | (2) 4CX5000A | Call |
| AM15KW | Plate Modulated AM | 15 kW | 500 KHz-2 MHz | 4-400 | 4CX15000A | (2) 4CX5000A | \$ 64,995.00 |
| AM15KWFHF | Plate Modulated Short Wave | 15 kW | 2-22 MHz | 4-400 | 4CX15000A | (2) 4CX5000A | Call |
| AM25KW | Plate Modulated AM | 25 kW | 500 KHz-2 MHz | 4-400 | 4CX20000B | (2) 4CX15000A | \$ 119,995.00 |
| AM25KWFHF | Plate Modulated Short Wave | 25 kW | 2-22 MHz | 4-400 | 4CX20000B | (2) 4CX15000A | Call |
| AM50KWF | Plate Modulated AM | 50 kW | 500 KHz-2 MHz | 4-100 | 4CX35000C | (2) 4CX15000A | \$ 209,995.00 |
| AM50KWFHF | Plate Modulated Short Wave | 50 kW | 2-22 MHz | 5CX1500B | 4CX35000C | (2) 4CX15000A | Call |

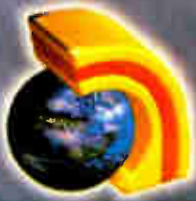
NEW! Digital Solid State AM & Short Wave Transmitters

| Model | Transmitter Type | Power Output | Frequency Range | PA Type | Modulator Type | List Price |
|-------------|------------------------|--------------|-----------------|-------------|----------------|---------------|
| AM500SSi | Solid State AM | 500 watts | 535-1710 KHz | Solid State | Digital PDM | \$ 7,000.00 |
| AM1000SSi | Solid State AM | 1 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 8,800.00 |
| AM1000SSA | Solid State AM | 1 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 16,495.00 |
| AM2500SSA | Solid State AM | 2.5 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 23,495.00 |
| AM5000SSA | Solid State AM | 5 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 41,495.00 |
| AM10000SSA | Solid State AM | 10 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 62,995.00 |
| AM25000SSA | Solid State AM | 25 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 131,995.00 |
| AM50000SSA | Solid State AM | 50 kW | 535-1710 KHz | Solid State | Digital PDM | \$ 194,995.00 |
| AM100000SSA | Solid State AM | 100 kW | 535-1710 KHz | Solid State | Digital PDM | Call |
| SW1000SSi | Solid State Short Wave | 1 kW | 3-7 MHz | Solid State | Digital PDM | \$ 11,495.00 |
| SW1000SS | Solid State Short Wave | 1 kW | 3-7 MHz | Solid State | Digital PDM | \$ 20,495.00 |
| SW2500SS | Solid State Short Wave | 2.5 kW | 3-7 MHz | Solid State | Digital PDM | \$ 27,995.00 |
| SW5000SS | Solid State Short Wave | 5 kW | 3-7 MHz | Solid State | Digital PDM | \$ 48,995.00 |
| SW10000SS | Solid State Short Wave | 10 kW | 3-7 MHz | Solid State | Digital PDM | \$ 72,995.00 |

Digital Audio Broadcast Compatible

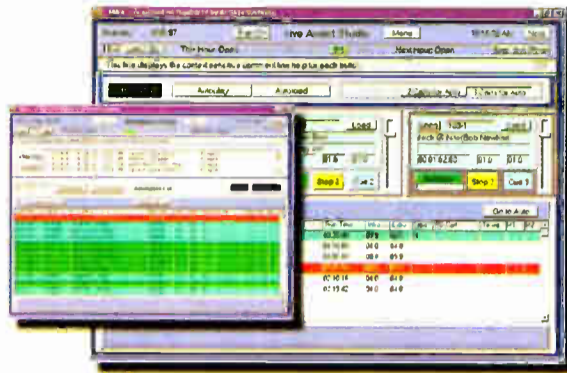


Save 5% just for mentioning this advertisement!
 Save an additional 5% if you choose to pre-pay your order!
 Special discounts for non-profit religious and educational institutions!
 Distributor discounts are available!



DL4 System II

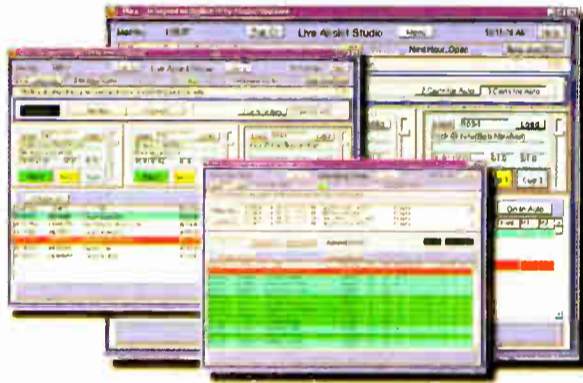
- NEW - On Air & Production System
- Live On Air, Hard Disk Automation, Satellite Automation, Production, Jingle Box, Segue Editor
- Complete - just add 2 PCs
- Only **\$7,995**



The NEW DL4 System II comes complete with a triple play & record DL4 workstation, 105 hours of audio storage, 7 input play switcher, 7 input record switcher, DL4-AUTO software for On Air, and DL4-SCHED for Production and Scheduling. This powerful 2 studio system requires only 2 customer supplied PCs and installation.

DL4 System III

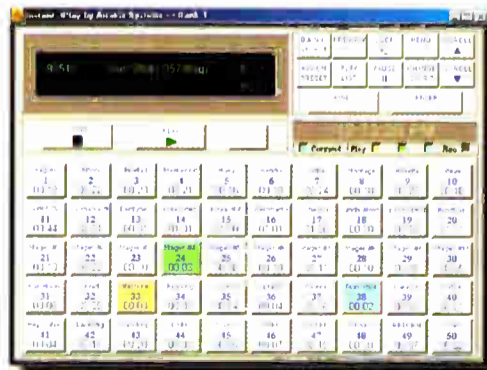
- NEW - dual On Air & Production System
- Live On Air, Hard Disk Automation, Satellite Automation, Production, Jingle Box, Segue Editor
- Complete - just add 3 PCs
- Only **\$16,995**



The NEW DL4 System III comes complete with a 6 play & dual record DL4 workstation, 210 hours of audio storage, two 7 input play switchers, two 7 input record switchers, (2) DL4-AUTO software packages for On Air, and DL4-SCHED for Production and Scheduling. This powerful 3 studio system requires only 3 customer supplied PCs and installation.

Instant 3-Play

- NEW - Instant 3-Play
- Triple Play & Record Jingle Box
- Control from 1, 2, or 3 PCs
- One PC has triple play -or- three PCs have a single play
- Only **\$2,995**



Just connect 1, 2, or 3 PCs running our INSTANT 3-PLAY software to our rack mounted digital workstation and you are ready to go. The workstation has 3 simultaneous plays with record. Software setup assigns play control to the PCs. 3 times the power of other Jingle Boxes, the Instant 3-Play provides access to the SAME jingle from 3 places.

How to Buy

Domestic Dealers:

BSW
(Broadcast Supply Worldwide)
(800) 426-8434

CROUZE-KIMSEY
(800) 433-2105

BGS
(Broadcasters General Store)
(352) 622-7700

SCMS
(Southern Coastal Marketing)
(800) 438-6040

BRADLEY BROADCAST
(800) 732-7665

CONTINENTAL ELECTRONICS
(800) 733-5011

RF SPECIALITIES
(contact their regional offices)

For more complete information on any Arrakis product visit our website at:

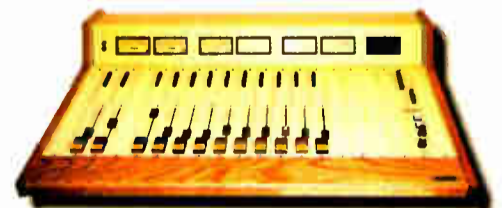
www.arrakis-systems.com

-or-

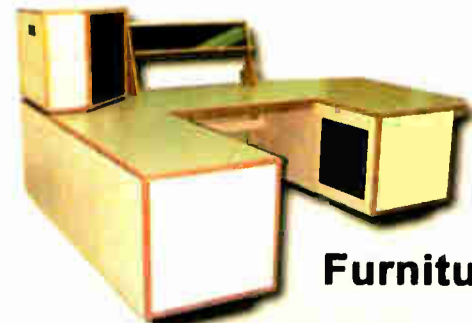
email to:

sales@arrakis-systems.com

Other Products



Consoles



Furniture

Clears

► Continued from page 30

was cast in stone, thus ending super-power hopes and leaving WLW as the only station in the country ever to operate formally with more than 50 kW.

Summarizing the inquiries it published in the late 1970s, the FCC noted it had asked whether any 1-A stations would apply for super-power, and reported that WHO, WBAP, WJR, WWL, WCCO, WSM and KSL had proposed various power levels from 200 kW to 500 kW.

WCCO had proposed 450 kW, and associated this with a proposal that all 1-A stations be permitted to go up in power "to a level nine times their present power ceilings." (sic)

The commissioners dismissed these applications, announcing that they were inaccurate in representing gains in listenership, and they said the applicants didn't provide a plan for the resolution of expected interference problems.

So that was that. Nighttime radio would never be the same.

Right move?

In many cases, the new Class II stations, at least at first, did serve the public interest, in fulfilling some of the white-area coverage expectations of the Report and Order.

That would not have been the case if the commissioners had listened to the Daytime Broadcasters. The FCC charitably dismissed as "impractical" a poorly-advised proposal by the DBA to double-up certain 1-A stations onto other Class 1-A channels, thus freeing up a number of clears and adding as many as 2,000 new stations to the channels thus vacated. Imagine what *that* would have sounded like!

What will happen when the AMs adopt a digital system that's 'designed to match the ground-wave coverage and to throw away the sky wave'?

In closing this decades-long proceeding, the commission reiterated its 1927 criteria for allocations (which hadn't been updated to acknowledge FM service).

The famous "Three-Legged Stool" criteria:

- At least one service to everyone;
- Service to as many persons from as many diversified sources as possible;
- Outlets for local self-expression addressed to each community's needs and interests.

The 1980 Order reflects to some degree the changes in the broadcast industry but, at the same time, the FCC was still welded to the concept that AM was the only effective night-time radio service. Curiously, this "AM-only" reasoning was written by the same FCC staff that was concurrently drafting FM Docket 80-90.

This leads one to speculate on the

real reasons for the final orders. As with many other allocation decisions by the FCC, the breakdown of the clears was done in large part "in the name of diversity." The FCC was soon to define "minority-owned" operations, and they suggested the clear-channel breakup and "future expansion dockets" would solve the dilemma of minority access to broadcast outlets.

In explaining the duplication of the remaining clears, the FCC said the "rising demand for services" *could* be met by "other proposed changes", but also argued that "they just didn't have time to wait."

The other proposed changes would include not only 80-90 waiting in the wings, but also the Expanded-Band proceeding and an NTIA initiative to put the Western Hemisphere on 9 khz spacing. And in a matter of months, the FCC would consider expanding the hours of the Daytimers.

Are we better off?

In reviewing the disposition of the "Clear-Channel Matter" we need to pose some questions: Did the FCC solution actually provide better nighttime radio service, or did existing and planned FM coverage make the issue irrelevant, even as the Final Report and Order was being written? Or should the FCC have adopted the original super-power plan to deliver "at least four dependable sky-wave services available to everyone?" It's tempting to speculate, and hindsight is wonderful, especially in view of the potential impact of new satellite-delivered "national radio services."

Clearly, under the FCC's "Three-Legged Stool" criteria, the concept of super-power on a few stations never had "legs." But did the FCC's actions promote diversity? Given what most of those secondary radio stations are

doing today, we would leave that to their listeners to decide.

What next?

So what was it all about?

The "Clear-Channel Matter" may have been a story of a few "haves" vs. a greater number of "have-nots." If that was the case, it would be tempting to view those AM giants as victims.

But the argument might be made that some 1-A stations abdicated their protection, by pulling back their former wide-area service, concentrating instead on their ratings-defined "metro areas." I would suggest that while some stations might plead guilty to that strategy, others continue to this day to be attuned to the needs of their extended service areas.

And that's what makes this next question so interesting: What will happen when the AMs adopt a digital system that's "designed to match the ground-wave coverage and to throw



Clear-channel broadcasters' 'educational material'

away the sky wave"?

At that point, should the 1-A stations be given identical day and night protection, matching their demonstrated ground-wave coverage? Would we then end up reconstructing the allocation tables, "in the name of diversity"?

What an interesting business. Stay

tuned for further developments!

Mark Durenberger is general manager of Group W Network Services in Minneapolis and an RW contributor.

He welcomes questions and comments about this series via e-mail to durenberger@teleportmn.com

WE SPEAK YOUR LANGUAGE!

SIDEKICK AUDIO SUBCARRIER GENERATOR

The SCA-186 Sidekick® is the industry standard for subcarrier services. When stations lease their SCAs to foreign language and reading services and need a reliable generator, the Sidekick is the only place to turn.

Here's why:

- **Crystal-Controlled Subcarrier Generator**— Frequency stability: +0.006% from 0-50° C
- **Modulation Monitor**— Simple, accurate and eliminates the need for an additional monitor
- **Integrated Audio Processor**— Better peak control significantly reduces crosstalk
- **Transmitter Tuning Aid**— RF fine tuning minimizes incidental AM to further reduce crosstalk
- **Composite Loop Through Feature**— Automatic mix of subcarrier signal into composite simplifies installation.

Reading Services
French • Italian • Russian • Chinese • Korean



12A World's Fair Drive • Somerset, NJ 08873
Voice (732) 302-3090 Toll-Free (800) 826-2603 Fax (732) 302-0206



New Northwest Builds Business

Robert Rusk

In its pursuit of a niche, seeking stations in small to medium markets throughout the northwestern United States, Seattle-based New Northwest Broadcasters has launched an acquisition strategy that resembles those of much larger radio giants.

The company is on an aggressive buying spree, and was recently up to 43 radio stations.

O'Shea said, "When Ivan and I first came up with this idea, no other group owner had gone into these areas of the Northwest and done medium- and small-market purchases. We really are the first company to do it, and we have a lot of history here."

Experience, respect

NNB has about 250 employees. It is headed by two experienced and respected broadcasters, according to industry analysts.

Chairman and CEO Michael O'Shea has been in radio for 35 years, working as an air personality and then PD at some of America's large market stations including KLIF(AM) in Dallas; WLW(AM) in Cincinnati; KMPC(AM) in Los Angeles and KVI(AM) in Seattle.

In 1981, O'Shea became GM of KUBE(FM) in Seattle and remained with the Arbitron top-rated CHR station in that market for 18 years. Along the way, he became co-owner of KUBE(FM) and sister stations KJR-AM-FM. O'Shea sold his interest in the stations in 1998 to become a founder of NNB.

President Ivan Braiker, 48, started his broadcast career in television sales in his hometown, Las Vegas. He became president of Belo Broadcasting's radio division in Dallas and later was a founder of the Satellite Music Network.

In the 1980s, Braiker founded

Olympia Broadcasting, which operated radio stations in Seattle and Spokane, Wash.; San Francisco; Kansas City, Mo.; Anchorage and Fairbanks, Alaska; and Las Vegas. He left Olympia in 1989 to manage a cluster of stations for Mariner Broadcasting in North and South Carolina.

programming.

"We're putting live, local morning shows on every one of our FM stations, where most of the listening is done most of the time, and those AM stations such as KAST and KVAS in Astoria, Ore., which are big parts of the community," O'Shea said.



Michael O'Shea

He joined O'Shea two years ago to create NNB.

Despite buying so many small town stations — with many different satellite-fed formats — O'Shea, 51, has no doubt that each station will continue to serve its community.

"We think that the only way you can provide good, local, community-oriented radio economically today is to have multiple signals within a market," said O'Shea. "That's just the only way that it can work."

When NNB launched its station group, O'Shea said, many of them relied on generic-sounding satellite-fed

"We're kickin' satellite dishes off of roofs. We just don't believe in satellite programming, with local inserts only for commercials and a couple of weather forecasts," O'Shea said.

"We do believe in live and local radio."

O'Shea said, "Not every daypart is going to be live, but every daypart will be local. We will not have anything come off satellites, except for the syndicated talk shows, like Rush Limbaugh, Dr. Laura and Bruce Williams."

While morning drive will be local, O'Shea said that other dayparts will

See NNB, page 39 ▶

COLE'S LAW

Indecency: Short-Term Thrills

Harry Cole

All the seismograph needles in the Geological Situation Room at Team Cole's Law headquarters started rocking one afternoon in September, showing shockwaves in the San Francisco area. We figured it was finally the Big One, but it turned out that our meters were only registering the reaction to retired Gen. Colin Powell's keynote speech at the NAB Radio Show.

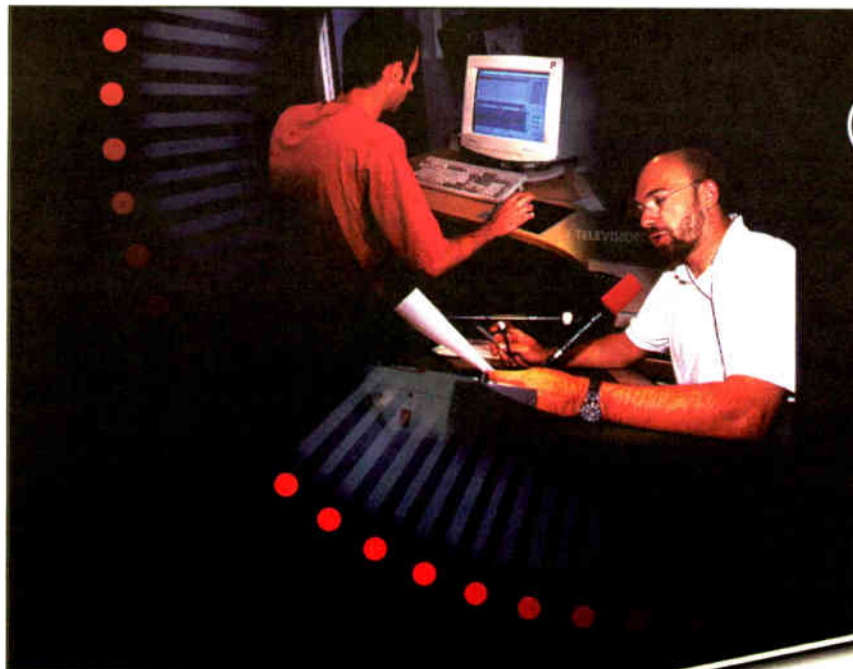
Keep it clean

For those of you who didn't make it to the party, Gen. Powell urged broadcasters to clean up their on-air acts. He criticized the broadcast of "rough, crude, dirty and filthy" material, and suggested that stations should be a "little more careful" in what they put out on the air.

Our hunch is that the general's speech had approximately the same effect as a Sunday sermon. Everybody sits in the audience, nodding their heads and agreeing that sin is bad — but then, back out in the real world, temptation takes control of them and you know the rest.

Whether or not coincidentally, though, the FCC had something to say about all this, too. Within a week after Powell's speech, the commission issued two \$7,000 fines for indecency. The two fines had been in the works for several months, so we don't think that they

See COLE'S LAW, page 50 ▶



RADIO-ASSIST®

www.netia.net



netia

NETIA North America

PO BOX 966 - Roanoke - Texas 76262 - USA

Toll Free 877 699 9151 • Fax 877 699 9152

Our Preferred Partners:

Bradley Broadcast & Pro Audio
800.732.7665

Broadcast Connection
970.482.9254

Broadcast Richmond
765.966.6468

Giesler Broadcasting Supply
713.774.3314

The Harris STL PLUS. Your green light to add more stations.



©1999 Harris Corporation.

In today's rapidly consolidating radio industry, the race is on to buy stations. And the pressure's on to cut costs by sharing station resources. The STL PLUS by **Intraplex** is the industry's most widely used *true* digital transport solution, allowing you to link multiple transmitter sites and studio locations and share program audio, data, even telephone services. With a single STL PLUS system, you can handle one-way or bi-directional STL/TSL traffic over any distance or terrain. Consolidate LAN/WANs. And remotely control transmitters and broadcast facilities—for increased efficiency. With STL PLUS, you have the green light for smooth integration of your next station. And the next.



The STL PLUS offers unmatched transmission robustness and reliability.

next level solutions

WIRELESS

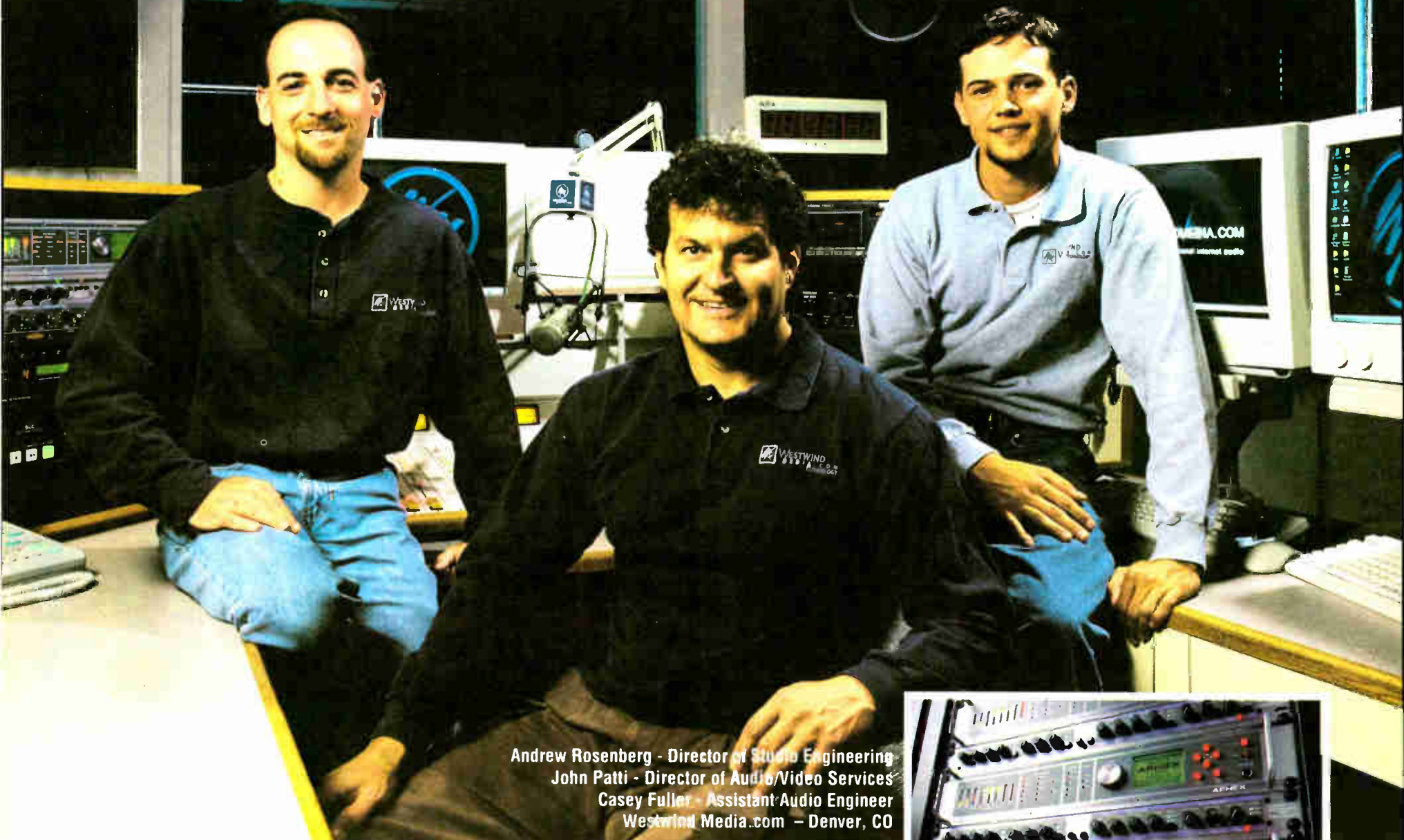
BROADCAST

GOVERNMENT

NETWORK SUPPORT

HARRIS

“Our web clients rely on us to deliver the highest quality streaming audio. That’s why we chose the Aphex 2020.”



Andrew Rosenberg - Director of Studio Engineering
John Patti - Director of Audio/Video Services
Casey Fuller - Assistant Audio Engineer
Westwind Media.com - Denver, CO



Westwind Media.com is a leading digital audio provider for Internet communities such as Lycos, iVillage.com, Fidelity Investments, TheStreet.com and PeopleWeb. These clients demand the best, and Westwind’s audio engineering department ensures that level of performance...even on connections as slow as a 28.8 dial up!

“We’ve tested other processors and nothing comes close to the consistently high audio quality and loudness of the 2020”.

The Aphex 2020 is a digitally controlled analog processor that is configurable as the high quality, cost-effective, one box solution for FM, Satellite Uplink, Mastering and Webcasting.

“It was no surprise to us that the number one FM station in town also uses the 2020- it’s the best sounding processor on the air and on the Web.”

**FOR THE FINEST PROCESSING FOR FM, SATELLITE UPLINK, MASTERING AND WEBCASTING
CALL APHEX TODAY OR VISIT www.APHEX.com TO SCHEDULE A DEMO**

APHEX
SYSTEMS

*Improving the way the world sounds*SM

11068 Randall Street, Sun Valley, CA 91352 U.S.A
818-767-2929 Fax: 818-767-2641 www.aphex.com

World Radio History

NNB

► Continued from page 36
employ "talent import" — music will be put on a hard disk and air talent will add personality aimed at each station individually from the newly built NNB studios in Seattle.

News, weather, sports and other features will continue to originate at the local-market level.

For example, KSWB(AM) in Seaside, Ore., recently aired live, local coverage of the Miss Oregon Pageant, part of the Miss America competition, which takes place every summer at the Seaside Convention Center.

But in another move to maximize the economies of scale, O'Shea said stations located in separate buildings in the same market will move into single facilities.

O'Shea said he was proud that the company has built up to 43 stations and "not fired one person because of our coming in and buying the stations."

In each market, O'Shea said, the company has worked with local management to keep everyone on the payroll.

Stability

"We've gone way out of our way to maintain stability at the stations — and of course that includes maintaining local management."

NNB, a privately held corporation, is putting its money where its micro-

phones are — and has accumulated \$80 million for capital growth and operating expenses.

Many of the biggest corporate giants are participating in this venture. The Marriott family of hotel fame has invested \$20 million, through its Maryland-based First Media Ventures subsidiary, which controls about 30 percent of NNB.

First break

Interestingly, it was Dick Marriott who gave O'Shea his first opportunity in management at KUBE(FM) — when the Marriott family owned it and nine other radio stations.

"We have watched New Northwest build a terrific radio company in a short period of time," said Marriott, CEO of First Media. "We see a wonderful opportunity to help build a substantial group in a great part of the country."

Other investors are Bluepoint Capital — formerly Key Equity Capital of Seattle and Cleveland, an affiliate of Key Bank — and Northwest Capital Appreciation of Seattle. Together, these investors have tossed \$60 million into NNB's coffers.

In a joint statement, Brad Creswell, a partner of Northwest Capital, and Bob Wainio, general partner of Bluepoint Capital, described O'Shea and Braiker as among the most experienced and talented United States radio operators.

NNB owns stations in Clatsop County, Ore., that must work as a together — including three AMs that

New Northwest Broadcasters Properties

| | |
|---|--|
| <h3>Washington</h3> <ul style="list-style-type: none"> WJOX(AM) Yakima KBBO(AM) Yakima KHHK(FM) Yakima KARY-FM Yakima KXDD(FM) Yakima KRSE(FM) Yakima KTCR(AM) Richland KEGX(FM) Richland KIOK(FM) Richland KALE(AM) Richland | <h3>Montana</h3> <ul style="list-style-type: none"> KBEX(FM) Billings KGHL(AM) Billings KGHL(AM) Billings KRSQ(FM) Billings |
| <h3>Oregon</h3> <ul style="list-style-type: none"> KAGO(AM) Klamath Falls KSWB(AM) Clatsop County KULU(FM) Seaside KAGO-FM Klamath Falls KYSF(FM) Bonanza KVAS(AM) Astoria KOOS(FM) North Bend KACW(FM) North Bend KHSN(AM) Coos Bay KBBR(AM) North Bend KKJX(AM) Klamath Falls KKEE(FM) Long Beach KAST(AM) Astoria KLAD-FM Klamath Falls KAST-FM Astoria | <h3>Alaska</h3> <ul style="list-style-type: none"> KQEZ(FM) Anchorage KKRO(FM) Anchorage KAQX(FM) Anchorage KUWL(FM) Fairbanks KWLF(FM) Fairbanks KXLR(FM) Fairbanks KFAR(AM) Fairbanks KCBF(AM) Fairbanks |

were previously under separate ownership and were archivals: KAST(AM) and KVAS(AM) in Astoria and KSWB(AM) in Seaside.

In fact, O'Shea said, "We had the Hatfields and the McCoys" under the previous ownerships. Now with so much clout, said O'Shea, NNB can

present multi-format packages to advertisers.

"In our Arbitron-rated markets (Anchorage, Billings, Yakima, and Tri-Cities), we have separate sales staffs selling each station," he said.

"In the smaller markets, we have See NNB, page 42 ►



LISA FOXX



DR. DEMENTO



JIM LADD



BIG BOY



DR. DREW & ADAM CAROLLA



GEORGE PUTNAM



CHUCK NILES



STAN FREBERG



PHIL HENDRIE

THE MUSEUM OF TELEVISION & RADIO

RADIO FESTIVAL

2000

New York: October 19 to November 2, 2000

Los Angeles: October 27 to November 3, 2000 ★ New

FUNDING FOR THIS FESTIVAL HAS BEEN GENEROUSLY PROVIDED BY






Opening reception in L.A. is sponsored by Norman J. Pattiz, Chairman, Westwood One.

In-kind support donated by *Broadcasting & Cable*, *Radio World*, and *R&R: The Industry's Newspaper*.

25 WEST 52 STREET, NEW YORK, NY 10019

465 NORTH BEVERLY DRIVE, BEVERLY HILLS, CA 90210

Festival Hotlines: 212/621-6709 • 310/786-1015



CARL KASELL



BOB EDWARDS



COKIE ROBERTS



GREASY KID STUFF



LORI KRAMER



RICHARD JOHNSON



CHARLES OSGOOD



KEN WEBB



HAL JACKSON



JULIET PAPA

COMREX



NEW
Shipping
NOW

GET THE FULL

You gain special benefits when you buy

The Matrix Does it All – POTS/ISDN/Wireless!

If you've got the Matrix, you've got options, because this 15 kHz POTS codec allows for easy conversion to ISDN operation using Layer III or G.722 and/or GSM wireless phones operation. These conversions simply require optional slide-in modules. Features include: 15 kHz full duplex audio on a POTS line; 2 mic inputs (one is mic/line switchable); headphone output; line level output on XLR; -10 dBu tape input.

Comrex MATRIX List \$3,700.00

FREE
Remote Software &
Modem Bundle

Omnia
A Telos Company

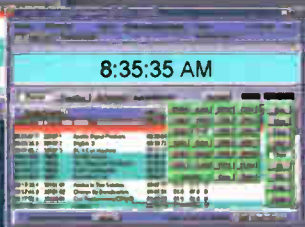
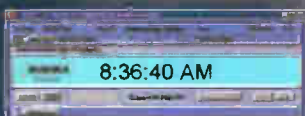


Special Offer on the Omnia 3

Say hello to Omnia 3 – the all-digital audio processor that offers all the clarity, punch and power of the original Omnia – at an amazingly affordable price. Whether you broadcast on FM, AM or the Internet, there's one to fit your needs. And each Omnia 3 includes standard features not found anywhere else – like 48 kHz sampling, multi-band processing, digital audio I/Os, integrated composite clipper and a removable PC card that simplifies software changes. Make your purchase by 12/31/00 and receive a Free Omnia remote software and modem bundle (a \$230.00 retail value) plus a 2-year extended service package (warranty and software upgrades). Call today on this special offer!

Omnia OMNIA3 List \$3,580.00 Call for BSW Price

arrakis
SYSTEMS INC.



**2 Studio
System
Under \$7,600**

Arrakis DigiLink IV Makes On-Air Delivery and Production Easy

2 Studio System –

- (1) On-Air and (1) Production/Scheduling
- Live On-Air and Full Automation Capability
- Both Satellite and Hard Disk Automation
- Voice Tracking, Segue Editing, Phoners and More
- Triple Play and Record DL4 Workstation
- Just Add Your Own PC Computers

Arrakis DL4STD2 List \$7,995.00



Configurable Studio Furniture Package

Quality, beauty, modularity and low-cost knock-down shipping combine to make the Arrakis Modulux a sensible furniture package. It comes complete with components to create a variety of configurations, including left- or right-handed, Short L, Long L, and Unbalanced U.

Arrakis MODFLEX1 List \$4,995.00 Call for Price



- Extended Product Warranty
- Extensive On-Site Installation
- Factory Trained and Certified Technicians

APHEX
SYSTEMS



Loud and Clear!

The 2020 FM Pro is Aphex' world-class, digitally controlled FM compressor, a loud signature with the full detail and clarity of precision. It features a stereo generator and pre-emphasis limiter; factory and user-selectable silence gate and AGC upper and lower control; bass clipper, EQ and total bass mix control; remote control; balanced XLR analog I/O. Options include: AES/EBU digital I/O. Aphex 2020WITH03 List \$6,995.00

**Now Include
"Top and Tail"
Editing of
Sound Files**

New 'Dash E' Version Offers Flexible Instant Access

Instant Replay re-defined the term Hot-Keys, with an easy-to-use control panel that offers rapid fire playback of 50 cuts, ordered in 10 different banks. Now Instant Replay expands your ability to select the exact audio bite, or portion of audio file that you want with "Top and Tail" trim editing. Up to 24 hours of stereo audio can be stored on Instant Replay's self-contained hard drive. Call today to order.

360 Systems DR554-E List \$3,250.00

BC
BROADCAST SUPPLY

For more information
or visit www.bcsupply.com

ADVANTAGE

Advantage Partner products from BSW.



Warranties on All Partner Products
Inventory for Fast Delivery
Certified Sales Professionals

EX
MS



FM processor Use it to create
analog audio. Features include: FM processor
user presets; frequency discriminate leveler
EQ: 4-band compressor; bass processor
remote interface with software;
O.



'Dash E'
n of an
tc



call 1 • 800 • 426 • 8434
www.bswusa.com



Multi-Line POTS or ISDN Talk Show Systems

Wouldn't it be great to have a talk show system that connects directly with digital lines - without all the hassle of analog conversion? This 12-line telephone system uses two digital hybrids to bring ISDN clarity right into the studio, and if you don't yet have digital service, you can use your existing POTS lines and upgrade for ISDN later. Order now and receive Call Screening software for only \$1 (a \$520.00 retail value) plus a 2-year extended service package (warranty and software upgrades)! Offer expires 12/31/00. Call for more information.

Add Call Screening Software for Just a Buck! (a \$520 value)



Call for Best Price



Now with 5 Times the Processing Power!

Loaded with Motorola's latest DSP chips, the Optimod 8400 comes equipped with more than five times the raw processing power of its predecessor. The 8400 retains many proven OPTIMOD-FM 8200 features, such as the five-band and two-band processing structures. But with supercharged processing power, the improvements are clearly audible. The result is a noticeably louder and brighter signal, yet with the smoothness and pristine clarity needed to hold listeners for extended periods. Place your order today. Orban 8400 List \$10,700.00

Call for Best Price



6-Output Headphone Amplifier

Symetrix' newest headphone amp features 6 direct inputs and 6 direct outputs with individual level controls; stereo/mono switch; assignable LCR mono cue input; proprietary high-voltage drive technology; internal power supply; crystal clear, low distortion for reduced listening fatigue. Option: HR-1 remote with audio loop through for daisy chaining. Symetrix 506E List \$529.00 Symetrix HR-1 List \$65.00



30-Day Trial Offer



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! Call for a 30-day trial. Moseley SL9003-4S (4-channel stereo) List \$16,250.00

NNB

► Continued from page 39

either one sales department selling all stations as a cluster — or a team approach, with one sales team selling specific formats (such as AC and country) and another team selling top-40 and hard rock. It really depends what each market dictates.”

Again focusing on the NNB stations in Clatsop County, Ore., there remain just two other commercial stations in the county that are controlled by a competing operator. Dave Heick operates those stations, KCBZ(FM) in Cannon Beach and KCYS(FM) in Seaside.

When contacted by *RW*, Heick said NNB has not posed any problems to his stations. He insisted that, in fact, the strong competition from NNB has not only helped but has increased sales at his two stations.

Marketing strategy

Heick said, “NNB has embarked on a bold marketing strategy — but the neat thing for me is that they have effectively reduced the on-street competition by 50 percent. Now I am able to go toe-to-toe with one sales person instead of two.”

Heick previously served 15 years as GM at KVAS(AM) in Astoria and KKEE(FM) in Long Beach, Wash., then co-owned, before starting his own company. Even though NNB now owns those stations, he said sponsors continue to commit to his business.

“I have upped my street time by about 80 percent and my closure rate has probably doubled or tripled. If you were to take a look at my bottom line, (the NNB acquisitions) have done good things for my business.”

For O’Shea, a private pilot, buying

stations in so many far-flung markets feeds two of his greatest loves: flying and radio.

“I’ve been a private pilot for 30 years,” he said. “I have a lot of hours flying and a twin-engine Cessna 340.

“Ivan and I can literally be at the Astoria Airport (about 150 miles south of Seattle) in about the same amount of time it takes us to drive to downtown Seattle in a busy commute. We can be at the Astoria Airport in about 35 minutes, we can be to Yakima in 25 minutes, or Tri-Cities in 40 minutes. It’s a wonderful way to go!”

■ ■ ■

Robert Rusk worked at KSWB(AM) in Seaside, Ore., in the 1980s, when it was owned by the locally based Seaside Broadcasting Corp. The station is now owned by NNB.



Michael O'Shea and Ivan Braiker

“How do we get our stations on the internet and add new revenue?”

New Northwest, SiteShell Sign Web Deal

New Northwest Broadcasters is not ignoring the Internet in its business plans.

In late summer, SiteShell Corp., a Web site network company, entered into a master affiliate license agreement with the chain. SiteShell will create and maintain what it called a locally branded, format-specific, e-commerce integrated Web site for each station.

SiteShell quoted New Northwest President Ivan Braiker as saying, “Great Web sites are very expensive to operate, and with a SiteShell affiliation there is no need for us to bear that expense.”

The announcement from SiteShell also stated, “Mr. Braiker is generally regarded as being among the more ‘Internet-savvy’ radio broadcast executives.”

New Northwest will maintain an internal Internet group, but the arrangement will permit it “to focus its resources on developing local and group-wide revenue producing Web site advertising and promotional programs.”

Braiker will serve on the affiliate advisory board of SiteShell’s BlueDot WebSite NetWork, which provides affiliates with turnkey Web sites using its PointSales merchandising system.



WEB WATCH

IBOC Doubts; Other Net Newbies Rule

Carl Lindemann

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

What was **unmistakable** at The NAB Radio Show in San Francisco? Visitors could *not* miss the overwhelming and snowballing support for **IBOC**. As the NAB has been wishing and hoping for years, this take on digital radio has finally caught fire.

Elsewhere, others offered business-to-business services to help broadcasters add listeners and revenue streams



that weren't possible in the outmoded analog era.

Yeah — right.

Take everything above and substitute Webcasting for IBOC. In fact, in my opinion, **the only thing missing for IBOC was a memorial for the stillborn service that remains vital only in the imagination of a few industry insiders.**

Those holding out hope for some IBOC resurgence before in-car Internet audio becomes available can give it up.

Live365.com's real demonstration of online radio streams captured off a standard Sprint PCS phone through a

handheld PC into the input jacks of a car stereo.

What will it cost? People already own the cellphones and the handheld PCs. The live365.com software is a free download. So it all comes down to is airtime on the cell phone — and prices there are coming down fast.



The Live 365.com demo 'studio/vehicle'

The demo took place outside the cell-unfriendly Moscone Center in the **Live365.com PT cruiser**. Live365.com's Director of Wireless Development **Paul Cattrone** officiated. **The 14.4 kbps streams sounded good — no dropouts.** Maybe the various IBOC-equipped cruisers were caught in traffic elsewhere.

Dancing bear

In all honesty, **this wireless Web radio rig is like the proverbial dancing bear.** That it can dance is enough — don't worry about whether it dances well. **The pocket PC/cell phone combo is not quite as handy as a \$10 transistor radio.**

Oh, and don't forget that **the devices cost \$600 and are really complicated to set up.**

But easy operation is coming. One of the more impressive newbies to The NAB Radio Show was **SurferNetwork**.

This upstart is a sign of some of the sweeping changes happening in dot-com land. These surfer dudes were in the Hawaiian shirts like some of the 20-something Internet millionaires that invaded the scene awhile back.

But SurferNetwork's people have a few gray hairs and the experience that goes along with it them. The company is composed of some **savvy AT&T folks** who took early retirement to create this venture. These are not a bunch of kids caught up in a craze (without a business plan and profits).

Instead, **Surfer Network.com demonstrated an online tuner** that snapped among different Web stations as easily as, well, that \$10 transistor radio. There were no delay buffering and *no* dropouts — the quality that could make online audio the kind of no-brainer needed to make this into a mass media medium.

After a long chat with **Harry Emerson**, SurferNetwork's founder and a key element in the company's brain trust, I can see that the upstart aggregator will be giving other, better-established firms like **BroadcastAmerica.com** some serious competition.

Emerson referred to the coding behind the **instant "on" streams** as a **"black magic"** and guessed it would take at least two years for others to

See WEB WATCH, page 44 ►

Audio Streaming
 Studio Cams
 Virtual Office
 Chat Rooms
 Ad Insertion
 eShopping



broadcastport.com

New Medium... New Revenue

(888) 665-0501

www.broadcastport.com

Web Watch

► Continued from page 43
reverse-engineer it to cut into the competitive advantage offered. The first handful of radio stations signed on with the free service launched just after the show and others are sure to follow.



Fred Lark Webcasting at the Warp Radio booth

Though it is still possible that new companies with new technology will turn the Web radio industry on its head overnight, having a track record still helps.

For example, new media veterans **Global Media** and **Broadcast America** had significant booth space — and visitors — at the show.

Meanwhile, **Warp Radio** had veteran broadcaster **Fred Lark** out of **KLXO(FM)** and **KLCM(FM)** in Lewistown, Mont., on hand to do a live show from the company booth/broadcast center.



Harry Emerson

Despite the splash that Webcasting has made, plenty of stations remain unconvinced. Seeing a Webcast in action won over more than a few to Warp Radio's "we try harder" attitude.

Others on the scene with B2B services for streaming audio included **Streampipe.com**. Formerly known as **Netcast Inc.**, **Streampipe.com** is a full-service technology partner for organizations looking to stream content online.

Prefer to do it yourself? **iTuner** unveiled the **Mediabox**, a one-box solution for multi-format audio and video streaming.

Among this year's most innovative include **InteractivePools.com**. The New Jersey-based outfit has already signed on **CBS Radio**, **Clear Channel** and **ESPN Radio** for its betting pool concept.



Streampipe.com's booth at NAB

It's an interactive version of what gets cooked-up around the water cooler. Here, listeners get drawn in much as they do in the office around the Superbowl and/or NCAA finals. **Howard Arkin**, the company's "head coach," cooked up this idea that can live on many a morning show.

Basically, the service can create a game for listeners to play online. Just consider it a powerful (and increasingly necessary) part of morning show prep.

Instant polling

Along similar lines, **Informano Networks** aims to make radio interactive with a wireless strategy that lets jocks poll the audience in real-time on sensitive, timely issues like "how long will **Brad Pitt** and **Jennifer Aniston** stay married?"

Announcers and producers can ask

anything they like and toss it out to the audience to respond. If you like getting listener voices on-air, you'll like this, too.

Other hot ideas at the show revolved around Internet appliances and ad-insertion technologies. **Akoo** and **3Com**'s newly acquired **Kerbango** stash the computer to give consumers online audio without knowing that they're online.

Expect dozens of consumer electronics manufacturers to follow this path bringing millions of listeners with them.

Lighteningcast continues to flash and thunder as an authority in the coming ad-insertion boom. This promises to be the way to leverage all those Internet appliance listeners for ad revenues by allowing target marketing. If these two take off as expected, they will dominate The NAB Radio show in 2001.

Like Good and Evil, success is paired with failure. **MP3.com** made a show at the Show with a PR program to help radio stations with fundraising opportunities for non-profit groups. But charity may begin at home for the controversial company.



Howard Arkin

MP3.com's future was seriously in doubt after taking a huge hit in court. On Sept. 6, U.S. District Court Judge **Jed Rakoff** ruled that **MP3.com** had willfully infringed on **Universal Music Group's** copyrighted works.

Before the ruling, company officials said that they could survive a \$5k per disc penalty — the judge imposed a \$25,000 penalty.

Such a ruling would spell the final chapter for some companies, but we'll have to see how this adventure plays out.

It began when the company bought up a bunch of CDs so that when online visitors wanted a song, they could buy the disc and download the tunes while waiting for it to arrive in the mail.

The penalty for this nefarious scheme — \$25,000 per CD purchased through **MP3.com**. While four out of five of the major labels were willing to settle with **MP3.com**, **Universal** held out. Was it a matter of principal or principle? **Universal's** own **MP3.com**-style service stands to benefit if this key competitor vanishes. **MP3.com** is appealing the ruling.



Josh Stella and Jennifer Weland of Informano Networks

Some other casualties of the coming shakeout didn't make it to the show. **Get Media** had signed on hundreds of stations with its real-time look into what was playing on air. It was one of the brightest new media ideas of 1999. But investors are shaky after the correction in the NASDAQ this spring.

And **Get Media** just couldn't attract the additional funding needed to stay alive so — *poof!*

How many of the entrepreneurial ventures at this year's NAB Radio Show will be kaput next year? Hard to say. But it seems sure that despite failures, others will continue trying. There will be many shakeouts before this begins to settle down.

And as for **IBOC**?



Carl Lindemann has worked in radio as a field reporter and production director. He consults on radio/new media projects and writes extensively on these subjects. He is political correspondent for the PRI program "Beyond Computers."

Reach him at carl@cyberscene.com

Bridging the gap between radio and the Internet.

WARPradio

- Easy terms
- Live on demand unlimited streaming
- No cash required
- New WarpFactor Streaming statistics

www.warpradio.com | sales@warpradio.com | 877.932.7234

World Radio History

Macnee Did Radio, Then 'Avengers'

Robert Rusk

He may be best remembered as the bon vivant with the bowler hat and umbrella from the 1960s British TV spy series "The Avengers," but long before actor Patrick Macnee took on that role as the suave secret agent Jonathan Steed, he got his start as an actor on radio in Canada.

It was in the early 1950s when Macnee came across the Atlantic Ocean to stake his claim in the New World, after serving as an officer in His Majesty's Royal Britannic Navy in World War II (1942 to 1946).

Explaining why he left his native land, Macnee, now 78, said, "To support yourself in England at that period was rough. Most of us were on rations for five or six years after the war finished. So thousands of us decided to emigrate. I had only about 10 pounds in my pocket (equivalent to approximately \$40 Canadian at the time), but took a chance and booked passage to Toronto because a friend of mine lived there."

It wasn't long before his friend — a director in television, a brand new entertainment medium at the time — helped Macnee find work.

Fledgling actors

Macnee found himself rubbing elbows with other fledgling actors (and Canadian natives) such as Christopher Plummer and William Shatner. The biggest star on radio then was Lorne Greene (who would go on to star in the long-running U.S. television series "Bonanza"). In the early 1950s, Greene was known as the "Voice of Canada."

"Radio in Canada at that time, 1950 to 1952, was probably the greatest radio that has ever been done anywhere," Macnee said. "We did all of Shakespeare (recorded in Toronto for the government-owned CBC network) and frankly it was bloody marvelous."

Macnee, who now lives in semi-retirement in the resort community of Palm Springs, Calif., (a favorite enclave of the rich and famous), has never worked in U.S. radio. He did, however, move to the U.S. in the mid-1950s to try and break into the burgeoning American television industry.

He had limited success, and mainly landed small roles as an extra in some of the top-rated Westerns of the day.

"I worked with Ray Milland and a lot of other big stars," Macnee said. "I also took falls and was a riding extra in "Wagon Train" and "Rawhide" (which starred a young Clint Eastwood).

Still looking for a show of his own — and with extensive radio and TV training — Macnee, then in his mid-30s, returned to England in 1958.

Two years later he landed the leading role in the imaginative new British-produced TV series "The Avengers," playing the quintessential Englishman. Literally overnight the show became a huge international hit.

It was Macnee's fondness of American movie stars — and their flashy wardrobes — that helped him get the job.

"I turned up at "The Avengers" rehearsal room in a trench coat and porkpie hat, like William Powell wore," said Macnee.

"The producer said, 'You really look

awful. What are you trying to do?"

Macnee said, "I told him that we had been dressing like that in Hollywood, but he insisted that I get another character. I suddenly thought of 'The Scarlet Pimpernel' and that aspect of English life, which is 'let's look completely flamboyant and harmless on the outside and be like lethal steel on the inside.'"

"That was the basic conception," said Macnee, "and I took a little bit in purely dress form from my father, who always used to wear beautiful hand-cut overcoats and bowler hats. But not bowler hats like you would wear to the city. These were curved and flat-ironed at the side, with a steel rim at the top so you didn't break

your head if you fell off your horse while fox hunting."

"The Avengers" premiered on English television in 1961 and ran for nine years. The show received its highest honor in 1964, when Macnee and his female co-star Honor Blackman received the Variety Club of Great Britain TV personalities of the year awards — equivalent to the American Emmy Awards.

It's worth mentioning that a young singing group called The Beatles was presented with Variety Club awards in '64. That's the same year the lads from Liverpool took U.S. radio stations by storm with No. 1, million-selling hits like

See MACNEE, page 52 ▶



Patrick Macnee with 'Avengers' co-star Honor Blackman

WE'LL PUT YOU UP IN THE AIR WITHOUT LEAVING YOU ON SHAKY GROUND.

NPR Satellite Services provides radio broadcasters with rock solid solutions. Affordable space segment, C- and Ku-band audio receiver options under \$1,600, and unsurpassed maintenance support—the essential components to long-term program distribution. We can start from scratch, or use your pre-existing C- or Ku-band gear. Visit us at www.nprss.org to learn more.

NPR SATELLITE SERVICES
LINK UP WITH US

Radio's Longest-Running Broadcaster

Robert Rusk

When Clint Formby greeted his loyal listeners with a friendly, "Hello, there," on May 15, he chalked up his 14,000th consecutive broadcast — which by his account makes his program the "Day-by-Day Philosopher" the longest-running radio program by one person in the U.S.

The program debuted on Oct. 11, 1955. Originally it ran 15 minutes and was an outlet for Formby's love of poetry, philosophy and "the good life." After 10 years, when Formby was beginning to find it difficult to fill 15 minutes, the program switched to its current 5-minute format.

Birds to business

At that time, Formby added editorial comments on local and national issues to his content. In the format that he follows today, he talks about topics "from bird sightings to big business."

One day he filled his time talking about zucchini, which generated a surprising response from listeners.

"I took off on zucchini and noted that the only reason people in Hereford lock their cars is to keep other people from putting zucchini in them," he said.

"Well, that set it off. All of a sudden I found zucchini in my car, on my desk and even some at my doorstep — people were just kidding me about zucchini."

He doesn't limit his talk to vegetables,

though. For instance, Formby said he has been "totally" in favor of prayer before high school football games — which he described as a hot topic in Texas.

He is proud that the show has never aired without a sponsor. His current sponsor, who has been with him for about 12 years, is the local office of Edward Jones, a financial services firm.

owned and operated by Formby, 76, and his son, Chip.

Even more impressive, the elder Formby's first job was at KPAN(AM) in 1948 — when he was still in college.

"I came here and worked just briefly when I was a junior at Texas Tech University and helped put the station on the air," said Formby.



Clint Formby



Clint Formby in the studio

The "Day-by-Day Philosopher" airs at 7:45 a.m. Monday through Saturday on KPAN-AM-FM, in the cattle-ranching town of Hereford, Texas, population 17,000, located about 30 miles southwest of Amarillo. The stations are

"I was everything from janitor to announcer, and also did painting and whatever else needed to be done. In fact, I was the first voice on the station the morning it went on the air. The night before, I had finished painting the restroom."

He studied for his B.A. in journalism and speech, then returned to the station because his uncle Marshall Formby was the manager.

Radio wasn't an automatic career choice for Formby, who seriously considered becoming a print journalist.

"I was offered \$45 to work for a newspaper and \$47.50 at KPAN. So between liking radio and the \$2.50 a week more, it helped me get my direction and destiny," said Formby, who, along the way, purchased stations in the Texas towns of Hunstville and Temple.

Formby was raised in McAdoo, Texas, where his father was a postal carrier. He proudly calls himself a small-town boy from West Texas. Growing up, Formby enjoyed listening

to news and commentators on radio — the genesis for his "Day-by-Day Philosopher."

As influences, he mentions Gabriel Heatter, a Mutual Network news announcer/commentator in the 1930s and '40s, but, "I couldn't say that one person influenced me more than another."

Yet mention one particular homespun philosopher, and Formby's eyes light up.

"In years past, I certainly used some of his material, because I believe Will Rogers related to people more than anyone in his time. He made such an impact on the nation."

Formby said. "I've always wished that I could have the wisdom and humor that he had."

Tape stash

These days, Formby — who records "Day-by-Day Philosopher" the afternoon before it airs and has prepared a "stash of tapes" for contingencies like being out of town or illness — gleans much of his material from leading magazines and newspapers such as Time, Newsweek and The Dallas Morning News. He said he "steals" ideas while reading on planes, and receives suggested topics from listeners via e-mails and faxes.

When asked how he knows the "Day-by-Day Philosopher" is the longest-running program by one person in the United States, Formby said, "We have flung that net out there and no one has challenged us. We've written state associations, the NAB, and we have haven't heard of anyone who's been on longer."

On the occasion of Formby's 14,000th
See FORMBY, page 49 ▶

HARD DISK - DIGITAL AUDIO AUTOMATION

THE PHANTOM



-Rock Solid • Easy-To-Use • Radio-Friendly-

Be Sure to Visit Our Reps:

Bernie O'Brien, Chatham Virginia
Call 800-874-7267

Broadcast Connection, Bellvue Colorado
John Shideler & Rhett Downing
Call 970-482-9254

RF Specialties of Florida - Bill Hoisington
Call 800-476-8943

Or call RDS Direct
at 1-800-521-5222

Look for "The Millennium"
Our New Windows Based
Traffic and Billing System

The Phantom Control Room... Your Station's Busiest, Most Efficiently Run Operation.

rds
Register Data Systems

STATION/STUDIO SERVICES

BALSYS

TECHNOLOGY GROUP, INC.

PROFESSIONAL BROADCAST
ENGINEERING SERVICES

Analysis - Installation - Support

7141 Tallowtree Lane
Orlando, FL 32835
Tel: 407-822-7055
Fax: 407-296-2587
www.balsys.com
sales@balsys.com

**SPACE
AVAILABLE
CALL NOW!**

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.**

Feeling locked in by your present hard disk delivery system?

MediaTouch is the key to freedom.

We set you free with standard "off the shelf" computer hardware, and we use industry-standard file formats like MP3, MPEG-II, and PCM.

MediaTouch's original Card Independence Technology gives you the freedom to choose any Windows compatible audio card for any workstation. This allows computers all over the radio station to share audio and work together without breaking the bank. Imagine your sales department auditioning commercials, and your program director inputting music from their desktops on any sound card.

MediaTouch's MAIN Solution lets you choose the Music, Automation, Internet, and News components your radio station needs. As your needs change, simply plug in the solution that fits.

Free yourself and move up to new Windows technology from MediaTouch.



Broadcasters General Store
800 636 0123



MediaTouch

888 665 0501 World Radio History www.mediatouch.net

You know this audience.



But do you know *this* audience?



MeasureCast Streaming Audience Measurement Service™

now you know

Call us today at **877-840-6800**, or visit us online at **www.measurecast.com**

Special Introductory Rates • For New Subscribers Only 1 Year for **\$45.00** (usually \$59.00) 2 Years for **\$79.00** 3 Years for **\$99.00**

Method of Payment: Check or money order payable to IMAS Publishing
 Visa M/C Am Ex

Card # _____ Exp _____

Signature _____ Date _____

Please Print:

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

E-Mail _____

Phone () _____ Fax () _____

**GM Journal
Studio Sessions
Workbench
Internet Radio News
Buyers Guide
Regulatory News &
more Digital Radio coverage
than anywhere else**

**Plus FREE
daily e-mail
updates on
breaking news
stories**

Your subscription begins upon receipt of payment. For faster service, fax this card and credit card info to:
(703) 820-3310

**FOR FASTER SERVICE FAX TO:
703-820-3310**

Visit us online! www.rwonline.com



**PLACE
STAMP
HERE**

Radio World

PO BOX 1214

FALLS CHURCH VA 22041-0214



Formby

▶ Continued from page 46

broadcast, he was presented a certificate of achievement from the Texas State Senate, which extended "most sincere congratulations."

When KPAN(AM) reached its 50th anniversary in 1998, Formby and the staff received a letter from Texas Governor George W. Bush.

"For half a century, KPAN has entertained the people of West Texas with country and Tejano music," the letter states. "You also have remained committed to providing live coverage of sporting events, political speeches and church services. I commend the Formby family and everyone at (the) radio station for reaching this milestone and for providing the free flow of information so vital to people in a democratic society."

Involvement

Formby has long been involved with both the Texas Association of Broadcasters, where he served as president in 1969, and the NAB, which named him an American Broadcast Pioneer in 1996.

Ann Arnold, executive director of the Texas Association of Broadcasters, said, "Few small-market owners have had the kind of impact on their local community and the nation's broadcast industry as Clint Formby."

"Clint has worked tirelessly on the boards of TAB, NAB, the Associated Press and BMI.

"Over the past four decades, it's



not been unusual to find Clint boarding a plane for some part of the U.S., or even the world, to take care of a broadcast industry issue. He truly is a small-town broadcaster with national connections."

Arnold said, "Because of his work at home on behalf of all Texas broadcasters, TAB has cited him with its two most prestigious awards: TAB's Broadcaster of the Year in 1994 and Pioneer Broadcaster of the Year in 1979."

On any plans to retire from boards or from his program, Formby said, "I'm sure the time will come. But for now, I plan to continue."

To hear Formby and the "Day-by-Day Philosopher," log onto the Web site www.kpanradio.com

2000 Marconi Awards a Smash

Find out why Marconi Radio Awards host Dick Purtan stood on the stage in San Francisco and denied that he was wearing lipstick. And who won what at the Marconi Dinner at the close of The NAB Radio Show.

Visit [Radio World's Web site at www.rwonline.com/dailynews/314.html](http://www.rwonline.com/dailynews/314.html)

STATION SERVICES

Mick Fleetwood Hosts New Feature

Westwood One has launched "Mick Fleetwood's Classics," a weekday live track featuring big names in classic rock.

The former drummer and co-founder of Fleetwood Mac will host the 6-to-10 minute segments that feature the Rolling Stones, The Beatles, The Doors, The Who, Queen, Jethro Tull and other favorites.

The segments are available daily from 6 a.m. to midnight.

For more information contact Chris Green of Affiliate Relations at (310) 840-4000 in Los Angeles.



From left: Fleetwood's Manager Carl Stubner; Westwood One Account Executive Stephanie Saxton; Mick Fleetwood; WW1 Vice President/General Manager Thom Ferro; WW1 Senior Director of Affiliate Sales Chris Greene and WW1 Director of Artist Relations, Brad Hirsch

Introducing AXS3: Scott Studios' Affordable New Digital System

AXS (pronounced ax'-cess) 3 is the *third generation* of the most popular digital automation for radio! AXS is in its *second decade* as the *premier* satellite system and digital cart replacement.

AXS 3 is also radio's first *affordable* music on hard drive system with *triple overlap* to *three separate console faders*. Your live jocks get the ultimate in level control and mixing ability. For unattended operation, AXS 3's voice trax auto-fades music under voices smoothly, bypassing the console.

Air Studio Production Bonus: AXS 3 also gives you *another* stereo production output and record input. You can record and edit phone calls or spots and auto-delay news and audition them in a cue speaker while playing triple overlap on the air!

Premium Hard Drives: The 3 also tells you that AXS 3 gives you a *3 year limited warranty* on hard drives. AXS 3 uses *exceptionally reliable* and *fast* 10,000 RPM 18GB (or 20GB) *hard drives* from top quality suppliers (like IBM, Seagate, Western Digital and others you trust) to keep your precious commercials, jingles and other recordings *always* at your fingertips. Other systems cut corners with slower and less reliable drives that sometimes choke and sputter with triple overlap and music from hard drive. AXS 3 won't jeopardize your cash flow with unreliable drives that might crash.

Awesome Sound Quality: AXS 3 uses only the best *non-proprietary* +4 balanced digital audio cards by Audio Science. These are also sold by most of the major brands of digital systems, but only in their top-of-the-line models costing *lots more* than AXS 3. Scott Studios uses premium audio cards in all our systems, although AXS 3 software will work with any good Windows sound card. Of course, if any card develops a problem, we'll replace it under warranty. You'll also be able to get these non-proprietary audio cards from us, the manufacturer, and several other vendors of high end digital audio systems.

Easy to Use: AXS 3 was *designed by jocks*, for jocks. It's 100% intuitive. AXS 3's big on-screen intro timer and separate countdown timers on every deck make pacing a snap.

If you know how to work cart decks, you know how to work AXS 3. It's so simple, everyone can run it! AXS 3 has *big* buttons. Other systems use complex multi-step mouse mazes. AXS 3 gets things done with one simple touch.

MP3 Import: AXS 3 plays MP3's, MPEG II and uncompressed (linear) recordings.

The Music's Easy: AXS 3 is delivered with *your* music library already pre-dubbed for you at no extra charge. AXS 3 also comes with Scott's time-saving TLC (Trim, Label & Convert) CD Ripper software. It runs in your Program Director's computer and uses a CD ROM drive to digitally transfer 5 minute songs to hard drive in 15-30 seconds.

The Best Voice Tracking: AXS 3 works with Scott's optional Voice Trax. Announcers hear surrounding music and spots in their headphones in order to match their voice to the moods and tempos of the music.

The Best Air Studio Recording: AXS 3's built-in recorder has a graphic waveform editor for ease of recording and editing phone calls, spots, news or announcer lines. AXS 3's log editor lets you add new items to your schedule.

Quality Hardware: You get an industrial Pentium III rack mount Windows computer and a 1RU (1-3/4") tall case is available when space is tight. Jocks can use a keyboard or mouse, or optional button box or touch screen for fast control.



Jocks love AXS 3, (shown with Scott Studios' 1RU rack mount case and optional flat panel touchscreen). AXS 3 works with three cart players on the right side of the AXS 3 screen. The program log (at left) automatically loads the decks, or you can insert anything from pick lists. The far left of AXS 3 has 12 Hot Keys that can play any time at a touch of a Function key.

The Best Tech Support: Toll-free emergency phone support is available 24 hours a day, 7 days a week (including holidays). Software updates with new features are available for AXS 3 customers several times per year to stations on our annual support plan.

Easiest to Install: AXS 3 comes with a pre-wired connections to CAT5 LAN cables for snap-in installation on the AXS3 end of the wiring. Satellite control logic is also a plug-in snap. Your first two satellite audio connections for music format and news network, as well as another for your production console, are built into AXS 3 so interface cards or external switchers are not required.

LAN and WAN: AXS 3 and other MPEG and uncompressed WAVE Scott Systems use the same recordings. You don't have to dub the same spot several times for several stations.

The Best Production Studios: AXS 3 is compatible with popular multi-track systems you may already have, like Sound Forge, Vegas, Cool Edit Pro, Fast Edit and others. Simply add our time-saving \$500 no-dub instant LAN spot upload option.

AXS 3 is Affordable: Satellite AXS 2 systems start at \$7,995 including built-in GPI and switcher. Triple overlap AXS 3 includes AXS 2 and adds 18GB of music on hard drive for only \$9,995 delivered. For details, check scottstudios.com or [call 800SCOTT-77](tel:800SCOTT77).

Scott Studios
13375 Stemmons Freeway, Suite 400
Dallas, Texas 75234 USA

(972) 620-2211 FAX: (972) 620-8811
800 726 8877
(800) SCOTT-77

Cole's Law

► Continued from page 36
were triggered by or otherwise connected to Gen. Powell's speech. Still, the one-two punch of the speech and the two fines should send a cautionary message to the broadcast industry.

The fined

The two fines involved separate incidents at a single station, KSJO(FM) in San Jose, Calif. In one case, the station's morning team presented a "nationally recognized sex therapist and certified clinical sexologist" that discussed "in clinical terms, the proper technique for performing fellatio."

In the second case, during the mid-day shift the station broadcast a "joke," with a punch line that indicated that a father was going to have sex with his "little girl" daughter.

While the licensee argued that the joke relied on "innuendo, the sexual import of which is not inescapable," the FCC disagreed, finding the punch line to "an inescapable reference to incest and sex with children."

At \$7,000 per incident, the station is looking at a \$14,000 price tag for a very limited amount of programming.

All of this prods us here at Team Cole's Law to dust off the books and remind everyone about what the FCC's

approach to "indecent" is.

A common myth is that the FCC has banned the broadcast of seven particular words. That is not true. That myth has its roots in the fact that the, *er*, seminal case in the indecency area involved the broadcast of a George Carlin monologue which focused on seven words which, according to Carlin, you really couldn't say on the air.

The most effective way to challenge an FCC indecency finding is to not pay the fine and force the government to bring an action against the licensee locally.

The FCC slapped the licensee's hand and the licensee (Pacifica Foundation) took the FCC to court. Pacifica won the first round before the U.S. Court of Appeals here in Washington, but then the Supreme Court reversed, holding in favor of the FCC's action by a 5-4 vote.

(Personal aside — Team Cole's Law participated in the briefing at the Supremes on behalf of Pacifica. While we remain morose and despondent that Pacifica lost, acquaintances have consoled us with the observation that it's

probably not everybody who could convince four members of the Supreme Court that it's constitutional to say "c—sucker" on the radio.)

In fact, the FCC prohibits the broadcast of "indecent" matter between 6 a.m. and 10 p.m. "Indecent" matter is defined as "language or material that, in context, depicts or describes, in terms patently

what "contemporary community standards for the broadcast medium" are.

If the FCC decides that Prince's "Erotic City" doesn't meet those standards, then it's indecent even though a large number of people may view that particular song to be perfectly acceptable art/entertainment.

Ditto for, say, Howard Stern, whose popularity among listeners is clearly established through ratings, but whose content has been held by the commission to be indecent in a number of cases.

Of course, if a licensee hit with an indecency fine wants to challenge the FCC's determination of what is or is not indecent, the licensee is free to do so. The most effective way of doing so would be to not pay the fine and force the government to bring an action against the licensee locally. The station would then have the opportunity to present its case to a local jury, which may or may not agree with the FCC.

Black marks

The problem here, though, is that such an "in-your-face" approach is not one that many broadcasters are inclined to take before the FCC. After all, the FCC has the ultimate power to yank your license, so it's understandable that a broadcaster would fear, rightly or wrongly, the risk of incurring some black marks somewhere on its permanent record deep within the commission.

And even if one or another licensee does not have such fear, there is the expense to consider: Litigating this kind of issue is not cheap.

So if the alternatives are either to (1) undertake risky litigation which alone could cost well into five or six figures, knowing that if you lose you will have to pay the fine anyway, and if you win, you may nevertheless have incurred bad feelings at the FCC, or (2) pay the stinking \$7,000 fine and get on with life, Choice Number 2 looks pretty good.

The bottom line, then, is that as bad and fuzzy and un-illuminating as the FCC's "indecent" standard is, it is not likely to go away soon. To avoid trouble your best bet is to use common sense and steer clear of programming relating to "sexual or excretory activities or organs."

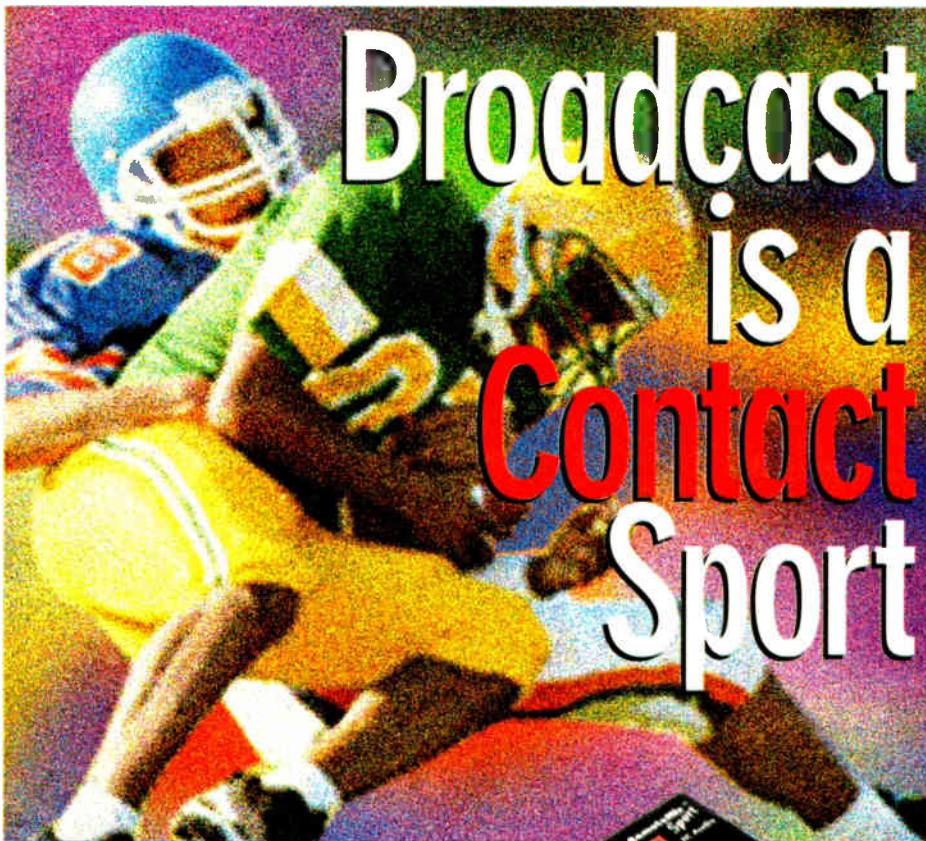
Which gets us back to Gen. Powell's remarks. The thrust of those remarks seemed to be that radio broadcasters have at least some ability to influence standards of acceptable language and discourse. If impressionable listeners hear "rough, crude, dirty and filthy" material on the air, he indicated, they might conclude that such material is acceptable in everyday communication.

There is, of course, a chicken-and-egg aspect to this subject: Is the level of public civility declining because of radio (among other similar influences), or is radio simply reflecting that decline without actually affecting it?

And what, if any, broader cultural or social responsibilities do broadcasters have in this connection? Such philosophical questions extend well beyond the much narrower area of FCC regulatory limits. Still, Gen. Powell's remarks have raised those questions, and the radio industry might do well to give them some serious thought.

■ ■ ■

Harry Cole is a principal in the Washington-based law firm of Bechtel & Cole, Chartered. Reach him at (202) 833-4190 or send e-mail to hfcole@coleslaw.com



Combining the great features of our original RemoteMix 3, with a third mic input, a third headphone output, and a host of other new goodies, our new RemoteMix Sport Hybrid Mixer is your best choice for professional sports broadcasting. Its compact design and combination phone line/universal handset connection provide unparalleled freedom and ease of use. Simply plug it into any analog line or a digital PBX or ISDN phone and begin the play-by-play.



the NEW RemoteMix Sport

make contact with the RemoteMix Sport

JK Audio
REMOTE BROADCAST GEAR

Toll Free (USA & Canada): 800-552-8346
Tel: 815-786-2929 • Fax: 815-786-8502 • www.jkaudio.com

What is to become of those who wait to go digital?



Going digital
means
going Prophet.

Now, targeted ad insertion and Internet streaming from a name you've trusted for over a decade . . . Prophet Systems Innovations. Create new revenue opportunities for your clients with targeted Internet only ads. Introducing—

StreamCast
Internet Radio

NexGen DIGITAL Broadcast

StreamCast
Internet Radio

Crystal
BALL

CD/Extractor
Pro

VoiceTRAC

AudioFormat
Converter

WANcasting
Wide Area Network

Audio Format Converter™ – Quickly and easily convert audio files for NexGen Digital™ Broadcast. Compress audio files from PCM to MPEG 1, layer 2. Configurable compression level, normalization, silence trimming, and system settings.

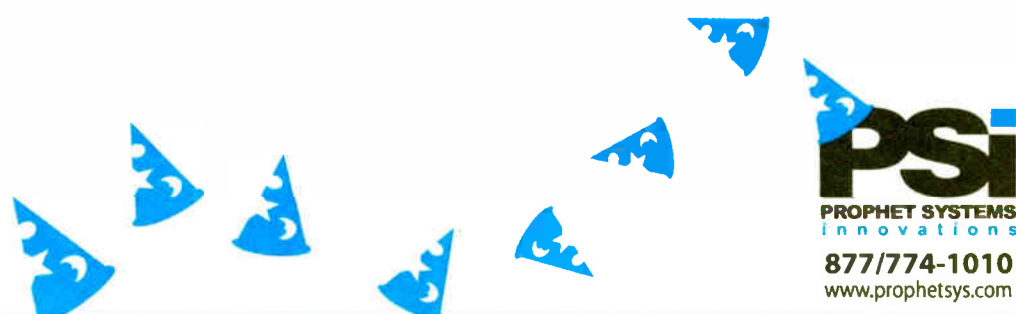
Crystal Ball™ – Archiving audio just got easier. Crystal Ball archives audio from as many as four stations to one computer, using Digital Audio Tapes (DAT).

Integrated Editors – Enhanced interfaces allow you to integrate SAW Pro, Cool Edit and Orban editors, automatically converting the data for use in NexGen Digital™ Broadcast.

CD/Extractor™ – Build music libraries easily. Multiple CD-ROM drive support, improved extraction speed, enhanced CDDB Internet access, comprehensive track editor and expanded configuration options.

VoiceTRAC™ – Record a four hour shift in under an hour that sounds live and local!

WANcasting™ – Transfer data across systems and stations via NexGen Digital™ Broadcast.



PSI
PROPHET SYSTEMS
Innovations
877/774-1010
www.prophetsys.com

Broadband Users Like Net Radio

Radio has beaten every challenge technology has thrown at it — so far. But now a new challenge looms: high-speed Internet access or broadband.

As many as 6 million American households are expected to have broadband access to the Internet by year's end. Will radio finally take a 10-count?

On par

According to a study by the Arbitron Company and Coleman Research, broadband in American homes has catapulted the Internet to a position on par with television and radio in terms of time spent with media.

The study, released at The NAB Radio

Show, reports that in broadband homes, the Internet's share of media time is 21 percent, roughly equivalent to television

cent of his or her typical day with television, followed by radio (28 percent) and the Internet (11 percent).

Americans say their use of Internet-only audio does not reflect dissatisfaction with traditional terrestrial radio.

(24 percent) and radio (21 percent).

The average American (in "dial-up" access homes and offices) spends 33 per-

"Broadband changes everything," said Warren Kurtzman, vice president at Coleman. "This study provides clear evi-

dence that we've only begun to see the Internet's true impact on media usage."

The study reports that broadband households are twice as likely to try downloading and streaming content from the Internet and up to four times more likely to do so regularly.

For example, 49 percent of American broadband homes have sampled streaming audio, as compared to those in the general population. Sixteen percent of broadband users report listening to streaming audio in the past week, while just 4 percent of average households report doing so.

Americans say their use of Internet-only audio does not reflect dissatisfaction with traditional terrestrial radio. And broadband households report that their satisfaction with traditional radio remains high, according to the study.

The report is available on the Web at www.Arbitron.com or at www.ColemanResearch.com

— Laura Dely

Get The Scoop Anywhere, Anytime

Ifield reporting the way it's supposed to work. Introducing the all new Scoop Reporter II portable CODEC from AETA Audio. This rugged unit combines POTS and ISDN facilities with an integrated three-channel mixer and internal battery supply. Featuring 99 user programmable presets, the Scoop Reporter II will handle two microphones and one line level input. A balanced XLR output can be used for studio producer IFB and Mix-Minus feeds from studio, or to feed the local PA. The Scoop Reporter II will operate on voltages from 85 to 240 volts at 47 to 440Hz. When AC is not available or fails, the unit will run on standard "D" cell alkaline batteries. The intuitive interface is so easy to use, your talent will be able to run a remote broadcast with no technical assistance. And with our 24-hour technical support, you'll never miss another field report. The Scoop Reporter is the all-in-one box that will get the scoop anywhere, anytime.

**D-CELL
BACKUP**

**ISDN
&
POTS**

**3
YEAR
WARRANTY**

- All-in-one-box with "D" cell backup
- Supports G.711, G.722, ISO/MPEG Layer II, ADPCM and J.52
- ISDN or POTS
- Three-channel mixer
- PC programmable
- Send and receive 20kHz audio at 128kbs with ISDN
- Send and receive 7.5kHz audio with POTS

Available through most broadcast equipment suppliers



**AETA
AUDIO**
Linking Innovation With Clarity

AETA AUDIO CORPORATION

75 Fleetwood Dr. Suite 200 · Rockaway, New Jersey 07866
Phone: (973) 659-0655 · Fax: (973) 659-9555

www.aetausa.com

Macnee

► Continued from page 45

"I Want to Hold Your Hand" and "A Hard Day's Night."

As for Patrick Macnee, today he is enjoying the fruits of his labor — living life comfortably with his wife Baba and taking on work that appeals to him.



Patrick Macnee today

One of his greatest pleasures these days is recording books on tapes. Recent recordings include the Bible, 11 novels by Jack Higgins, and Peter Mayle's "Toujours Provence."

Now some 50 years since he first stepped before a microphone in Canada, Macnee is thankful for his exposure on radio.

It turned out that his producer at CBC in Toronto had moved on to become a television executive in London, remembered Macnee, and personally hired him to star in "The Avengers."

"I must have done something right when I was in radio," Macnee said with a chuckle.

■ ■ ■

Robert Rusk is an entertainment industry reporter and a frequent contributor to RW.

Reach him via e-mail at Robert@CallingHollywood.com

THE REVOLUTION

Radio



365

HOW TO BE A MAJOR MARKET SUCCESS

New York, Los Angeles, Paris and London are the most competitive radio markets in the world. You don't make it to the top in these cities without chops, talent and know-how. Being late to the best ideas and the cutting edge gear is not an option. That's why the world's leading broadcasters have made Omnia the number one audio processor.

And now, we've taken the audience-grabbing Omnia sound to the next level.

Introducing Omnia-6. With more raw DSP horsepower. A unique plug-in software architecture for unlimited flexibility. An intelligent, full-color, twin-screen user interface. And, of course, the Omnia signature sound that's clearly above and beyond anything else on the dial. Nothing compares. Nothing competes.

With Omnia, you lead. And others follow.

For the name of your Omnia dealer, contact us at +1 216.241.3343 or visit www.omniaaudio.com.

Omnia
A Ince Company

CUTTING EDGE

2101 SUPERIOR AVENUE CLEVELAND, OH 44114
TEL: +1 216 241 3343 FAX: +1 216 241 4103
E-mail: info@omniaaudio.com

CUTTING EDGE EUROPE

JOHANNISSTRASSE 6 D 85354 FREISING GERMANY
TEL: +49 81 61 42 467 FAX: +49 81 61 42 402
E-mail: info@omniaaudio.com

Studio Sessions

A new Short/cut



See Page 56

Radio World

Resource for Radio On-Air, Production and Recording

October 25, 2000

PRODUCER PROFILE

Folksy Style Suits Memphis Duo

Ken R.

At Barnstable Broadcasting's Memphis Radio Group, the shortest distance between two points is a straight spot.

"A lot of clients want you to cram their name into the copy about 20 times, along with an address and phone number and then they ask you to be creative with it,"

Augustus said the stations are in the same building but the company is planning to move to a bigger facility next year.

"Depending on the day, we may need to write, produce, tag or dub as many as 40 spots between us," Augustus said. "Rob and I both read spots and we can call on our other announcers to help out with voice tracks and production."

people, but I don't like those clichés," said Austin. "Terms like 'for your shopping convenience,' 'for all your automotive needs,' 'your car headquarters,' and others usually are dumped."

The three-station facility is almost completely computerized. There are two identical production rooms and several other smaller workspaces for voice tracking. An IQS SAW32 is used for production and a Scott Systems server manages the music, commercials and jingles.

Two Electro-Voice RE27ND mics reside in each main production room, and the facility has twin Yamaha MC2404II 24-channel mixers.

"We produce most of our spots without EQ or effects and handle all that later in the SAW," said Augustus. "We don't do a lot of compression anyway as we're aiming for a more adult sound."

The station boasts an Eventide Harmonizer DSP4000B and a Yamaha SPX1000 for those occasional special effects along with a Valley Model 433 Dynamite3 processor.

Borrowing from the best

"If we're trying to achieve something unusual, we may tinker with the EQ on the board," said Austin. "The production level in Memphis is very high, so we both listen to other cities and borrow from the best in the business."

For production music the stations rely on their customized FirstCom Music library, which they are able to select on a disk-by-disk basis.

Austin said that the initial contract has a library of about 40 CDs, and periodically they review other discs.

"We turn the library over every six months or so," said Austin.

Because the cluster has three different formats, the two production directors

See WGKX, page 60 ▶



Rob Austin in the studio

said Earle Augustus, one of two production directors at the facilities. "We prefer to imagine that in our commercials we are just talking to a friend."

This down-to-earth approach seems to work well. The three stations Augustus and his partner Rob Austin oversee appeal to adults over the age of 25.

The stations in the group include WGKX(FM), which airs a country format; WRBO(FM), which plays R&B oldies; and WSRF-FM, known as Star 98, which broadcasts classic hits.

In an unusual departure from the industry standard, a successful spec spot earns these two production directors a bonus.

"Barnstable is a good company ... not too big and not too small," said Augustus. "They are very people-friendly."

Augustus and Austin are free to focus almost entirely on commercial production. Station imaging is voiced by Hollywood Hendrix and other free-lance talent, then assembled with music and effects by others within the station.

"I want our spots to sound like real

PRODUCT EVALUATION

Take Aim With an EV Shotgun

Radio World Takes a Shotgun Microphone to A Machine Gun Event

Carl Lindemann

The Electro-Voice ENG 618 is a relief to anyone who has felt the strain of holding onto a traditional shotgun/boom pole mic over an extended period of time.



The testing grounds for the shotgun (mic) and machine guns

The use of carbon graphite materials creates a strong, feather-light boom pole that is manageable without requiring a regular workout at the gym.

See EV SHOTGUN, page 59 ▶

Symetrix



Plug it in.

Set it up.

You've got **better** things to do with your time than worry about your station's audio... change light bulbs, fix the PD's radar detector, figure out where all the new batteries went.

The New 506E HEADPHONE AMP has everything you need to make your monitoring setup a snap.

Go change the oil in the station van.

The 506E features an internal power supply (no wall wart or line lump), LCR assignable cue input for IFB or producer talkback, and the Symetrix name.

Call your favorite broadcast equipment dealer to get yours today.

Then you can think about the **more important** things.

- ▶ Internal power supply
- ▶ 6 Direct ins and 6 Direct outs
- ▶ Assignable LCR mono cue input
- ▶ Proprietary high voltage drive technology
- ▶ Crystal clear, low distortion for reduced listening fatigue
- ▶ Optional 4-way mounting HR-1 Remote with audio loop thru for daisy chaining

PRODUCT EVALUATION

360 Systems Short/er in 2000

W.C. Alexander

Many radio station studios have a 360 Systems Short/cut.

This versatile piece of gear, introduced just a few years ago, has found its way into the rooms of many producers and on-air talent.

360 Systems recently released a new version of its stand-alone digital editor. Following the popular millennial trend, the company called it the "Short/cut 2000" and sent **RW** a unit to evaluate.

Where I work at the Crawford Broadcasting Co., we have scores of the older Short/cut. It is one product with which I am intimately familiar. So, the improvements the manufacturer made in the new version should be readily apparent.

For those not familiar with the Short/cut, it is a two-track self-contained digital editor. It can be used as a stereo audio recorder, much like a reel-to-reel machine, and a high-speed digital editor, complete with scrub wheel and backlit LCD waveform display.

The heart of the unit is a SCSI hard drive that stores up to four hours of stereo audio.

Features

The unit features switchable line/mic balanced inputs, line-level balanced outputs, AES/EBU digital I/O, IEC-958/II/AES3-ID digital I/O, headphone jack and built-in speakers.

This provides enough versatility that the unit can be connected in any digital or analog studio or used by itself on a desk. This was proven at our own facilities.

Studio congestion at some of our operations resulted in producers recording their unedited cuts onto the unit and then taking it to their offices to complete their editing.

Audio is recorded into the unit in the same manner as any other recorder, by pressing the Record key. At the end of the recording, Stop is pressed. The recorded file can then be saved raw or edited.

The sample rate is menu-selectable at 44.1 or 48 kHz. Recording features include threshold start, whereby the unit

starts recording when input audio first rises above a preset threshold, record pause and insert recording.

Large front-panel buttons access editing features, such as cut, copy and insert. A scrub wheel is used to navigate through the recorded material while observing the LCD waveform display.

Virtual clipboard

Several types of edit marks can be inserted. Cut/copied material is sent to a virtual clipboard where it is temporarily stored for later insertion.

Anyone familiar with grease pencil and razorblade editing will be at ease with Short/cut's editing features. Likewise, anyone who has ever used the select/cut/insert features of a word



Can you guess whether he's using the old or new version?

processor will also feel right at home. The learning curve is very short.

The high-resolution bitmapped LCD display can zoom in and out, displaying single or dual waveforms with magnifications of two, five, 10 or 20 seconds. With the display set to two seconds, highly precise edits are easy to make.

One of the most popular uses for the Short/cut is for recording and editing of phone calls. Calls can be recorded, edited and played back in a hurry.

A "bleep" button is provided to bleep out inappropriate language. In the Edit mode, simply set the edit in and edit out marks around the offensive material and press the bleep key.

In a matter of seconds, the bad words are bleeped out. Such bleep editing is non-destructive, and the original material remains on the disk.

At my job, we connect the Short/cut's GPI or remote connector to the Telos or Gentner on-air phone system. With a button push on the phone system's switch console, the line is seized and the Short/cut starts recording. This makes for fast and easy recording.

Front-panel assignable Hot Keys provide a link to any cut on Short/cut's hard drive. These can be used like a cart machine for spots, liners, promos or sound effects instantly ready at the press of a single button. Edited phone calls or any files can also be assigned to Hot Keys.

Connections

The Short/cut editor can be connected to other 360 Systems devices through the XLR audio connections; or on BNC digital connections via D-NET, the product-specific networking foundation of all 360 Systems products. Compatible products include DigiCart/II and Instant Replay units.

Where I work, Short/cuts in production rooms are networked to control room Instant Replays and other Short/cuts throughout the studio. With this network in place, a producer can record and edit a cut anywhere and send it to another device in any studio — a very handy and timesaving feature.

The Short/cut has a front-panel alphanumeric keyboard to name files and



directories. Search functions are provided, so anyone familiar with computer directory structures will not have any trouble saving, loading and finding files on the system.

Menus are accessed using the front-panel pushbuttons, the scrub wheel and the alphanumeric keyboard. Complete control of system parameters is available through the menu system.

Now that I have covered what the older version of Short/cut can do, what has been improved on the Short/cut 2000 is speed.

While the Short/cut and Short/cut 2000 look identical, the 2000 model has some improvements in terms of horsepower under the hood.

In the evaluation trial, I set up both a Short/cut and a Short/cut 2000 and performed the same edit. The old Short/cut took five seconds to perform the edit, while the Short/cut 2000 took less than a second.

This may not seem that important, but when making multiple edits on a recorded phone call while the four-minute song is nearing the end, it makes all the difference in the world.

Several new editing features have been added. These include fade-in and fade-out, relative fades in either direction, gain adjustment and crossfade edits.

Control of the audio levels on the fly while editing brings a whole new dimension to the production process. Older units could not do this.

I did run into one problem with trying to undo a crossfade. It may have been a misunderstanding with the product, and the company helped clarify the problem.

See SHORT/CUT, page 63 ▶

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.



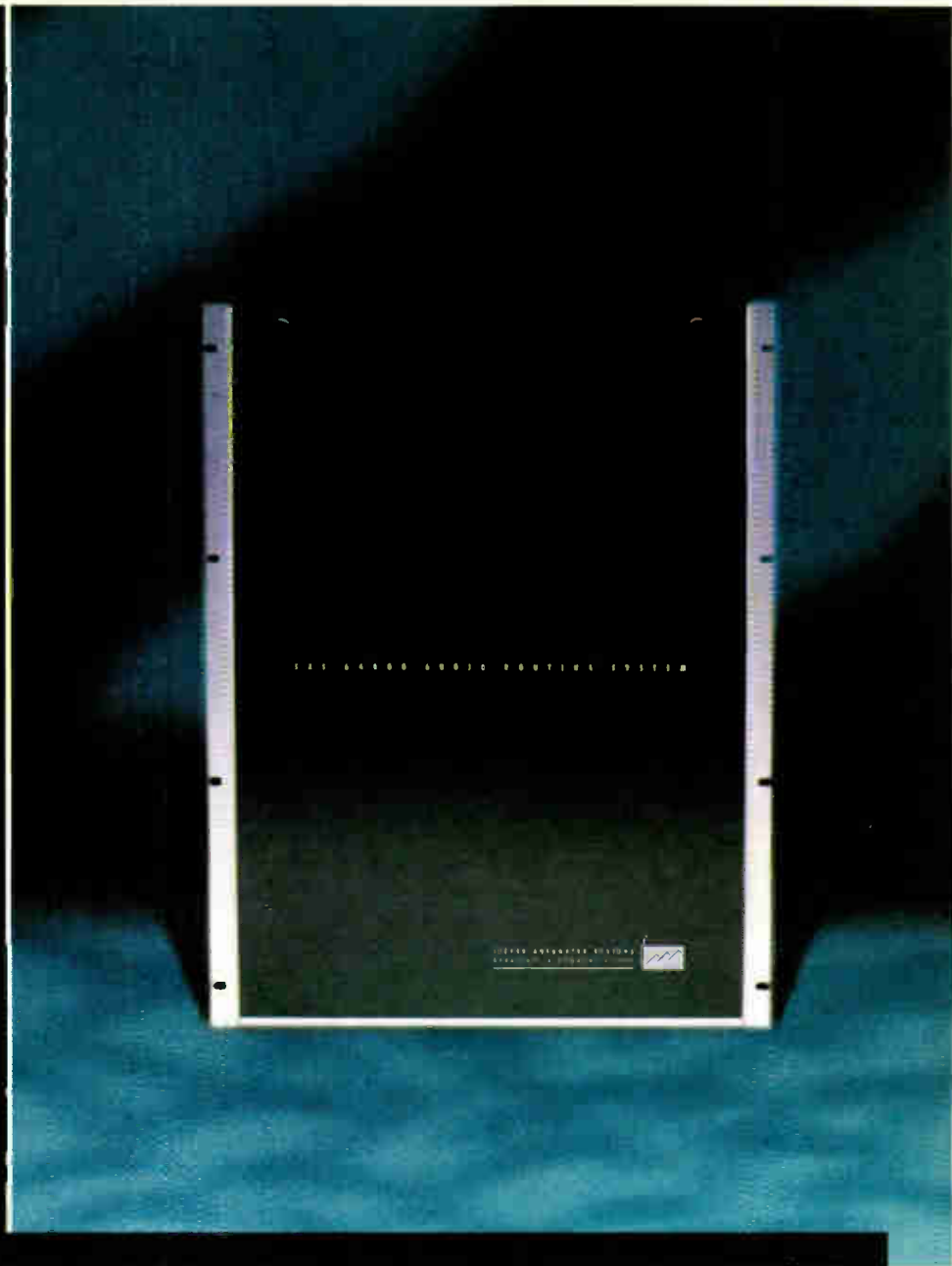
ALTRONIC RESEARCH INC.

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>

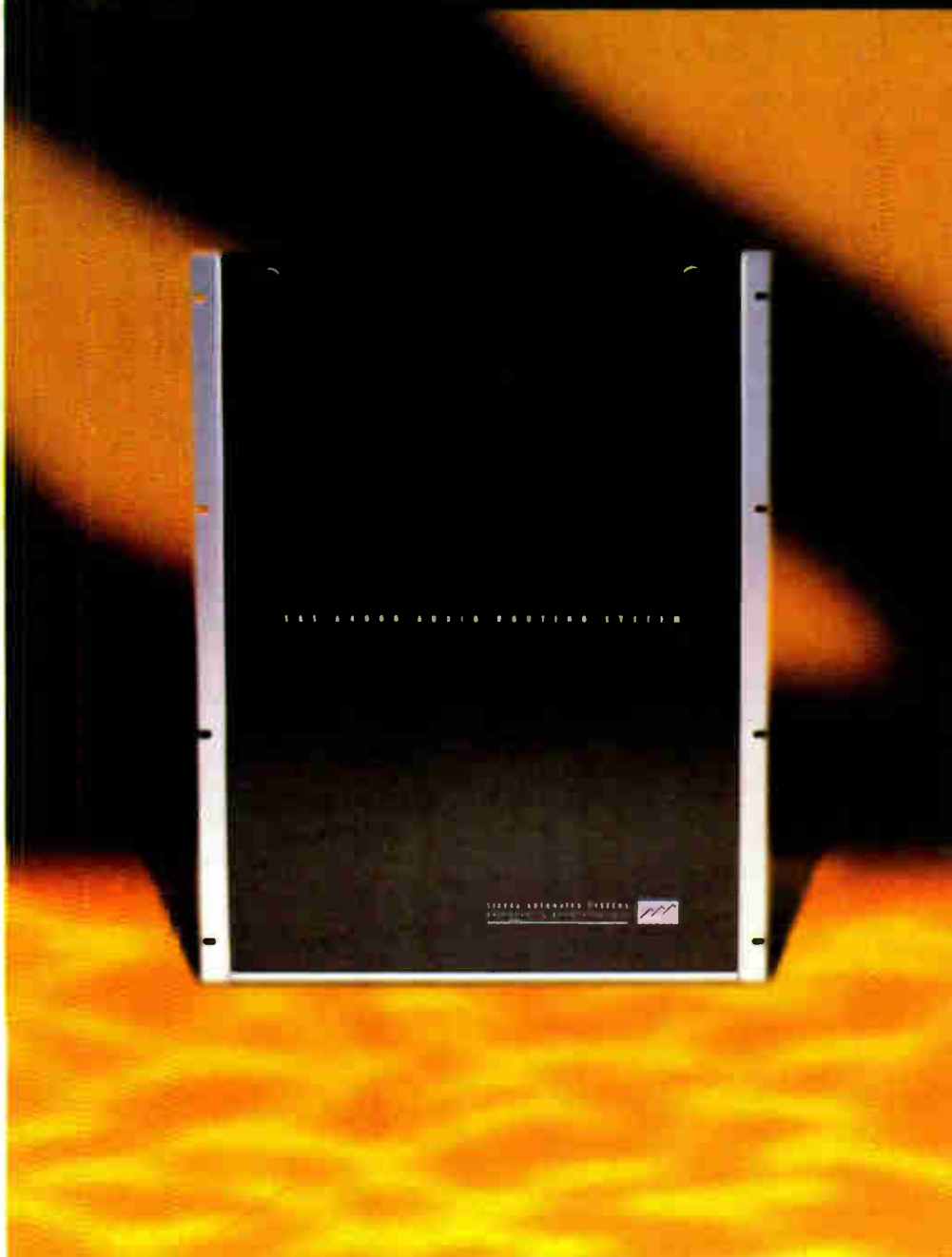
SAS64000 AUDIO ROUTING SYSTEM

E l e g a n t
A n a l o g

I n s t a n t
D i g i t a l



256 X 256 LARGE • MONO/STEREO • WIDE VARIETY OF CONTROL PANELS • 118DB ANALOG DYNAMIC RANGE • DISTRIBUTED MULTI-PROCESSOR ARCHITECTURE



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

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

And it's wonderfully simple. Just plug in our new digital port expander and that's it. Welcome to digital! -co-existing richly with analog in the same framework.

There's lots more to tell. Call us: 818 840 6749. Fax us: 818 840 6751. E-mail us: sales@sasaudio.com Check the Web site: sasaudio.com And of course, snail mail: 2625 North San Fernando Blvd. Burbank, California 91504 USA



SIERRA AUTOMATED SYSTEMS
BROADCAST & COMMUNICATIONS

BSW

BROADCAST SUPPLY WORLDWIDE

Advantage

Audio Equipment for Broadcasters

- Best Price Guarantee*
- Same Day Shipping*
- Extended Hours
- Knowledgeable Sales Staff
- Flexible Terms

Trust Gentner for Reliable Broadcast Equipment

NEW



Affordable Remote Control Packages
From \$3,750 incl. tax

State-of-the-Art Remote Facilities Management

The new VRC2500 remote site control unit is ideal for single-site stations providing 16 channels each of metering, status and command. It monitors your transmitter and alerts you if an alarm condition occurs. It also enables you to create commands and macros which can be executed automatically or at scheduled intervals. The

dial-up option allows you to use a standard telephone to retrieve data, execute commands or macros, and receive alarm notifications. It also has the ability to operate unattended. A PC is only required for setup and monitoring, not for smart operation. Intelligence, reliability and versatility make the VRC2500 one of the best values in remote facilities management. A highly innovative Windows-compatible operating software is included. Call today for pricing on a system to fit your requirements.

Gentner VRC2500 **Price Based on Configuration**



SALE
\$1,659⁰⁰

24-bit Digital Telephone Hybrid

Gentner's digital hybrid provides the highest quality audio interface between your telephone line and audio equipment. With its 24-bit digital signal processing, it's an excellent hybrid for use with your digital or analog console. **Features include:** three remote-accessible presets; auto mix-minus; adjustable compressor and expander; acoustic echo cancellation; 3-band digital EQ; balanced analog XLR I/O; balanced digital AES/EBU I/O.

Gentner DH30 List \$1,795.00

Multi-Line Telephone System

The TS612-6 six-line telephone system is an excellent choice for broadcast talk shows. A basic TS612 system consists of a rack-mounted control system, two Gentner digital superhybrids, I/Os for six telephone lines and a tabletop control surface. **Features include:** automix-minus; telephone line selection and conference buttons; Split-Caller and Split-Hybrid modes; a handset for talking with callers off-line, remote control via RS232; expandable to 12 lines and up to 3 control surfaces.

Gentner TS612-6 List \$3,149.00

Gentner TS612-12 (12-line system)

List \$4,195.00 **Only \$3,859.00**



Gentner



To Order Call BSW

1 • 800 • 426 • 8434 or www.bswusa.com

Let BSW Work to Your Advantage!

We offer a best advertised price guarantee*, same day shipping of in-stock items*, sales professionals with real-world experience and sales hours from 6:00 AM to 6:00 PM Pacific Standard Time.

* Call or see www.bswusa.com for details.

World Radio History

Are you getting our sales flyers?

Call or view online at www.bswusa.com



EV Shotgun

► Continued from page 55

The integrated hypercardioid electret condenser mic does excellent double duty as a shotgun and interview mic.

able synthetic that is easy to grip.

The frequency range of the mic is a modest 50 Hz to 8 kHz with a 200 Hz rolloff switch.

The tradeoff for the lack of top end is the hypercardioid's ability to isolate sound in a noisy environment or to gather audio at a distance. However, tests with



The mic can be held with one hand ...

A battery pack built into the base of the unit also powers a headphone amp. Add a decent field recorder and this makes a complete road-ready sound-gathering kit.

The ENG 618 is constructed as a single piece — the mic and the windscreen are permanently attached to the pole.

voices in a studio did not seem to overly attenuate the high frequencies.

The only trouble with getting ready for the field tests was with the door to the battery compartment. The screw-in base was difficult to remove and the 9 V battery holder seemed a bit makeshift.

But once I put in a fresh cell, this was



... and collapses down to 18 inches

The most remarkable spec of this unit is a total weight of only two pounds. Fully folded down to 18 inches, it packs into a vinyl pouch with a belt loop. The full reach is six feet.

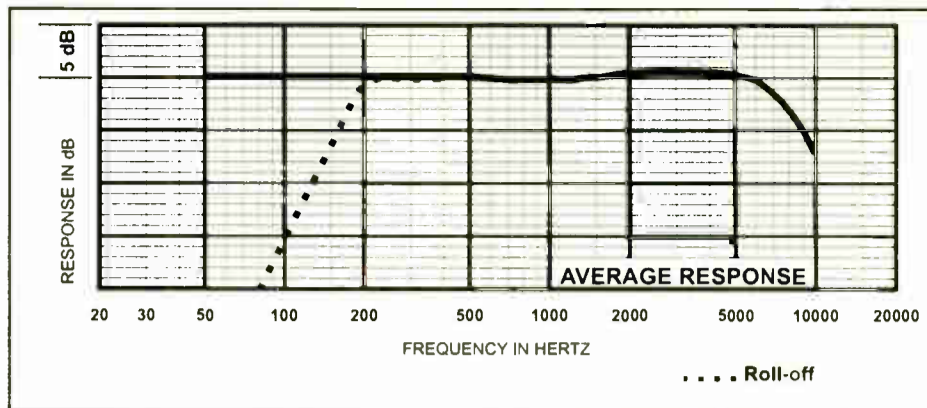
The design is four tube sections of decreasing diameter with screw-locks on the end to tighten it into a single piece as they are extended. The fit and finish of the pole are excellent. It feels like a solid piece even when extended.

The base section is covered in a pli-

sealed up and out of sight. Batteries are good for approximately 20 hours.

I took the ENG 618 to record sound from machine guns used at the Hiram Maxim Historical Society's fifth annual Northeast Military Shoot & Expo in Dover-Foxcroft, Maine.

In addition to the EV shotgun, I brought along my beyerdynamic MCE 58 interview mic, a pair of Sennheiser HD 25 headphones, a Sony MZ-R55 MD recorder and a Sony DV video camcorder.



Frequency response of the ENG 618

The shoot alternated between cease-fire periods when I would interview participants as they reloaded for the all-out mayhem of full-auto fire. The "quiet" periods were also the occasion for demonstrations of cannons and flamethrowers.

Holster rigs

While most participants sported an impressive assortment of firearms in various holster rigs, nothing matched the sizable ENG 618 hooked into my belt-loop. This shotgun mic is mightier than the sword.

I switched off between the MCE 58 and the ENG 618 attached to the MD recorder with an XLR-to-mini jack. Admittedly, it is hard to beat the MCE 58 when it comes to an interview mic. But the ENG 618 did a fair job on its own.

Obviously, the superior sound of the beyerdynamic mic will not help much when a subject is beyond arm's length, as

often happens capturing comments in a crowd.

The only thing I wish the shotgun mic could do is detach the element from the pole for face-to-face interviews. The top piece does screw off with a standard thread connector, but the internal cabling is permanently soldered. It would be a simple matter to have some kind of plug-in interface instead for separate use.

Conditions for the shoot were miserable. The weather alternated between light drizzle and downpours. I managed to keep the recorders dry, but the ENG 618 got the worst of it.

Despite a day in the rain, it dried on a radiator at the motel that night and worked fine the next morning. It would have been nice if I could have removed the windscreen, but it was glued on.

My ultimate challenge for the shotgun mic was trying to capture some of the

See EV SHOTGUN, page 61 ►

Model RFC-1/B Remote Facilities Controller

it's the most affordable, fully-featured transmitter remote control system available. it's flexible. it's expandable. it has a well-deserved reputation for being very reliable. and it's not difficult on the eyes. what other reasons do you need?



FEATURES

- transmitter control from any telephone
- 8-64 channels of telemetry and control
- programmable control by time and date
- automatic adjustments based on telemetry
- optional printer and modem adapters
- programmable telemetry alarms
- full-featured, affordable, reliable
- integrated rack panel



nashville, tennessee • 615.228.3500 voice • 615.227.2393 fax-on-demand • www.sinesystems.com

visit our web site for more information on our products

You'll find endless features and more than forty cool effects in every box of Cool Edit Pro!

Higher sample quality supported

the complete multitrack recording suite for Windows

www.cooledit.com

good sound stuff!

Syntrillium SOFTWARE CORPORATION

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

V/O Business Ups and Downs

Travis

The most frustrating aspect of going into business for yourself is the loss of a monthly paycheck. I have known several people who tried going into the voice-over business full time, only to give up after a few months.

"I couldn't stand the uncertainty," an acquaintance told me. "I was doing quite well, but I found I was walking around scared all the time. I couldn't count on anything ... I need to know I've got something coming in that I can count on."

That person went back into radio full time, where he decided he was happy. Voice-over for him is now a profitable part-time occupation.

The voice over business is capricious or unpredictable, just like any other business.

When my first business, a production recording studio, got busy enough to require my full-time attention, three of my friends were upset at my decision to quit my full-time job at a local radio station.

They asked questions like "how can you give up your security?" And "what happens if you fail?"

I was surprised when two of those three friends lost their jobs within a year. In one case, the company suddenly folded. Another friend, who was the most upset over how I could give up job security, has his own graphic design business

and is doing well.

At that time, my business was doing well. I realized that the concept of "security" was just an illusion. It is just harder to keep that illusion of "security" when you work for yourself.

Security concerns

Eventually, my friends were right about their concerns for my security. I made a few bad business decisions, and it quickly went down the tubes.

Losing my business was more painful than the times I have been laid off. When your business fails, it is harder to place blame elsewhere — it was my fault, not because the PD did not like me or because another company bought the station.

When I started my first business, I was not afraid. I was sure I was going to make it in no time. Now, after operating my own business for over two decades, I realize that I should be afraid, as anything can happen.

It is O.K. to be afraid. A psychologist once explained to me that you are in the "real world" when you are afraid. The world is a scary place, which is why it is important to be brave when you are in business for yourself.

To be successful, you must be aware of the dangers. To me, the rewards of self-employment far exceed the dangers.

It is also important to have a sense of faith — faith in yourself, faith in your

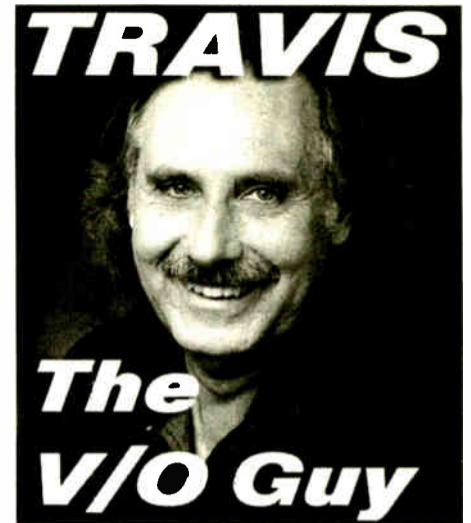
ability and faith in the future.

While the "bad times" are not pleasant, I've found they are the most important times for working on my career. When I am busy, I do not have the time to take care of career details. The slow times are for putting together that new V/O demo, for finding and contacting potential customers, and developing my abilities.

During these slow times, my biggest problem is that I tend to lose faith in my abilities. There is a strong tendency to waste time rather than be productive. I seem to say to myself, "If I spend all this time on a new demo, who's gonna hire me anyway?"

The last demo I assembled for submitting to agents was garbage, because I was too busy with work to take time to put together something representing the professional growth I achieved.

As a result, I am stuck for a year with a recording on my agency's demo CD that is not as good as my recent work. If I



used the "slow time" which occurred a few months earlier to acquire material for the CD, I would be much better off.

What was I doing with all that time? Part of the time, I was surfing the Net, looking for people and companies who might hire me. While it might seem like valuable time spent, it was not. I already have lists of several thousand companies I need to send my demo to.

See TRAVIS, page 63 ▶

WGKX

▶ Continued from page 55

make sure they have enough fresh background music to handle anything that can come up.

For sound effects, Austin and Augustus like the Sound Ideas 1000 and 2000 series. The Series 1000 is in mono, but has a large number of usable cuts, while the Series 2000 series is recorded in stereo.

At WGKX, the production team works closely with the sales department.

Austin said, "The salesperson may come back with a comment from an advertiser such as 'I don't use your station because I don't like the music.' My answer to that is: if you go fishing, what do you use for bait ... what you

At most stations, copy deadlines are tight and instant turnaround on spots and other production is normal. Austin believes he should not rush through production of a spot.

"People in hell want cold beer," said Austin with a smile. "We need information, copy points and time. It's not fair to the client, it's not fair to you and it's not fair to us. Because if we rush then we get a crappy spot."

There is a 72-hour rule at WGKX, meaning that is the amount of time needed between a script being sent to production and delivery of a final spot. But Austin said sometimes emergencies come up, especially on Fridays for some reason.

Austin has a philosophy about retaining long-term business.

"The sales guy is just thinking, 'I've got to make this sale,' but I tell him that if you make the sale today with a mediocre spot which doesn't get results, you lose the account forever. You can shear a sheep for a lifetime, but you can skin him only once."

Another piece of advice Austin gives to salespeople: "If you treat a client right, he'll come back. If you treat him bad he'll be gone and you'll be gone."

Austin and Augustus

are realistic about their task.

"A lot of times we get caught up in trying to impress ourselves," said Austin. "That's wonderful and the listener probably likes it, but the main thing is the writing."

"If it's not on target it won't matter if you use three voices and reverb."

Austin and Augustus work hard at their jobs, but apparently the work is not all that is on their minds.

"We're single, ladies," said Austin.

■■■

Ken R. was a production director when radios were powered by steam.



Earle Augustus in one of the Barnstable studios

like to eat or what the fish likes to eat?"

The staff obtains copy approval from the client before producing it. Sometimes the account executive takes the script to the advertiser in person to make sure they are all in agreement.

The message

"A lot of clients must think the radio listener is completely dazzled by every fact about that business, but the truth is the listener doesn't care about all that stuff. We focus on the important message and try to educate the advertiser if we can," Austin said.

THE SOURCE FOR SOLUTIONS

For the last 30 years QEI has supplied innovative FM transmission solutions

HIGHLY RELIABLE SINGLE TUBE GROUNDED GRID FM TRANSMITTERS

For 15 years QEI has manufactured a line of technologically advanced grounded grid FM transmitters that provide outstanding performance and reliability.

SINGLE PHASE HIGH POWER FM TRANSMITTERS

QEI was the first broadcast equipment supplier to offer high-power FM transmitters able to operate from single phase AC power sources. These products allow the development of many transmitter locations where providing 3 phase power would be cost prohibitive.

COST EFFECTIVE SOLID-STATE FM TRANSMITTERS

QEI has been manufacturing solid-state FM transmitters since 1975, longer than any other US manufacturer. The QUANTUM Series FM transmitters are power efficient and very competitively priced. They are designed in 600-watt increments so you can buy precisely the amount of power output needed.

QEI also manufactures the finest FM Modulation Monitor and Test System available and the CAT-LINK Digital STL/TSL System.

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.



Web site <http://www.qei-broadcast.com>

QEI CORPORATION
PO Box 805 Williamstown NJ 08094 USA
800-334-9154\856-728-2020\856-629-1751 Fax

QUALITY

ENGINEERING

INNOVATION

EV Shotgun

▶ Continued from page 59

downrange sound. Most of this sound was lost in the rat-tat-tat clatter of the subguns and 50-caliber monsters blasting away at cars set up as targets 100 yards away.

The 120 dB clipping level of the shotgun handled it fine, but hearing impacts and small explosions from sticks of dynamite set up as targets proved elusive.

It's fun to blow things up

The highlight of the day was a new, unusual target — a van with a whole bundle of dynamite hidden somewhere inside. Contestants took turns unloading a "clip" of 30 rounds trying to touch-off the explosives.

Here, the E-V reached forward of the firing line and succeeded in cutting through the noise to capture the explosion. The low-end sensitivity was perfect to capture the thunderous *kaboom!*

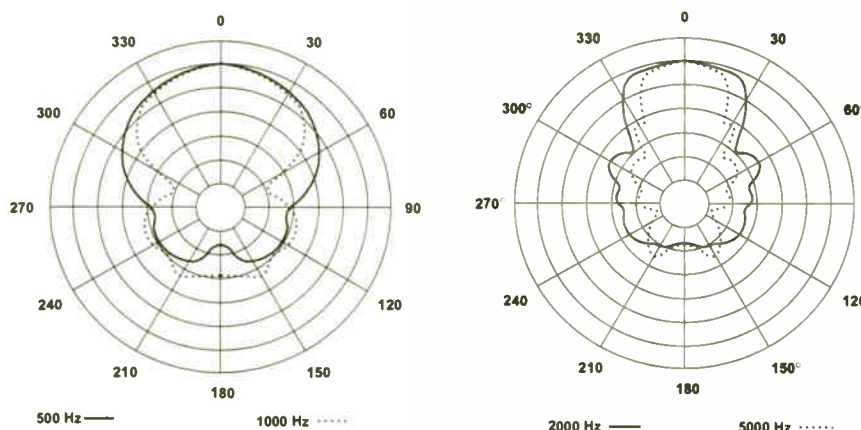
By the way, range officials would not

permit me to wear my cans without earplugs underneath. Therefore, monitoring during the live fire was dicey at best. Under normal conditions, the headphone amp on the ENG 618 had plenty of juice.

For a final test, I connected the shot-

The integrated stereo mic did a decent job up close. Internal noises generated by mechanisms in the camera were minimal.

But connecting the shotgun mic was nothing less than a revelation. The 16-bit sound quality was impressive — as good



Polar response of the ENG 618

gun to the DV camera. This was my first experience with the new video format, and I came away impressed.

as any MD with the proper mic attached. The Electro-Voice ENG 618 is not cheap, at \$1,534 list, but it is a total plea-

Product Capsule:
Electro-Voice ENG 618
Shotgun/Boom Pole Mic

Thumbs Up

- ✓ Incredibly light
- ✓ Good headphone monitoring
- ✓ Solid construction

Thumbs Down

- ✓ Mic/windscreen not detachable
- ✓ Limited high end
- ✓ Mediocre construction of battery compartment

For more information contact Electro-Voice in Minnesota at (800) 392-3497 or visit the Web site at www.electro-voice.com

sure to use. A few minor tweaks suggested would increase the versatility of the unit. But even as is, it is a relief for tired arms and sharp ears.

Products & Services Showcase

NANOAMP SERIES™ Problem Solvers
MIKE, LINE, SUMMING AND DISTRIBUTION AMPLIFIERS

Compact • Low Noise & Distortion • Servo Balanced Outputs @22dBm • Field or Studio Use • Desk or Rack Mount Kits.



L200 Two Channel Line Buffer & Isolation Amplifier



DA103 Line Input to Three Isolated & Protected Balanced Line Outputs



ML200 Two Channel Microphone to Line Driver



DMA103 Microphone XLR Input to Three Isolated XLR Balanced Outputs

Free Brochure Available Upon Request
<http://www.atiguys.com>
 328 W. Maple Avenue • Horsham, PA 19044
 800-959-0307 • 215-443-0330 • Fax: 215-443-0394

AT I AUDIO TECHNOLOGIES INCORPORATED

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

Incredibly Flexible DTMF Control



The DS-8 Programmable DTMF decoder

Bridge the DS-8 across your audio source and get eight individually programmable relay outputs. Each closure is activated by its own code of one to four digits long. Each relay can be set up as momentary, latching or interlocked with other relays! Use the DS-8 for remote audio switching, automated program recording, secured remote EAS control, you name it! Optional rack mount (pictured) is available. A two unit R.M. is also available.

The DS-8 features include:

- Each of the eight programs may be independently programmed for codes and mode.
- Program it with any DTMF phone.
- High quality metal enclosure can be wall or table mounted. Low cost (optional) rack mount available.
- All connections on screw terminals
- Retains settings after a power failure
- List price is just \$299.

Call your favorite dealer or visit our website for the latest info and downloadable tech manuals!

CircuitWerkes
 3716 SW 3rd Place
 Gainesville, Florida 32607
 (352) 335-6555 / fax 380-0230
<http://www.circuitwerkes.com>

NEW PROBLEM SOLVER!

ULTRA-CLEAN PROCESSING



The Ultramod FM is a self contained split-band stereo FM processor, with an input AGC, a split-band compressor-expander and an ultra transparent digital stereo generator. Also included is a built-in composite compressor. Designed to help you compete in your market at a price you will like. Contact us for details or call your dealer.

www.broadcasttech.com

Broadcast Technology Company
 P.O. Box 751 • Lamar, CO 81052 • (719) 336-3902 • Fax: (719) 336-9473

Products & Services Showcase

Switcher tools

Designed by broadcast engineers for broadcasters, our audio and digital audio switchers offer excellent sonic quality, removable I/O connections, contact closures and serial remote control capabilities and flexible mounting accessories.



SS 12x4

Active crosspoint switching/routing with 12 stereo inputs and 4 stereo outputs.



8X2D

Active crosspoint switcher with 8 stereo inputs, 2 stereo and 2 mono outputs



SS 3.1

Passive switching/routing with 3 stereo inputs and one stereo output or vice-versa.



10X1

Passive switching/routing with 10 stereo inputs and one stereo output or vice-versa.



6X1G

Passive switching/routing with 6 stereo inputs and one stereo output, or vice-versa.



SS 2.1/BNC

Passive switching/routing with 2 composite audio, video, or AES/EBU inputs to 2 composite audio, video, or AES/EBU outputs, or vice-versa.



SS 8.2

Active crosspoint switching with 8 stereo inputs, 2 stereo plus 2 mono outputs.



3X2B

Active crosspoint switcher with 3 stereo inputs and 2 stereo outputs.



8x1 DAS

Routes any one of eight AES/EBU digital inputs to split outputs.



SS 2.1/TERM

Passive switching/routing with two stereo inputs to one stereo output or vice-versa.

Check out our web site for product information, list pricing and a list of distributors!

BROADCAST tools inc.

Internet: www.broadcasttools.com E-mail: bti@broadcasttools.com

Voice: 360 . 428 . 6099
Fax: 360 . 428 . 6719

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 (± 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

If You Can Make It Here ...
You Can Make It Anywhere!

Photo by John Lyons

6016 FM Antenna Condé Nast Building New York City

Shively Labs
(207) 647-3327
888-SHIVELY
www.shively.com
sales@shively.com

SOUND GREAT — INSTANTLY!

- Eliminate flanging (hollow room) effect
- Eliminate bad room acoustics
- Hold absolute levels
- Correct voice symmetry

AIRcorp 500PH Microphone Processor



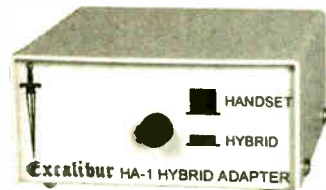
- Front panel input level select +4 to -50 dB
- Three section variable boost and cut equalization
- Compressor/Expander cross coupled for maximum punch
- Built-in earphone jack
- DE-ESSER designed to protect pre-emphasis curves
- Simultaneous mic level and line level outputs
- Internal 48 Vdc Phantom Supply

AIR corp

Call your dealer

or call 972-304-0455 or fax: 972-304-0550

Excalibur Electronics HA-1 Hybrid Adapter



The HA-1 Hybrid Adapter allows you to use your favorite broadcast hybrid with almost any telephone — old, new, single line, multi-line, etc. Since the HA-1 hooks up through your telephone instrument's handset connector, no connection to the telephone line is needed. With the HA-1's front panel push-button out, your telephone functions normally. With the button pushed in, the handset is disconnected and your hybrid is now on line; nothing could be simpler or easier. The performance of your hybrid will be the same as it would be if hooked up directly to a C.O. line.

EXCALIBUR ELECTRONICS, INC., CHANTILLY, VIRGINIA
Call your favorite radio broadcast dealer today for Excalibur products!

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

REMEMBER THE *CORTANA* FOLDED *UNIPOLE* ANTENNA? WE STILL MAKE IT WITH THE SAME HIGH QUALITY MATERIALS AND WORKMANSHIP. IT FEATURES...

- BROAD BANDWIDTH for better sound,
- GROUNDING ANTENNA for lightning & static electricity,
- ELIMINATES ISOCOUPERS in VHF & UHF antenna lines,
- BEST ANTENNA FOR DIRECTIONAL ARRAYS.

ALSO

DETUNING SYSTEMS FOR ANYTHING THAT DISTORTS YOUR
AM COVERAGE PATTERN: TOWERS, POWER LINES, TANKS
OR ANY METAL STRUCTURE.

FOR INFORMATION CALL, FAX OR WRITE:

nott ltd.

4001 La Plata Hwy
Farmington, NM 87401

phone 505-327-5646 fax 505-325-1142

Short/cut

► Continued from page 56

Brad Cox, technical services manager at 360 Systems, said, "We allow crossfades to be undone. They can be undone, redone, undone again, but there is only one level of undo. Once another undoable action has occurred, the crossfade cannot be undone."

"This contrasts with gain changes, erase and bleeps which never changes the audio data. Therefore, if the user wants to access the original audio that existed before a crossfade was performed, we recommend making a copy of the original audio file. The Short/cut operating system does not require the actual audio data to be copied, but only a file that points to the audio.

Save functions

"Also, you can use Save As instead of Save and retain the edits only in the newly created file. The original will still exist as it did the last time Save was pressed, or when the file was opened if never saved."

For users in the digital realm, the sample clock on the Short/cut 2000 can be synchronized to an external reference. This added with compatibility with WAV, BWF, AIFF, SD-2 and 360 Systems digital audio file formats makes the unit an even more powerful digital editing platform.

The new Short/cut 2000 also reads

Product Capsule:
360 Systems
Short/cut 2000

Thumbs Up

- ✓ Complete I/O versatility
- ✓ Short learning curve
- ✓ Precision editing capability

Thumbs Down

- ✓ Limited storage time on HD
- ✓ Headphone jack on rear panel
- ✓ Only one level of undo

For more information contact 360 Systems in California at (818) 991-0360 or visit the Web site at www.360systems.com

and writes Zip and Jaz disks in DOS or HFS for Mac formats using an external drive. This feature makes swapping files with a personal computer easy.

The Short/cut 2000 lists for \$3,495 and is available through broadcast equipment dealers.

Users of the older model Short/cut should not despair: the older units are upgradeable in the field. For \$295, the company will send you an upgrade kit that will make your older model into a Short/cut 2000, complete with the new features and lightning-fast editing speed.



Cris Alexander is the director of engineering at Crawford Broadcasting.

Travis

► Continued from page 60

It was a desperate attempt to make myself feel like I was accomplishing something worthwhile.

If I had been smarter, I would have taken care of business I would need when business picked up again.

A month later, things are crazy and business is great.

I mentioned to an acquaintance that while I was happy being busy, it always seems that when I start to get ahead, something happens that hits me in the wallet.

"It seems that the universe knows that I have got a few extra bucks and wants to stop me from keeping it," I said.

"Did you ever think that perhaps the universe can sense that you're going to need some extra money," she said, "and it is making sure you have got some?"

I said that I had never looked at it that way before.

I decided to wait and see if that theory worked and sure enough, something came up that required some extra dough. This time, instead of being angry at the situation, I felt a sense of gratitude.

I notice that many successful people I meet seem to have a sense of gratitude toward the universe. I used to think that things just have gone well for them. Now, I realize it is the other way around.

Appreciating the good times and remembering to use the bad times to your advantage are two important ingredients to success in the voice-over business — and just about everything else.

Flex-Studio



- One Size fits all modular design
- Highest quality laminates & wood
- World famous Modulux cabinetry
- Assembles quickly & easily
- In stock for immediate delivery
- Only \$4995 complete !!!

The Flex-Studio is a complete, modular furniture package that can be assembled in dozens of different ways to meet nearly any studio design. As a standard Modulux product the NEW Flex-studio features solid oak trim, high pressure laminate table surfaces, complete laminate finish inside and out. Modulux is the #1 selling studio furniture system with nearly 2,000 sold worldwide.

Arrakis Systems inc.
web: arrakis-systems.com phone: (970) 224-2248



NEWS HAPPENS


... and now RWOnline brings it to your desktop every day.

Introducing **RW NEWS BYTES** A new feature on RWOnline

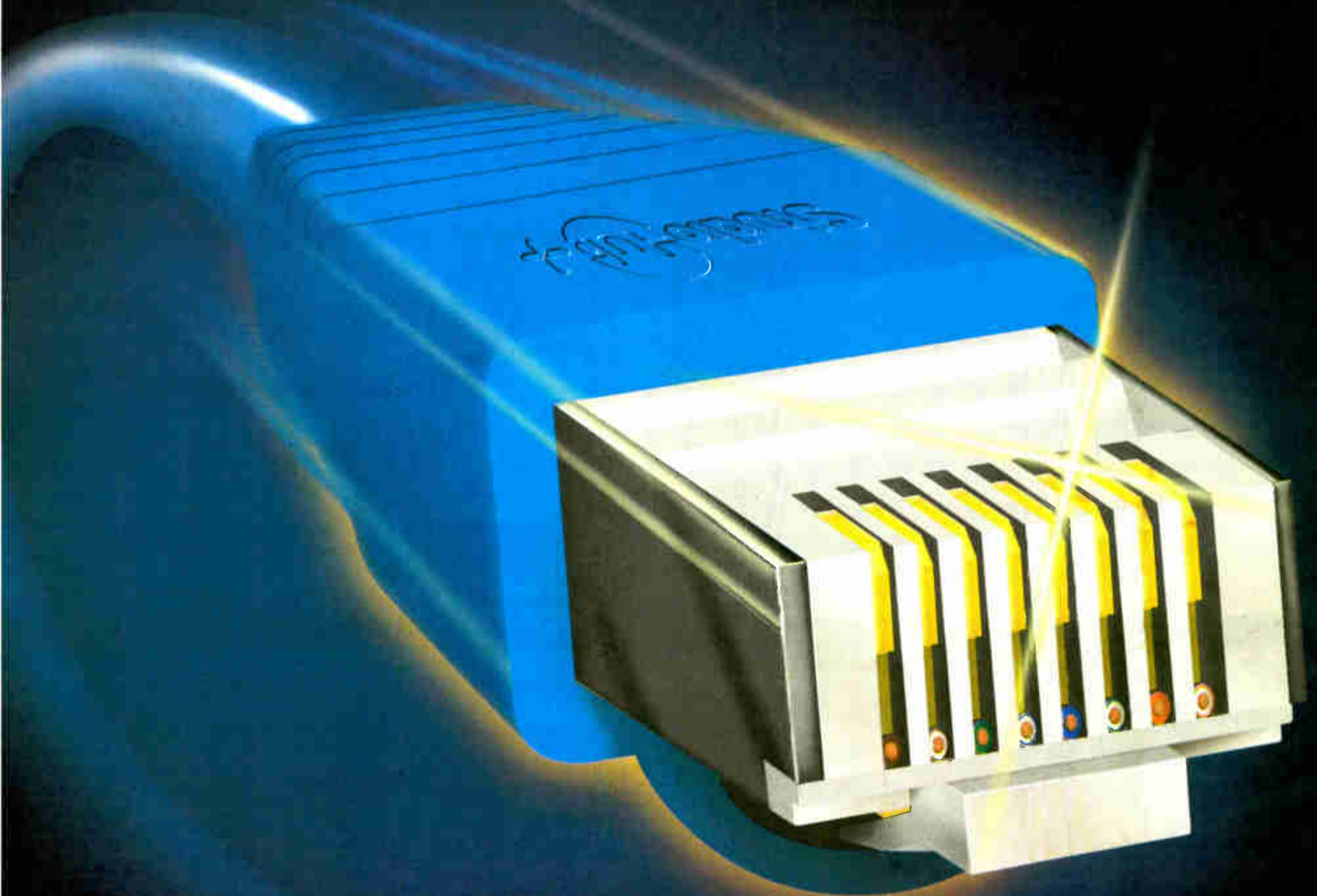
Every business day the Radio World editorial staff will provide you with the latest in radio news and technology. Begin your work day with the scoop on:

- Digital Radio
- Mergers and Acquisitions
- FCC Regulations
- New Product Launches
- Who's Doing What and When
- Trade Show Coverage

Every two weeks, you depend on Radio World to provide you with in-depth coverage of all the happenings in radio. Now turn to www.rwonline.com to provide you the same excellent coverage - every weekday!

Sponsored by:  **Get your RW NewsBytes NOW!**
www.rwonline.com/dailynews

One plug. All play.



StudioHub 

The RJ-45, CAT-5 Analog/Digital
Shielded Wiring Solution.

radio 
SYSTEMS

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

Buyer's Guide



Tech
Updates
Inside

Radio World

FM Transmitters

October 25, 2000

USER REPORT

Harris Transmits From Conde Nast

by John Lyons
Chief Engineer
WAXQ(FM)

NEW YORK Everyone in New York is talking about it.

It towers 48 stories over Times Square. It's considered an engineering marvel. And it's been featured in several of the nation's leading newspapers and magazines, which have called it everything from "spectacular" to "transcendent."

"It" is the new Conde Nast building in Times Square. But for my money, the real story is the simple sheet rock enclosure, row of transmitters and antenna tower that sits on the roof of Conde Nast's new headquarters.

They are beautiful in their own way. And the story behind this facility is pretty striking, too.

Reaching for the sky

Several years ago, the former Chancellor Media Corp. decided to build a new backup transmission site for its five stations in New York City — WAXQ(FM) "Q1043" classic rock, WHTZ(FM) "Z100" hit music,

WKTU(FM) 103.5 "The Beat of New York," WLTW(FM) "Lite FM" 106.7 and WTJM(FM) "Jammin' 105" R&B oldies.

Chancellor's main transmission site on top of the Empire State Building — WKTU's is on the World Trade Center — was working fine, but going off the air for even a few minutes in a major market like New York obviously is not an option.

The stations that Chancellor had acquired individually and consolidated into a group, handled outages differently as independents. The new site was an opportunity to standardize and upgrade backup strategies and equipment. It was also an opportunity to take a bold step into the future.

The site itself was groundbreaking. The new Conde Nast building was designed from the get go as a communications "tower," with the ability to accommodate large, penthouse-based transmitter rooms and, via a combiner station, up to 12 FM stations on a single antenna as well as a future, high-definition TV antenna.

AMFM Inc., which had purchased Chancellor as the building plans were

taking shape, was also granted "pioneer" status on the rooftop of the building. (AMFM, of course, has since merged with and become part of Clear Channel Communications Inc.)

This meant we had carte blanche to design our transmitter room and have direct input into the antenna parameters, with the equipment we wanted, without worrying about other broadcasters.

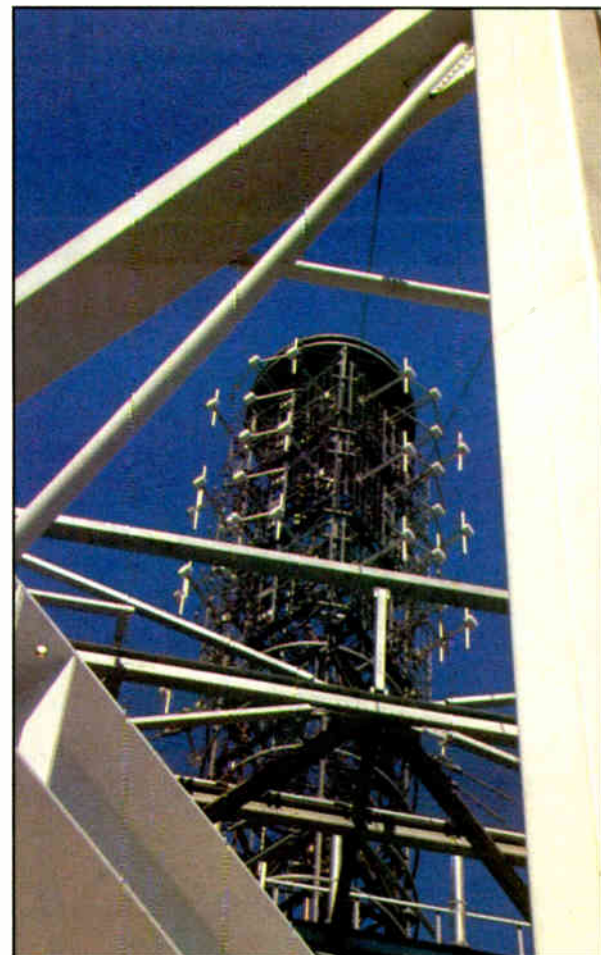
On the roof

We worked with Riser Management Systems of Burlington, Vt., the rooftop manager, on the layout of the FM floor and installation logistics for both the transmitter plant and the antenna/combiner system.

To put the magnitude of the project into perspective, the back-up power system just for the FM floor is a 1650 kW generator. There is room for 90 racks of radio equipment, including two-way radio, hubs, b-sites and downlinking across the satellite arc, all serviced with UPS backup, on the floor above the combiner room. The equip-

ment was the other really "futuristic" part of the project. We obviously wanted transmitters that were easy to install

See HARRIS, page 68 ▶



Clear Channel/WAXQ transmission tower on the Conde Nast building

USER REPORT

Nautel Powers Pottsville

by Argie D. Tidmore
Owner, General Manager
Pottsville Broadcasting Co. Inc.

POTTSVILLE, Pa. At Pottsville Broadcasting Co. Inc., we own WAVT-FM, called "T-102," a 50 kW ERP FM that runs a hot A/C format; and

WPPA(AM), a 5 kW full-service AM.

We also LMA WSPI(FM), a 1 kW FM that uses Jones Radio's soft hits format; and WPAM(AM) a 1 kW AM that plays oldies.

During the summer of 1999, we experienced several severe thunderstorms that pounded our region. One of these destroyed a large portion of our primary on-air transmitter.

First on the scene

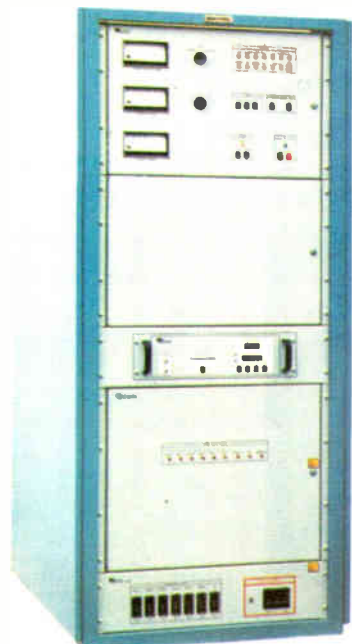
I was the first on scene, as I live about 20 minutes from the T-102 transmitter site. Our contract engineers, Boyer Consulting and Design, are about one hour and 15 minutes away.

Usually after a lightning strike, I can get the main back on with either full or reduced power. Sometimes the remote just won't cooperate and re-fire, which necessitates a trip to the site to manually reset the main.

When I entered the building this time, I noticed a layer of smoke hovering around the ceiling. I was not surprised when the main showed no signs of operating.

When all else fails, our backup transmitter usually pulls through. Unfortunately, this time, our late 1940s-early 1950s vintage backup failed.

See NAUTEL, page 71 ▶



Nautel FM10

You can measure...
with the best monitor and the most accurate test set.

The FMM-2/FMS-2 series monitors provide an even greater degree of precision measurement than ever before... You can measure S/N below 90 dB, You can measure crosstalk below 85 dB, You can measure separations of better than 70 dB, You can measure frequency response to better than 0.25 dB, You can measure distortions to lower than 0.01%, and much more... Our uncluttered panels and autorangeing voltmeters make these measurements a dream.

BELAR www.belar.com (610) 687-5550
ELECTRONICS LABORATORY, INC.
LANCASTER AVENUE AT DORSET, DEVON, PENNSYLVANIA 19333
Call or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.

USER REPORT

Cleveland, Tenn., Takes the Crown

by Phil Baker
Contract Engineer

CLEVELAND, Tenn. I recently was asked to remodel a control room and prepare for a format change on a station that my boss had acquired. During the initial inspection of the FM, I recommended the transmitter be replaced. It was a rack-mount tube-type with a TPO of 1,250 watts.

The boss was planning to rebuild the studio and change the format. The studio build went as planned.

On the Thursday before the Monday format change, the tube PA failed.

The station was running only on exciter power to the antenna. We were faced with a serious problem and the PA was not going to be repaired any time soon. In fact, I told the boss the only way to get the power back was to replace the PA. When he asked for a replacement cost and manufacturer, I recommended Crown.

Avoiding stress

The boss basically told me to have it up to full power by Monday. I thought this was going to be impossible, but a call to Crown landed me with Steve Claterbaugh. After explaining my problem, we enlisted the services of Don Briehler, the technical boss.

They didn't have a PA 2000 ready

to ship but they were willing to loan us their PA 2000 and power supply from their lab until our unit was ready. But they wanted to do a burn in of 24 hours on the test unit, but that meant it would not be ready until Saturday.

How to get the unit from the factory to my door and installed before

Monday was the next question. Claterbaugh would make arrangements to be at the factory on Saturday and have someone meet us there and help load the unit.

We made arrangements to have a member of the staff drive to the factory and be back to the station on Sunday. My problem was on the way to being solved and stress was on the way down.

When the tube PA went down there was no question what type of PA I wanted — it was the PA 2000. The biggest headache was removing the old tube PA; that unit seemed to weigh a ton. Even the boss went to help remove it.

It didn't take but a short time to install the loaner PA and the PS2000 power supply. The only cabling necessary was the two DC cables from the power supply, a D type control cable from the PA to the power supply, RF in and RF out. The four PA modules slid in from the front.

We were on the air Sunday afternoon at rated power and ready for the new format. Our problem was solved.

Smooth power delivery

I like several features of the PA2000 and the PS2000. There are ample metering functions available from the front panel. Each PA module current can be viewed as well as total current and PA voltage and drive and a host of other functions. Remote metering is available on a D plug.

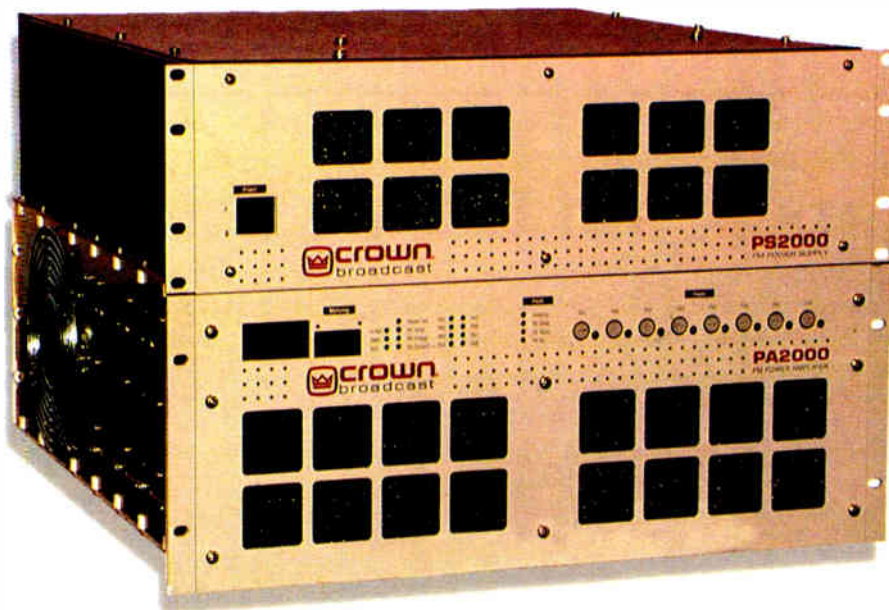
Reliability is not a question. The units perform as expected. I received our new unit and returned the loaner. Since then, my visits to the site have been uneventful.

The metering has not changed, everything is working perfectly, we have gone through the lightning season and no problems have ever occurred with the PA2000 and the PS2000 and my dozen translators.

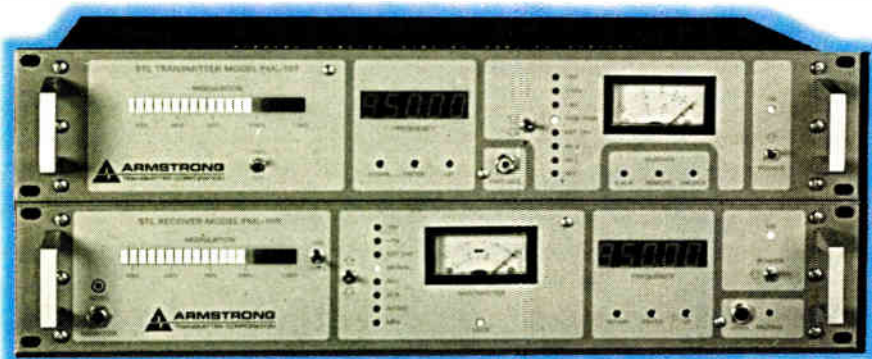
I have not made one service on any Crown units in the three years I have had these units. In fact, recently the boss said he was impressed with my choice of the Crown PA. In my 31 years of engineering service I have yet to find a company whose products perform as advertised and who stood by me when my problem seemed astronomical.

I highly recommend any of Crown's products. But don't pack your lunch when you go to install — you won't be there long.

For more information contact Crown Broadcast in Indiana at (219) 262-8900, fax (219) 262-5399 or visit the Web site at www.crownbroadcast.com



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 \$3500.00
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

TECH UPDATE

Continental 816R Transmitters

Continental Electronics' 816R series transmitters range from 11 kW to 35 kW.

These units use only one tube, which is for the final power amplifier. The IPA

is solid-state and requires no tuning.

The "soft-start" circuit brings the system gradually to full TPO and the low voltage controls allow the transmitter to recycle and return to the previous operational status.

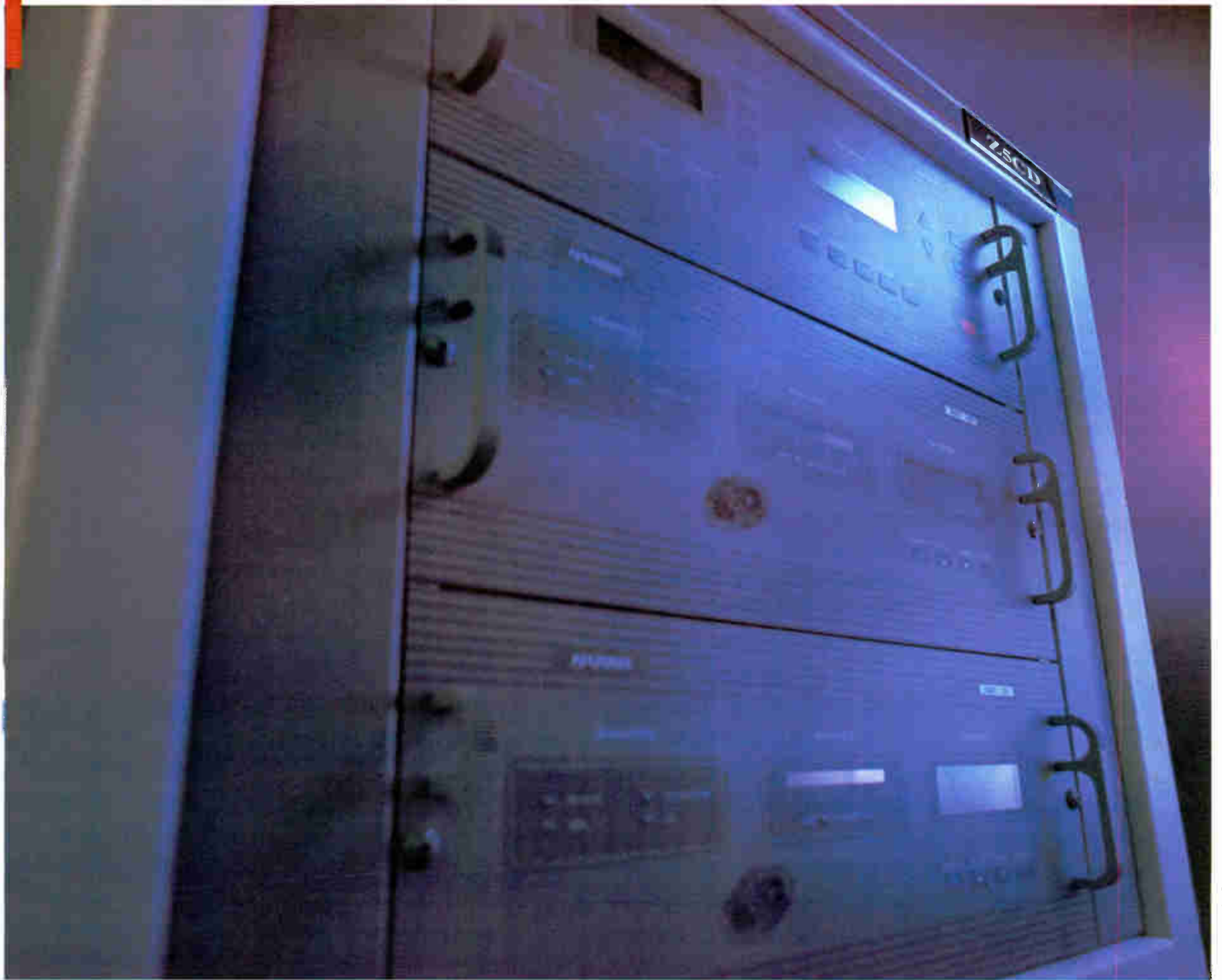
The 11 kW through 30 kW versions of the 816R and accompanying harmonic filter are self-contained. The 35 kW version has high-voltage rectifiers and plate transformer located in a separate chassis.

There are no controls, fuses or circuit breakers on this cabinet, so it may be located up to 100 feet away from the main cabinet.

For more information call Continental Electronics in Texas at (800) 733-5011, fax (214) 381-4949 or visit www.contelec.com



***Solid-state reliability. Built-in redundancy.
You'll appreciate why we named them ZZZs.***



©1999 Harris Corporation.

Engineers sleep easier with the Harris Z Series of FM transmitters for lots of reasons. Like their solid-state reliability, redundant IPA systems and power supplies, hot-pluggable RF modules for easy on-air repairs, *and* the option of two exciters with automatic switching built in. Outfitted with our unrivalled DIGIT CD™ FM digital exciter, Zs deliver the trend-setting, CD-quality sound listeners increasingly expect. And now, we're putting your worries about the future to rest as well. We're actively working with DAB system proponents on modifications to Z transmitters for IBOC field testing, so when a new standard is established and you need to start broadcasting IBOC DAB, you won't be caught snoozing with Harris. Or, then again, maybe you will.



Z Series transmitters include an easy-to-read LCD panel for diagnostics plus a main and backup controller.

next level solutions

WIRELESS
BROADCAST
GOVERNMENT
NETWORK SUPPORT



1-800-622-0022 • www.harris.com

Armstrong Serves Pago Pago

*South Seas Broadcasting, Delta Radio Install
Armstrong Components and Transmitters*

by **Larry Fuss**
President
Delta Radio,
South Seas Broadcasting

CLEVELAND, Miss. When South Seas Broadcasting began constructing KKHJ(FM) in Pago Pago, American Samoa, we knew we had to have a reliable transmitter. With the principal owners more than 8,000 miles away, quick jaunts to the transmitter site were unheard of. Even for locals, it's a major trek.

Located atop 1,600-foot Mount Alava, overlooking Pago Harbor, the transmitter is accessible only by a four-wheel drive vehicle up a steep trail that follows the ridge of an ancient volcano. The scenery is extraordinary but it's an hour-long teeth-chattering ride even under ideal conditions.

since, "93KHJ" is American Samoa's only 24-hour radio station, so the Armstrong exciter/amplifier and the Armstrong composite STL work around-the-clock. The only down time has been for occasional power outages.

When the time came to buy a 3.5 kW transmitter for our new facility in southeast Arkansas, we again turned to Armstrong.

We purchased an Armstrong FM 3500TX transmitter with the new FMX-100LCD, 100-watt exciter. This time, we also bought an antenna, a six-bay circularly polarized model FMA-727. When KRKD(FM) went on-air in April, we were amazed at the coverage. Even though we're a grandfathered 3 kW FM, we had excellent coverage in Greenville, Miss., 24 miles away.

The FM3500TX is self-contained in

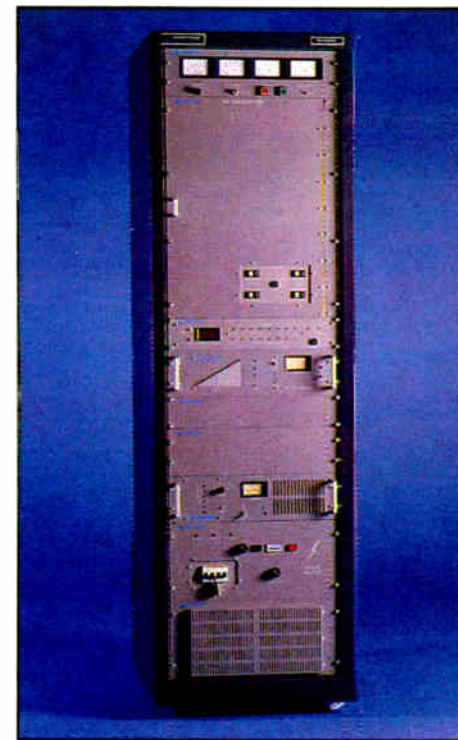
rate wires to the circuit board behind the multi-meter for plate voltage and filament voltage.

We spoke to Armstrong about this and they have since brought all remote-control connections, including those two to a single DB25 connector that is easily accessible at the rear of the transmitter.

To its credit, Armstrong continues to make improvements to its products based on field reports and suggestions from customers.

We're certainly pleased with our Armstrong transmitters and wouldn't hesitate to purchase another one for our next station.

For more information contact Armstrong Transmitter in New York at (315) 673-1269, fax (315) 673-9972 or visit the company Web site at www.armstrongtx.com



FM 3500TX transmitter



Armstrong FM-500SC amplifier

Not wanting to make the trip often, we elected to install an **Armstrong Transmitter FM-500STX**, a component system consisting of the FMX-30 exciter and an FM-500SC solid-state amplifier. This way even if we lost the PA, we could feed the exciter directly to the antenna to remain on the air while repairs were being made. This made the most sense rather than an all-in-one unit.

Word of mouth

We had seen the Armstrong products at the NAB and we had good field reports from users that indicated they were reliable and a snap to install. The units feed a two-bay antenna mounted on an old TV tower to achieve an ERP of 370 watts — equivalent to 6 kW at 100 meters.

The Armstrong units were "plug-and-play." When a minor problem arose, we placed a call to Armstrong's 24-hour tech support. It was about 7 p.m. in Samoa at the time — 2 a.m. in New York — but as promised, tech support was immediately available by phone, we were able to get through to Sinan Mimaroglu, general manager and owner of Armstrong, who quickly diagnosed the problem and we fixed it in moments.

That was in December 1999 and the transmitter has been running fine

a 4-foot-high, 22-inch-wide, 30-inch-deep cabinet, which makes it perfect for restricted floor space. The cabinet is mounted on heavy-duty casters so it rolled into place easily. We opted for the LCD exciter due to its sonic quality as it is virtually transparent with exceptional spec for an analog exciter. The transmitter comes standard with the FM-300SC as a driver.

Backup to the backup

By configuring the system as we did, we have triple backup. If there is a PA failure we can still put the FM-300 SC on the air or should we lose the driver, the FM-100 LCD will give us sufficient drive to run the transmitter at about 2KW output. In a worst-case scenario, we can place the LCD exciter directly on the air.

One of the features unique to Armstrong is the heat sensor built into the PA. It acts as a great backup to the air pressure switch if it fails to indicate a blower shutdown. It also will shut down the transmitter if the PA goes above the preset temperature to prevent PA damage from overheating due to another problem.

It took us a few minutes longer to hook up the remote control than we expected. Part of the control comes from a DB25 connector at the rear of the controller but we had to run sepa-

Harris

► Continued from page 65

and operate — as well as extremely quiet. We're talking New York City, so we also needed them to provide the best audio performance. But our No. 1 priority was a product that could adapt to our needs going forward, specifically our need to go digital.

After looking at a variety of transmitters and taking to radio equipment manufacturers, we determined that **Harris** understood the issue of converting to IBOC digital radio, the next wave in radio broadcasting, better than anyone else.

Harris' Z Series FM transmitters have been proven IBOC-compatible, with modifications, in field testing by both USA Digital Radio (USADR) and Lucent Digital Radio (LDR), which recently merged to form iBiquity. When an IBOC standard is announced, we'll be ready.

We purchased five Z10s outfitted with Harris Digit CD digital exciters plus three Harris Intraplex STL Plus multiplexers to replace older systems to WHTZ, WKTU and WLTW.

Harris also outfitted the transmitters with 480VAC transformers to accommodate the building's higher voltage, without our having to use a step down transformer, which both takes up space and generates an additional heat load in the room.

Shively Labs provided the antenna system, a model 6016 three-bay, four-around broadband panel antenna with a nominal gain of 1.9.

During the testing and installation phases of the project, Shively's engineering group worked along side us so everything jelled when push came to shove for installation.

The combiner is a model 2540 balanced, convection-cooled system with feedback loops. Two of the stations have low-power group equalizers. The monitor and protect system is Model 10MP.

We put in place a lockout/tagout protection system so any contractors working on the upper tower can have total assurance that there will be no RF radiating from the antenna when they are in the aperture. A complete remote/local

diagnostic system is in place.

The system is IBOC-ready. Stations can be added in any frequency order, so adding stations causes little impact on the existing ones.

All transmission lines, except the one supplied by Shively as part of the antenna system, were provided by Myat. This included all input lines and the output line from the lockout/tagout switch to the power divider.

The installation was a little trying at times. We had to schedule elevator time around the 75 trade unions working in and on the Conde Nast building. The equipment support people and I virtually lived on the roof for four months as everything went up. But what many people in June, at the start of the project, said "couldn't be done" was completed by October.

The sweet sound of success

When we turned the transmitters on the night of Sunday, Oct. 17, everything worked great.

All five came up with no problems, one right after the other. I never thought I would see the day when we would be able to bring five transmitters online in four hours. I brought some of my engineering friends from the area along to show them how easy the site was to set up and operate. The installation is so quiet — it is still amazing to me that we could hold a conversation in front of five operating transmitters.

The installation has been in place since October and operational, in case of emergencies or planned maintenance on the main transmission site, since the beginning of the year. In the few cases where the transmitters and antennas have been tested, field readings show no degradation of signal within a 45-mile radius. With the ongoing DTV work at both the Empire State Building and World Trade Center, the site is invaluable to us.

Let me put it this way: The Conde Nast building itself may be getting all the press. But the designs for the simple sheet rock enclosure, the row of transmitters and the antenna tower on the roof are much bigger news, in my book.

For information call (800) 622-0022 or visit www.harris.com

Products & Services Showcase

WATTCHMAN® TRANSMITTER PROTECTION SYSTEMS



WATTCHMAN® protects your transmitter and transmission line system. A permanent 19" rack installation used with any dual socket line section 7/8" through 6 1/8" and elements (additional) to monitor CW, TV, and FM power. Model 81070 features two easily read meters to monitor both forward and reflected power. Abnormal conditions quickly cause transmitter shut down.

TERMINATING LIQUID/AIR LOADS (84000/85000 series) available to cover CW power ranges of up to 10,000 Watts over a frequency range of DC to 2.4 Ghz. All models are available with optional thermal overload switches to interface with the user's interlock or warning circuit.

NEW



COAXIAL DYNAMICS, INC.
15210 Industrial Parkway
Cleveland, Ohio 44135 (216) 267-2233
Toll Free 1 800-COAXIAL (262 9425)
FAX: (216) 267-3142

Web Site <http://www.coaxial.com>
Email: coaxial@apk.net



FM BROADCAST ANTENNA

FMR Series



- Circular polarization
- Series fed
- Internal feed
- Brass/Copper construction
- Excellent bandwidth

PROPAGATION SYSTEMS, INC.

719 Pensacola Road
Ebensburg, PA 15931 USA
814-472-5540 Fax 814-472-5676
E-mail: psiba@surfshop.net



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 Telex: 176756
Toll Free: 800-532-6626 From Canada: 800-848-8841

Automating Programs? No Problem!



The NEW SUB-03 Subaudible Tone Decoder

You can use the Sub-03 to automate your network feeds or take the guess work out of when to cut away from networks. The decoder listens to your audio source and gives you dry contact closures from any service that sends subaudible tones, including satellite receivers, RPU's and POTS frequency extenders. The decoder's relay contacts interface easily with your automation system. The Sub-03 is a reliable and inexpensive problem solver. The Sub-03 can be ordered set for 50/75Hz operation. Rack mount option (as shown) available. List Price only \$329.00 Check our website for more info or to download the latest manuals.

The Sub-03's features include:

- Interlocked, dry relay closure outputs for 25, 35 & combo.
- Balanced or unbal. audio input.
- Provides filtered, balanced out.
- Indicators for all three tones, audio level setting & power.
- Enable input lets you (or your automation) prevent closures.
- Uses standard 1/4" TRS (head phone style) jacks for all audio.
- Db-9 and screw terminal outs.

Circuit Werkes

3716 SW 3rd Place
Gainesville, Florida 32607
(352) 335-6555 / fax 380-0230
<http://www.circuitwerkes.com>

S.C.M.S., Inc. Charlotte, N.C.

Low Prices – Experienced Staff
New and Re-built R.F. and Audio

THIS MONTH'S SPECIAL

**SENNHEISER MD-421II MIC
ONLY \$289**

**SENNHEISER SYNTHESIZED
WIRELESS MIC EVOLUTION 100 SERIES
ONLY \$419**

CALL FOR A COMPLETE BROCHURE AND QUOTE

You Know We Know Radio —
Toll-Free 800-438-6040
FAX 704-889-4540

POWER AMPLIFIERS



10 WATTS IN, 1000 WATTS OUT
All solid state, no tuning, 3 year warranty. Unbeatable prices.
Models from 150w to 3 kW. www.svpa.com



**Silicon Valley
POWER
AMPLIFIERS**

The RF People

Phone 408 986 9700 Fax 408 986 1438

**1,200 Hits on
HARD DRIVE
for \$795!**

**FREE HitPick software lets
YOU create a custom format!**

5,000 songs available!

Go to www.h-b-s.com
for song lists



Just call our name

**800-HALLAND
800-425-5263**

1289 East Alosta Avenue
Glendora, CA 91740 USA
PH 626-963-6300
FX 626-963-2070
www.h-b-s.com

**CD libraries
ONLY \$695**

**SIX MILLION
THUNDERSTORMS HIT
PLANET EARTH EVERY YEAR!
IT TAKES ONLY ONE TO
PUT YOU OFF THE AIR!**



The STATI-CAT LIGHTNING PREVENTION SYSTEM provides a continuous, low-resistance discharge path for the static electric charge on tall structures. Dissipation points are 1/8" stainless steel rods.

This affordable and rugged system has proven itself in the field for over 15 years.



Write or call for a free brochure and design
P.O. Box 2548, Farmington, N.M. 87499-2548
Toll Free Ph: 888-325-5336 • Fax: 505-326-2337

OUTSTANDING Outstanding specifications and pricing on professional quality receivers for EAS, monitoring and "translator" service.

The AFC3 is a three receiver rack mount that is configured to your EAS or monitoring specific application. Each receiver has internal frequency selection (PLL) switches, front panel controls and indicators, and rear panel connections.



Price: Approximately \$1000 (depending on receiver choice)

Select three receivers from our FM or FM/SCA, NOAA Weather, Public Service and/or AM Monitor/Receivers. All receivers are PLL (synthesized) designs using the latest state of the art components and are available as stand alone receivers as well as in AFC3 combinations.

Quality Receivers Designed and Manufactured in the USA since 1980

DAYTON INDUSTRIAL CORPORATION

2237 Industrial Blvd., Sarasota, FL 34234 Tel. (941) 351-4454
Email: SCARadio@aol.com WebSite: www.DaytonIndustrial.com

USER REPORT

Bext Equipment Does It All

by Steve Fuss
Construction Consultant
Coalinga Broadcasting

LOS ANGELES In 1999, our group realized that we had several construction permits that were about to expire in California.

We needed to act quickly and Bext came through with quick delivery times. Everything we purchased was from the company, from stereo generators to STLs to exciters, transmitters and amplifiers of all power levels, some of them solid-state and some tube-type.

The installations were the most "plug-and-play" transmitters we have seen in many years of broadcasting. On the solid-state models, with everything broadband and self-contained, it literally came down to connecting the audio, the AC power line and the antenna, and we were done.

Exciting the tubes

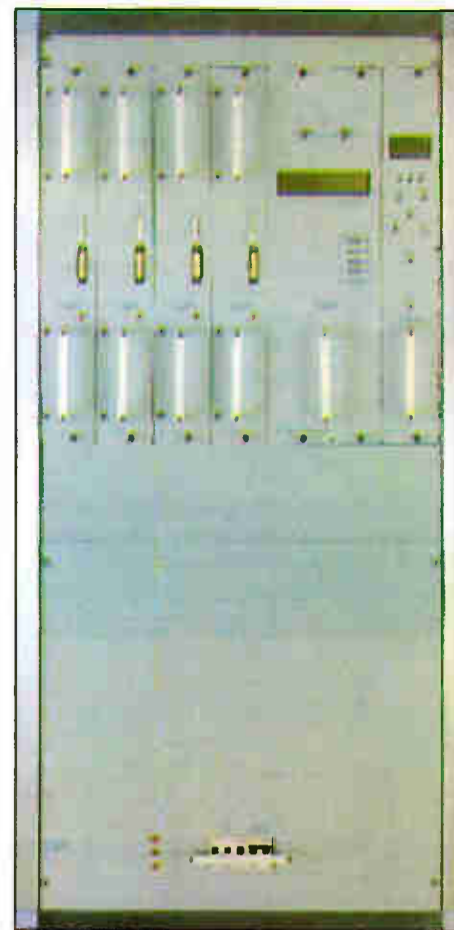
For one of the stations, we bought a 10-kW tube system. The Bext TFS 10-kW transmitter we chose employs a well-known grounded grid 3CX15000A7 Eimac tube, which is actually well oversized for 10,000 watts, ensuring a

much longer tube life than usual.

The exciter is directly programmable from the front panel and the whole transmitter can be easily moved to any frequency on site, if necessary. Installation and power-up were quick and simple procedures, requiring only a few minutes of fine-tuning the PA for our antenna. We later discovered that installation was as easy for each of the items we purchased from Bext.

The broadband design, in addition to being practical, is one reason the Bext gear sounds so transparent.

Our little network of stations essentially was going to operate by repeat-



Bext TFS transmitter

ing each other's programming by FM-to-FM retransmission. Therefore, quality reception was mandatory to preserve good audio through the many steps of the chain.

We were impressed with the performance of the FM receivers that are inside the translators that we installed. One of the stations, although licensed as a Class A, operates essentially as a giant translator.

The broadband design, in addition to being practical, is one reason the Bext gear sounds transparent.

This station had all the odds stacked against it — for example, the FM receive and transmit frequencies are only 1 MHz apart, the incoming FM receive signal comes in weak from quite a distance and, to top it off, the transmit signal is 3,000 watts of FM power, right there in the same building and with receive and transmit antennas 40 feet apart.

That would be enough to totally overload the front end of most translators that we know. Not Bext's. The company has this neat one-box translator, called the HPT, available in several power levels, that allows the user to dial in receive and transmit frequencies right there from the front panel, just like all the other Bext transmitters and STLs.

This HPT translator's front end was able to handle the highest-power translator-like installation — 3,000 watts of raw FM transmitter power at 1 MHz apart with no problems. The folks at

See BEXT, page 71 ▶



Drive this...

Just as a car needs a reliable driver, so does every radio broadcast transmitter. The Crown FM series exciters, drivers and low power transmitters offer reliability unsurpassed throughout the world. Incorporating standard features as an integral part of all power levels, the quality in workmanship standard is consistent for all of Crown Broadcast products.

The exciter/driver model offers high reliability as an RF driver while maintaining the audio purity associated with FM broadcasting today. The internal low pass filter allows the exciter to be placed directly on-air in the event of a main transmitter failure.

Crown transmitters are stand alone low power units and can be configured with optional stereo generator and audio processor. Thousands of broadcasters around the world have come to appreciate the rugged, reliability of the Crown Broadcast line of transmitters.

So when making your decision on a new exciter, RF driver or low power transmitter, reliability should be at the top of your list. Crown Broadcast builds reliable transmitters from 1 watt to 2 kilowatts.

Contact Crown for reliable, efficient broadcast transmitters.

Get in the driver's seat

 **crown**
broadcast

P.O. Box 2000 • Elkhart Indiana 46515-2000 • 219-294-8050 • 800-294-8050

Fax 219-294-8222 • www.crownbroadcast.com

Bext

► Continued from page 70

Bext told us that they had some customers who were able to re-broadcast even first-adjacent channel (200 kHz) signals, albeit with careful antenna positioning.

Clear sailing

Our 10 kW operates on a similar translator setup with more reasonable channel separation. It works perfectly.

Good equipment alone wouldn't be enough if not backed by a company that is eager to help. Working with Bext is a broadcaster's dream. The company is not too new or too small to make you apprehensive, but it's not too old or too big to be set in its ways or unwilling to do special arrangements if necessary.

Everyone was willing to go the extra mile every time we needed anything out of the ordinary; and we could easily reach every one of them, from the salespeople to the engineers to the upper management at all hours if we needed to.

I honestly don't know of any other company that could have met all our requirements, some of which were out of the ordinary at times, as effortlessly as Bext did.

For more information contact Bext Inc. in California at (619) 239-8462, fax (619) 239-8474 or visit the Web site at www.bext.com

Nautel

► Continued from page 65

After the customary five-minute warm-up period, I threw the switch to put our standby on-air. With a loud "pop," a red-orange flame shot out the top of our old standby. I knew we needed a better backup.

Our main transmitter was about 15 years old and had served us fairly well over the years. I decided that I would buy a new transmitter and move our main to the backup position.

Comparison shopping

I asked Steve Boyer, my engineer, what makes I should consider. With that information, I started gathering brochures from the various transmitter companies and began comparing the different possibilities.

There are many fine transmitters on the market today. I decided on the Nautel FM10.

Here's why. Our 5 kW AM has had a Nautel Ampfet 5 as the main for 15 years and we have had little trouble over the long haul.

Going over the information package sent from Nautel, as well as speaking with Nautel's sales rep Sydney Swaine, I was pleased to learn about the improvements Nautel has made since the last time we needed a transmitter.

Nautel's FM10 has six power modules. If you lose one or a few, the Nautel simply powers down by about

that percentage, but does not take you off the air. Also, when a module needs to be repaired or replaced, you do not have to shut off the transmitter to perform servicing.

I opted for the analog exciter with the reassurance that a simple field upgrade is all that is required to change the NE50 to a digital exciter when that time comes.

The engineers said there was no problem installing the transmitter. Most of their time was spent simply running, attaching, and testing the remote cables. Since the unit was put on the air, we have had zero problems.

When I ordered the transmitter, I also ordered an Ampfet ND 5 for WPPA. I am eagerly waiting to hear the improved audio on our AM station. If it improves

Nautel's FM10 has six power modules. If you lose one or a few, the Nautel simply powers down by about that percentage, but does not take you off the air.

Most of all, I chose the Nautel FM10 for the superior on-air sound we would have. I was not disappointed when the unit was put on-air. I am impressed by the depth of sound we now have on T-102. Even though we have an older Optimod 8100, the quality of sound is much better than before. We plan to upgrade the Optimod next spring.

The company scheduled all shipping. We actually received our FM10 sooner than expected due to a quick build from the factory and a short ship time.

our sound anywhere near as well the FM10 did for T-102, I will be very pleased.

Swaine and the staff at Nautel kept me informed as to the build out and shipping dates of both my transmitters. The company's engineers have produced a great series of transmitters that I would gladly recommend to anyone considering buying a new transmitter.

For more information contact Nautel in Maine at (207) 947-8200, fax (207) 947-3693 or visit www.nautel.com

ENERGY-ONIX Offers You a Choice of the World's Finest FM Transmitters!

SOLID STATE



- ◆ 1.5, 2, 3, 4, 5, 10, & 20KW Models
- ◆ Broadband, Interchangeable 1KW Amplifiers "Hot Pluggable"
- ◆ No Tuning Required
- ◆ Automatic Power Output
- ◆ High Performance "Stealth Exciter"

Legend 4000 Series "C"

ONE TUBE



- ◆ 4, 6, 8, 10, 15, 22, 25, 30, 40, & 50KW Models
- ◆ Available in Single or Three Phase
- ◆ Solid State, Broadband IPA
- ◆ Reliable Grounded Grid Triode Design
- ◆ No Neutralization Required
- ◆ Relatively Low Plate Voltage

ECO - 25

FREQUENCY AGILE EXCITER



- ◆ 10, 30, 100, 150 & 300 Watt Models
- ◆ Front Panel Frequency and Power Output Adjustments
- ◆ Unsurpassed Noise & Distortion Specs
- ◆ Mono, MPX, SCA & Stereo
- ◆ Automatic Power Output & VSWR Foldback Protection

SST 30B

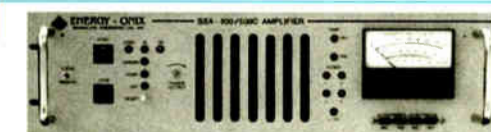
FREQUENCY AGILE STL SYSTEMS



- ◆ 10 Watt Transmitter Output
- ◆ Front Panel Frequency Selection, 940 to 960 MHz - Other Ranges Available
- ◆ Mono, MPX, Stereo, and SCA
- ◆ Two & Four Channel Digital Transmission - Optional

STL - 1

BROAD BAND RF AMPLIFIER



- ◆ No Tuning Required 87.5 to 108 MHz
- ◆ 300, 500 & 1000 Watt Models
- ◆ Minimum RF Drive Required: 5 - 7 Watts for 500 Watts, 12 - 15 for 1KW
- ◆ Minimum Rack Space Required - 5 1/4" for 300 / 500, and 10 1/2" for 1KW
- ◆ Remote Controllable
- ◆ VSWR Foldback & VSWR Protected

SSA - 300 / 500C

THREE BAND PROCESSOR/DIGITAL STEREO ENCODER



- ◆ Economically Priced - \$1,695
- ◆ Multi Band Processing
- ◆ Designed to Work With Any Audio Source
- ◆ Front Panel AGC & Processing Controls
- ◆ SCA & RDS Inputs With Level Controls

Maximizer III



ENERGY-ONIX

"The Transmitter People"

BROADCAST EQUIPMENT CO., INC.

P. O. Box 801 • 1306 River Street • Valatie, New York 12184

VOICE: 518.758.1690 / 888.324.6649 • FAX: 518.758.1476

E-MAIL: info@energy-onix.com WEB SITE: www.energy-onix.com

TECH UPDATES

Energy-Onix Legend Transmitters

The Legend Series "C" from Energy-Onix features a broadband design for use as a main or as a back-up transmitter for multiple stations in a single market. If trailer-mounted, it can serve as a portable emergency unit for group owners.

It is supplied with frequency-agile exciters. Frequency can be changed through a dial-in on the exciter front panel.

The transmitter also features a "hot-pluggable" 1 kW drawer, which can be safely removed or inserted while the Legend is on air. It will continue to operate at reduced power with a PA drawer removed.

Each Motorola MRF151G mosfet utilized in the transmitter is protected by its own thermal protection circuitry. In addition, a VSWR foldback circuit also protects each 1 kW amplifier.

The units range in power from 1.5 kW to 20 kW. By special order, 10 kW and 20 kW are available.

For more information contact Energy-Onix at (518) 758-1690, fax (518) 758-1476 or visit the Web site at www.energy-onix.com

Itelco Introduces J-Series

Itelco J-Series solid-state FM transmitters feature a modular design with labeled plug-ins that can be removed from the unit and tested separately. Analog and digital exciter options are available.

Manufactured under ISO 9001, the transmitters are designed to be redundant and fault-tolerant. A back-up power supply system features modular switchmode, which can be powered from either single-phase or three-phase power lines.

The number of power supplies required for each transmitter is allocated such that the transmitter will continue to operate at full power even if one power supply fails.

The series is available in output values of 4, 6, 8, 10, 12, 16, 18 and 20 kW, and is engineered to minimize noise and vibration.

Each transmitter features a control unit that links all plug-in signals and displays them on the front panel. Users can monitor and troubleshoot the system using front-panel controls or a standard PC located at the site or connected remotely by a modem.

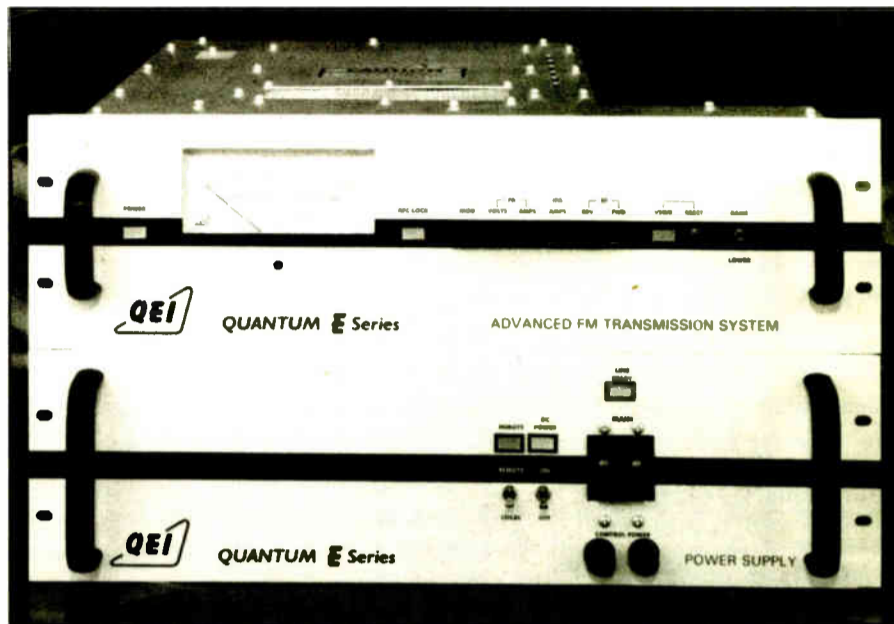
For information call (303) 464-8000 or visit www.itelco-usa.com

QEI Makes Quantum 'E'

QEI Corp.'s Quantum "E" Series FM high-power exciter/transmitter line incorporates a fourth-generation RF amplifier built around high-power FET devices. The E series includes models for 150-, 300- and 600-watts power output.

crosstalk, noise and stereo degradation. The Quantum "E" can be programmed to operate on any channel in the FM band in 100-kHz increments. An option for 10-kHz increments available.

The front panel provides a display



All three models are designed to be space-efficient. Each unit is housed in two 5-1/4-inch-high rack-mounted chassis — one for the exciter/final RF amplifier and the other housing the power supply.

The models include an ultra-linear Frequency Modulated Oscillator. The FMO is shielded against stray electromagnetic fields by a steel enclosure. The additional foam packing is designed to eliminate microphonics.

The Direct FM "On Carrier" operation of these transmitters ensures spurious free signal and low distortion,

of operating parameters with a push-button selectable multi-meter and LED status indicators. The transmitters include a remote-control interface.

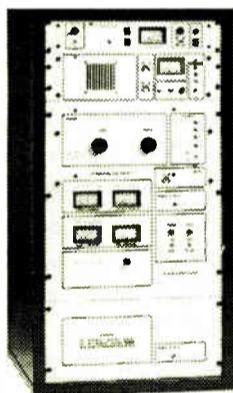
The composite audio input is through a BNC connector and monaural audio is supported through a barrier terminal strip. QEI offers RF amplifier-only models of the Quantum "E" series in the same power levels.

For more information contact QEI in New Jersey at (800) 334-9154, fax (856) 629-1751 or visit the Web site at www.qei-broadcast.com

Superior Broadcast Products

Quality Transmitters and Antennas at Reasonable Prices

FM Transmitters



- High Performance Solid State Exciter
- Solid State IPA Amplifier
- One Year Limited Warranty
- Factory Service
- On site check out by factory personal available

| | |
|-------------------|-------------|
| 1,000 watt | \$5,990.00 |
| 2,500 watt | \$11,990.00 |
| 5,000 watt | \$18,990.00 |
| 10,000 watt | \$24,990.00 |
| 15,000 watt | \$34,990.00 |
| 20,000 watt | \$37,990.00 |

20 Watt Solid State Exciter - \$995.00

Solid State FM Transmitters with Digital Exciter

| | | | |
|------------------|------------|------------------|-------------|
| 120 watt | \$2,800.00 | 2,000 watt | \$12,900.00 |
| 300 watt | \$3,500.00 | 3,000 watt | \$19,990.00 |
| 1,000 watt | \$7,990.00 | 5,000 watt | \$29,990.00 |

| FM AMPLIFIERS | |
|---------------|------------|
| 100 watt..... | \$995.00 |
| 300 watt..... | \$1,790.00 |
| 500 watt..... | \$2,990.00 |

| FM STL Both Transmitter and Receiver | |
|--------------------------------------|------------|
| | \$3,500.00 |

FM Antennas

All Power Levels 500 watts to 20,000 watts per bay

As low as.....\$395.00 per bay

| | |
|--|--|
| FREQUENCY AGILE FM TRANSLATOR \$2,500.00 | * RF Coaxial Patch Panels *FM Combiners |
|--|--|

Superior Broadcast Products

Contact **Jimmie Joynt** 17194 Preston Road, Suite 123-297 • Dallas, Texas 75248
Ph: 972/473-2577 • 800/279-3326 • Fax 972/473-2578 • 800/644-5958
Email: sbp@pulse.net web site: www.sbpj.com

BE's Solid-State 10 kW Transmitter

The Broadcast Electronics FM-10S joins the BE lineup of solid-state transmitters. It offers an RF chain that delivers 10 kW of power into a 1.5 to 1 VSWR.

The unit features 16 PA modules and one IPA module, which are interchangeable and broadband. The FM10S can stay online with as many as eight of 16 PAs failed and removed from the transmitter. The PA modules can be removed and re-inserted while power is on.

The redundant power-supply design and optional fifth supply configuration allow the FM10S to stay at full power even with one supply offline and provides for continued operation as long as one of the supplies remains functional.

This adjustable supply keeps the FM10S transmitting into loads as poor as 3 or 4 to 1 VSWR.

Output power can be reduced to zero and the transmitter will continue to monitor load conditions until the problem has been cleared. It will then return

to normal operation at full power or at a power that limits the amount of reflected energy to a safe level.

For information contact BE in Illinois at (217) 224-9600, fax (217) 224-9625 or visit the Web site at www.bdcast.com



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

AcousticsFirst
888-766-2900

Full product line for sound control & noise elimination.
www.acousticsfirst.com

AMPLIFIERS

Want to Sell

Peavey tower amp CS-600, \$200. Mark Stamat, WPDQ, 1745 Hwy 9, Howell NJ 07731. 732-845-9362 or 9055.

ANTENNAS/ TOWERS/CABLES

Want to Sell

ERI 7 bay antenna. 3.3028 gain. Originally tuned to 92.7 FM, \$2000 plus shipping. Albert Cox, 361-289-0887.

S.W.R. FM Antennas

Great Antenna
Great Price!



HE HALL Electronics (804) 984-4255

Rohn 55G, 150' including 55TG tapered base section, guy wires, turnbuckles & TA55 torque arm, gd cond, no rust, on ground. Rod Rogers, 929 Plaza Dr, Salina KS 67401-4664. 785-827-4772.

Transmitters, Antennas, STL Systems

superiorbroadcast.com

contact **Jimmie Joynt**
Phone 800/279-3326 Fax 800/644-5958

Scala 5 element Yagi, one center mount & one rear mount, both 106.5, \$150 ea. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

TOWER SITE 2000 COMPLIANCE

Antenna site signs
Registration signs
FCC-OSHA tower signs
Tower site products
610-458-8418
www.antennaid.com
Antenna ID Products

Dielectric 3-1/8" motorized four port coaxial switch; Dielectric 3-5/8" motorized four port coaxial switch. Continental Communications, 800-664-4497. Email: cont-comm@fiastl.net.

LIN TELEVISION RENTS TOWER SPACE

That's right and we have towers in several top DMA's ranging from 80 to 1961 feet. Visit our web site for details of existing towers, including coordinates, height, maps, ect. at: <http://www.lintv.com/tower.htm> or contact Jerry Colvin at 616-966-6804 or George Csaharin at 214-523-5957. (Terms and conditions will vary depending upon location, height, weight, and windload)

Weather-resistant aluminum tower signs for compliance with 47 CFR Part 17.4(g)



AntennaSigns.com
800-526-4817, ext. 115
from The DDayLine, a div. of Hand Industries, Inc.

LPFM ANTENNAS

\$95!

3db gain single bay
fmbroadcasters.com

AUDIO PRODUCTION

Want to Sell

CASSETTES · CARTS · REELS

J & I AUDIO/VIDEO

A wholesaler in the Radio and Television market. Now running SPECIALS on audio and video:
BAS F Cassettes-AMPEX R-Rs
AUDIO PAK, FIDELIPAC & ITC CARTS
DAT & THE NEW R-CD
For more information call Kris Elliot at 1-800-942-1711 or write to: J&I Audio/Video 20899 Kelvin Pl. Woodland Hills, CA 91367

JBL/Urei M712 stereo limiting/compressor, like new, \$400; Urei LA-12 stereo limiter, excel cond, \$550. Mark Schackow, Mark Schackow Recording, 307 4th Ave E. Lemmon SD 57638. 605-374-3424.

Arrakis DL11 w/Y2K & hard drive software upgrade, remote tower & network card also included, \$2450. Mark Stamat, WPDQ, 1745 Hwy 9, Howell NJ 07731. 732-845-9362 or 9055.

CART MACHINES

Want to Sell

ITC Delta (2) singledeck R/P, \$350 ea. Tom Toenjes, KJTY, 6120 Riley Cr, St Marys KS 66536. 785-437-6549.

ITC Delta system, 2 stereo decks + stereo record amp w/rack mount, manual, like new cond, units have all 3 cue tones, \$1000. Hank Landsberg, KCHZ FM, 503 Key Vista Dr, Sierra Madre CA 91024. 626-355-3656.

Behringer MX2642A 16 chnl console, new in boxes (3), \$600 ea. Serge Petit-Homme, C&S Network, POB 1517, Port Chester NY 10573. 914-966-3436/800-898-1011.

Harris Stereo 80 8 channels w/manual, no power supply, \$300. Tom Toenjes, KJTY, 6120 Riley Cr, St Marys KS 66536. 785-437-6549.

Want to Buy

25B consoles or any other WE items, paying up to \$7500. Larry Drago, WELI, POB 85, New Haven CT 06501. 203-230-5255.

FASTENERS

GRIFF-WRAP

THE ULTIMATE VELCRO REUSABLE STRAPS

Designed for the Busy Broadcast Engineer
For special pricing call

GRIFFITHS BROADCAST

203-746-3231
Fax: 203-746-3366

BE triple deck, gd cond, record made need work, 200 carts free, \$1000/BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

CD-R DUPLICATORS

Want to Sell

www.mrsmedia.com

MRS media
Master Recording Supply

CD, DVD, Audio & Video Duplication Equipment
Packaging Supplies • Blank Media

TOLL FREE (800)-860-4560

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"

Radio World

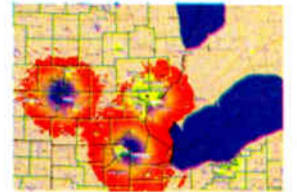
CONSOLES

Want to Sell

Audio amplifier console model 80E, 100W stereo system in 3 piece cabinet, 4' long console, (2) 2' speaker cabinets, all enclosed. Has HHS Scott 296 integrated dyaurnal lab amp, Fisher 200B Fm tuner, Collaro RC-440 TT/changer. Also has 50 factory recorded stereo tapes, 1950 & 1960 LPs & some classical records. SASE for full details. Francis Yonker, 1229 Inverary Pl, State College PA 16801. 814-867-1400.

BROADCAST ENGINEERING CONSULTING SOFTWARE

Professional software packages for preparing FCC applications and plotting coverage. For Windows and NT.



- ✓ Create "real-world" coverage maps with Longley-Rice, TIREM, PTP & other models using polygon map features.
- ✓ Prepare concise FCC model coverage maps and allocation studies using USGS geographic map databases. Census calculations, tower and airport databases.
- ✓ Search for AM, FM, TV, DTV & LPTV channels with graphics oriented programs and FCC databases.
- ✓ Plot STL paths in 3-D using NGDC terrain databases... and more!

VSoft
Communications
800-743-3684
www.v-soft.com

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.

MISCELLANEOUS

Want to Sell

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin, Goodrich Ent. 11435 Manderson St, Omaha, NE 68164 402 493 1886 FAX 402 493 6821

Roland 4404 PA amp & mdl 6101 EQ, \$100/both +shpg. Herman Gibbs, WCWS, Box C-3177, College of Wooster, Wooster OH 44691. 330-263-2212.

MICROPHONES

Want to Buy

77 & 44's, paying up to \$2000 for RCA mics. Larry Drago, WELI, POB 85, New Haven CT 06501. 203-230-5255.

Good used handheld wireless mic w/diversity receiver, UHF is fine. Al Windel, ALW Electronics, 300 So 18th St, Estherville IA 51334. 712-362-7939.

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.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RF Warning Signs

9"x 12" \$13.95

10"x 19" \$19.95



HE HALL Electronics (804) 984-4255

Want to Buy

Gates PWR-5 power supply modules & schematic. These have one 6x4 tube. Need six. Also, BA-20 bases for above & PAS-1 shelf. Mark, 925-426-2300 (message) or ideo@home.com.

HE HALL Electronics

706 Rose Hill Dr. Charlottesville Va. 22901
804-984-4255 (Voice) 804-984-3299 (Fax)

This Months Deal:



Tascam DA-30 MKII
DAT Recorders
Rebuilt \$595.00
w/ 30 day warranty

Lots more Used / Rebuilt gear on our website.

Visit our web site for more information.
sales@halls.com www.halls.com tech@halls.com

RCA on-air or stand-by lights, paying \$200 ea. Larry Drago, WELI, POB 85, New Haven CT 06501. 203-230-5255.

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.

RECORDERS

Want to Sell

Otari ARS-1000 automation PB decks, stereo, w/built-in 25Hz tone decoder, 7.5 & 15 ips, near-new heads w/manual, 3 decks avail, \$300 each. Hank Landsberg, KCHZ FM, 503 Key Vista Dr, Sierra Madre CA 91024. 626-355-3656.

Tascam 32, 2 track analog production machine, excel cond, \$650. Mark Schackow, Mark Schackow Recording, 307 4th Ave E. Lemmon SD 57638. 605-374-3424.

STUDER REVOC PARTS/SERVICE
Cassette-CD-Open reel Capstan resurfacing, ALL BRANDS.
JM TECHNICAL ARTS
1515 Elm Hill Pike #203
Nashville, TN 37210 (615) 365-9030

Ampex AG-440C two in gd cond, one needs brake adjustment, \$1000/BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

DAT Machine Service
Fast, expert repairs on all DAT recorder brands & models including ADAT and DA-88
Warranty Service on Most Brands
Over 3000 Machines Serviced!
New/Refurbished DATs Available
Compare Our Rates!
Pro Digital Inc.
DAT Recorder Service Specialists
(610) 353-2400

Ampex ATR 700 r-r (2), \$250; Teac A-330058 r-r, \$150. Mark Stamat, WPDQ, 1745 Hwy 9, Howell NJ 07731. 732-845-9362 or 9055.

DO YOU NEED PARTS FOR SCULLY TAPE RECORDERS ???
SEQUOIA ELECTRONICS
800-848-4428
FAX 1-(408) 363-0957

Want to Buy
Stellavox recorders & accessories. Charles King, King Audio, POB 116, East Berlin CT 06023. 860-832-4930.

REMOTE & MICROWAVE
Want to Sell

WE RENT FOR LESS
Hotlines FM Exciters
Zephyrs STL's
News 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"

RENTALS
TELOS-Zephyr
COMREX-Hotline, Vector
MUSICAM-Prima
COMPLETE AUDIO PACKAGES
Silver Lake Audio
(516) 763-1776
internet: silverlakeaudio.com

Marti RMC-15 16 chnl remote control, \$200; Marti MR-30 receiver, 166.25 MHz, tube type, gd working cond, \$250; Marti RPT-15 xmtr w/rack mount & CW lder, \$400. Tom Toenjes, KJTY, 6120 Riley Cr, St Marys KS 66536. 785-437-6549.

SATELLITE EQUIPMENT
Want to Sell

Zephyr four cards, excel cond, BO. Curt Marker, WHWL, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Space is available!
To advertise call
703-998-7600, ext 154.

SCA/SUBCARRIERS

Major Baltimore market radio station WLIF-FM SCA/Subcarrier available. Call Alan Hay, 410-823-1570. One West Pennsylvania Ave, Towson MD 21204.

Major Boston market radio station WODS-FM, SCA frequency available. Bud Giordano, 617-787-7589.

SOFTWARE/DATABASES
Want to Sell

BUILD A COMPUTER TOOL-BOX AT www.epix.net/~ronnieb

STATIONS

OWN A COMMERCIAL RADIO STATION ANYWHERE IN THE COUNTRY FOR ONLY \$1500!!

Buy an FCC Certified low power AM transmitter & cover up to a 4-mile radius. Why wait 3 years or more for Non-Commercial low power FM. Call (401) 322-1743 or online: www.wblo.org for more info. No FCC license required. To order a transmitter, send down payment of \$500, along with your address to: DiPonti Comm., 244 Post Rd, Westerly RI 02891. FCC ID#: DP624TA100

TAPES/CARTS/REELS/CD'S
Want to Buy

Revox-Studer 215B cassette deck. Donald Bisbee, 685 S Roys Ave, Columbus OH 43204. 614-279-4163.

Want to Advertise?
Call Simone Mullins @ 703-998-7600, ext. 154

broadcastmarket.com

TRANSMITTERS

Want to Sell

CCA 25,000W '70s vintage, OK shape, priced to sell at \$8900; QEI 3500W FMQ-3500 with matching exciter, presently on air, excel, \$10,900. Call Chris at 816-628-5959. Other FM models also available!

USED: FM/AM Transmitters, RPU's, STL's, FM Antennas, Consoles, Processing, etc.
CONTINENTAL COMMUNICATIONS
3300 Chippewa, St. Louis MO 63118
1-800-664-4497
FAX 1-800-700-9427
contcomm@fiastl.net

Collins 21E/M TX, gd unit, has been stored in dry environment, you pick up or have shipped, \$3000/BO. Gary McAvin, WMLK, POB C, Bethel PA 19507. 717-933-4781.

CSI T-20-F 20KW FM w/CSI exciter, \$9500; Continental 831-D-2, 2.5KW FM w/exciter, \$5000. Tom Toenjes, KJTY, 6120 Riley Cr, St Marys KS 66536. 785-437-6549.

OFF THE AIR?
Emergency Back-up Rentals
FM Exciters - STL's -
FM Pwr Amps - Antennas -
Studio & Test Equipment
SCMS Inc (800) 438-6040
"You Know We Know Radio"

Decade MS100S low power xmtr part 15, new \$740; B/W TX150 low power 100W xmtr, 25-150W adjustable, call for price. Serge Petit-Homme, C&S Network, POB 1517, Port Chester NY 10573. 914-966-3436/800-898-1011.

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 AFCCCE

Consulting Communications Engineers EMC Test Lab
• FCC Applications and Field Engineering
• Frequency Searches and Coordination
• AM-FM-CATV-TFS-LPTV
• EMC Test Lab-FCC and European (IEC)
OWL ENGINEERING, INC.
E-mail: info@owleng.com 1-800-797-1338 Fax (763) 785-4631
8899 Hastings St NE, Minneapolis, MN 55449 (763) 785-4115 "Member AFCCCE"

T. Z. Sawyer Technical Consultants AM-FM-TV-LPTV
• FCC Applications & Exhibits • Frequency Studies
• Experimental Authorizations • Class Upgrades
• AM Directional Antennas • STL Applications
• High Power Antenna Arrays • 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@mun-reese.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

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/TFS/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

FREQUENCY SEARCH - \$199
FM APPLICATIONS - \$1199
LPFM APPLICATIONS - \$748
(LPFM 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

LPTV Searches \$550
LPFM Searches \$250
FM Commercial or Non-commercial Application, Amendments, Upgrades
Call Michael Colenza
631-928-0077 Fax: 631-928-1905
or write:
41 Kathleen Crescent, Coram NY 11727

AM Annual NRSC Spectrum Measurements
Low Cost Flat Fee
We make trips all across the U.S.
Call to get on our schedule.
T and T Measurements
800-687-9161
email: ltaft@2fords.net
tandtmeasurements.com

LPFM Freq Searches: \$249
FM Application Preparation: \$1749
*Upgrade Study: \$895
*Upgrade Preparation: \$1749
*Full Color Coverage Maps (groups): \$79 + \$25 per station beyond first station
MonsterFM.com
903-562-1978
Email: hawkmf@netzero.net
-Financing Available-

Put your advertising dollars to work!
Call today to advertise in
Radio World
703-998-7600, ext. 154

dataworld
Market Analysis
Engineering Software
Ethnic/Demographic Data
Custom Full-color Mapping
Sales Marketing Packages
www.dataworld.com 800-368-5754
info@dataworld.com fax: 301-656-5341

PROMOTE YOUR BUSINESS!
SPACE IS AVAILABLE!
Call Simone Mullins for more information at
1-800-336-3045 x. 154.

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 web: www.surcom.com

...Republicans say that's the way it was...Democrats say that's the way it is...the people say this is the way it's going to be...and some things never change...
RADIO! The beat goes on!
CROUSE-KIMZEY OF ANNAPOLIS
tops in broadcast equipment
1-800-955-6800
ask for Kathleen
kkannapolis@worldnet.att.net



**REBUILT
POWER TUBES
APPROXIMATELY
1/2 THE
COST OF NEW!**

ECONCO

TEL: 800-532-6626
INTL: +1-530-662-7553
FAX: +1-530-666-7760
SE HABLA ESPAÑOL
EXT. 110



TRANSMITTERS (cont.)

TRANSCOM CORP.

Serving the Broadcast Industry Since 1978

Fine Used AM & FM Transmitters and Also New Equipment

| | |
|--|---|
| 100 W FM 1985 Harris FM100K Single Phase | 400W AM 1996 Nautel AMFET 400 |
| 1 KW FM 1981 Harris FM 1K | 5KW AM 1980 CSI T-5-A |
| 2 KW FM 1996 BE FM 2C Solid State Single Phase | 5KW AM 1982 Continental 315R-1 |
| 2.5 KW FM 1984 Harris FM 2.5K Single Phase | 10KW AM 1975 Continental 316F |
| 2.5 KW FM 1980 Harris FM 2.5K Single Phase | 25KW AM 1985 CSI T-25-A |
| 2.5 KW FM 1976 Collins 831D Single Phase | 25KW AM 1989 Nautel AMPFET 25 Solid State |
| 3 KW FM 1975 CSI FM3000E | 50KW AM 1978 Continental 317C-1 |
| 5 KW FM 1989 Harris HT-5 Single Phase | 50KW AM 1982 Harris MW-50B |
| 5 KW FM 1985 Harris FM 5K | |
| 5 KW FM 1984 Harris FM 5K | |
| 5 KW FM 1967 Collins 830E | |
| 6 KW FM 1994 Henry 6000D | |
| 10 KW FM 1974 Harris FM10H/K | |
| 20 KW FM 1980 Harris FM20K | |
| 20 KW FM 1988 CCA FM 20,000G | |
| 30 KW FM 1995 QEI FMQ30,000B-1 Single Phase | |

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
SEND YOUR E-MAIL REQUESTS TO: transcom@fmamtv.com

McMartin BF3.5M, w/McMartin BFM-8000 exciter, \$8500. Ernesto Baez, KANA FM, 9659 Pagewood Ln, Houston TX 77063. 713-952-2090.

Harris TE-3 in perfect cond, currently on 100.1. crystals still avail, \$550. Kinnon Thomas, The Thomas Sound Group, 619 S Main St, Gainesville FL 32601. 352-376-8742.

Tepco J-340 (2), used 2 yrs, like new, \$2000 ea. Curt Marker, WHWV, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

BEXT TRANSMITTERS - Call for demos, closeouts, full warranty. 619-239-8462.

Continental 831-D2 2.5KW FM xmt; RCA BTF-5-E1 5KW single phase FM. Continental Communications 800-664-4497. Email: contcomm@fiastl.net.

McMartin BF-10K 10 kW FM, factory rebuilt, in perfect, like new cond, includes new tubes, tested & tuned on your freq. Guaranteed. Adjustable from 5.5 kW to 15 kW, FCC type accepted. Goodrich Ent, 402-493-1886.

TRANSMITTERS



| FM RADIO Including Stereo Encoder | | TV NTSC PAL, OR SECAM | |
|--------------------------------------|----------|--------------------------|----------|
| 1Watt | \$1,183 | 1Watt | \$1,614 |
| 50Watt | \$1,658 | 2Watt | \$1,730 |
| 100Watt | \$1,900 | 4 Watt | \$2,268 |
| 300Watt | \$3,300 | 20 Watt | \$4,035 |
| 600Watt | \$6,198 | 40 Watt | \$5,247 |
| 1KWatt | \$9,064 | 100 Watt | \$6,825 |
| 2KWatt | \$12,376 | 200 Watt | \$10,268 |
| | | 400 Watt | \$11,158 |
| | | 800Watt | \$19,026 |
| | | 1KWatt | \$23,816 |
| | | 2KWatt | \$37,152 |

Taylor Bros (O/M) Ltd
Orlando FL
FreePhone (1) 877 329 2669
FreeFax (1) 877 329 2670
Fax Int 407 363 1922
European Sales office Oldham England
(44)161 652 3221
Fax (44)161 626 1736

Sell your used equipment here!
Radio World Broadcast Equipment Exchange

SERVICES

SIMPLE CONNECTION
200 Product Lines, Integrated & Prewired
Connect to the USA Turnkey Distributor
BROADCAST RICHMOND
E-mail broadcast@infocom.com
Tel 765-966-6468 Fax 765-966-5505
www.broadcast-richmond.com

ERI ELECTRONICS RESEARCH, INC.
REGISTERED PROFESSIONAL ENGINEERS
STRUCTURAL ANALYSIS
ERI Incorporated 1941
TOWER REINFORCING
ERI 812-925-6000
7777 Gardner Road
Chandler, IN 47610
www.ERInc.com

EMPLOYMENT

HELP WANTED

Clear Channel Radio

Clear Channel Radio has openings for Regional Engineers, Market Engineers, Project Specialists and Assistant Engineers in several areas of the country.

We offer Excellent Pay, Technical Training programs, 401K, Employee Stock Purchase Plans, Great Benefits and many Opportunities for growth and advancement.

If you have great technical skills and are ready to work with our highly qualified team... If you are tired of your job and are ready for a career... If you are ready to make a move up...

Contact:
Jeff Littlejohn - VP Engineering Services
Clear Channel Communications
80 East RiverCenter Blvd #1200
Covington, KY 41011
859-665-4535 Direct
859-665-9345 FAX
jefflittlejohn@clearchannel.com

Clear Channel is an Equal Opportunity Employer.

Technical Support Engineer Logitek Electronic Systems

Houston, Texas based manufacturer of digital audio consoles is seeking a Technical Support Engineer. This person will assist customers with technical questions in use of Logitek products, administer the Return Authorization system for repairs & returns, assist in repairs as needed & assist in trade show staffing. The ideal candidate will be knowledgeable with studio broadcast installations & equipment, especially audio consoles & must be comfortable working in a Windows PC environment. Previous experience with digital audio equipment & knowledge of broadcast computer automation systems is helpful. Good diagnostic & trouble-shooting skills, as well as good communication skills, are essential. Location to Houston main office is required. Salary commensurate with experience & qualifications. E-mail resume with full contact information to: HYPERLINK "mailto:info@logitekaudio.com" info@logitekaudio.com or telephone 713-664-4470. All submissions are confidential.



Factory Recertified Pre-owned Transmitters

All recertified, pre-owned transmitters are tuned and tested on your frequency and include a 1yr. warranty.

CCA FM25000D \$20,000

BE FM30,000 \$24,500

Commercial Communication Associates

Phone 770.964.3530 Fax 770.964.2222
360 Bohannon Rd., Fairburn, GA 30213

Want to Buy

McMartin AM/FM xmt, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

TUBES

Want to Sell

AMPEREX, EIMAC, SVETLANA
3CX400A7/8877, 3CX3000A7, 3-500ZG, 4CX250B, 4-400, 4CX400A, 807, 833C, ETC.
Westgate 800-213-4563.

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.

TUBES, Eimac, Svetlana
800-430-6683
Fax: 905-469-4291
ams@hard-to-find.net
www.hard-to-find.net



The Choice of Successful Broadcasters Since 1934

NEW POWER TUBES

Triodes
Tetrodes
Pentodes

NEW SOCKETS & REPLACEMENT PARTS

Worldwide Availability

Made in U.S.A.

CALL 800-414-8823
Int'l (650) 592-1221
Fax (650) 592-9988

Visit our Web Site at
www.eimac.com



MAINTENANCE ENGINEER

Join one of the most prestigious, award winning, public radio stations in the country! WBUR is one of New England's most important radio stations and is respected throughout the area as a primary source of thorough and intelligent coverage of local, national and international news. We are seeking a qualified engineer who likes a fast pace and exciting work environment to plan and direct installation, maintenance and repair of studio and broadcast equipment. Additional responsibilities include: purchasing equipment, replacing parts, making emergency repairs, and supervising broadcast maintenance technicians. B.A./B.S. or equivalent, preferably in Electrical Engineering and three to five years of broadcast engineering experience required. EOE. Send letter and resume to: Ken Tabbetts, Director of Organizational Development, The WBUR Group, 890 Commonwealth Avenue, Boston MA 02215, fax 617-353-0907, email: HYPERLINK "mailto:jshaw@wbur.bu.edu" jshaw@wbur.bu.edu.

SPACE IS AVAILABLE!
Call 703-998-7600, ext. 154 for more information.

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: _____

WTS WTB Category: _____

Make: _____ Model: _____

Brief Description: _____

Price: _____

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 listee.

Broadcast Equipment Exchange

PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 • Fax: 703-998-2966

EMPLOYMENT

POSITIONS WANTED

Experienced CE 15 yrs with great people skills, wishes to accept new challenges in Radio see resume at www.funport.com/mychucky/resume.htm. I can reduce your headaches. Only top 25 market or equivalent need apply. Good references.

Fresh radio talent looking for position in production, DJ, news, board ops. Creative, hard working, intelligent. Brian Allen Ennlow, 817-695-2474 or listen to me at www.radioschool.com.

Hot Momma with attitude, recently graduated from broadcasting school, FT position needed, live on-air experience, willing to relocate. Noel, 405-524-0100.

Rookie offering more than just simple conversation. Energetic, out-going, detailed oriented, pushing the art form to the next level, let's make great music business together. Robin, 323-292-4194.

Trained, intelligent, innovative female seeking position w/classic rock format, excellent people skills as well as production, copywriting and news delivery. Connie Le, 405-275-0810.

Friendly, industrious 46 yr old CE can make your stations operation sound up to its potential. Seeking FT/PT, contract work within a 75 mile radius of metro NYC. I guarantee you won't be disappointed. Call 800-413-5224 pin#44 or write: Mitchell Rakoff, 81-12 Roosevelt Ave, #702, Jackson Heights NY 11372-6748 or email mitchellrakoff@yahoo.com.

Stop, look, listen! Don't let this opportunity pass you by. Genius of the airwaves looking to land on the air. Rookie w/a veteran's soul looking for a home. Garrick, 405-670-7026.

Veteran Cleveland newscaster interested in voicing commercials, news, narrations, instructing interns. Past employment includes Storer, Westinghouse, NBC. Friendly but authoritative voice, prefer Eastern Ohio but will consider any offer. Ken Courtright, 330-364-3264.

Bright, funny, modest, right-of-center ex-network host, seeks quality market for mayhem & brain massage. E-mail: seeithearit@aol.com.

Seasoned broadcast engineer ready for more, all personal & professional noble qualities, real, technologically progressive & ratings motivated team player for the tri-state area (IN,IL,WI), seasonedengineer@aol.com

Young ambitious announcer/production whiz. A value to your team. Willing to work in any market. A real conversation piece. Mike, 918-494-9600.

www.rwonline.com

Radio World

5827 Columbia Pike, 1st Floor • Falls Church, VA 22041
 PHONE: 703-998-7600 • FAX: 703-998-2966

Call Simone Mullins,
 Classified Ad Manager, to reserve space
 in the next issue. Use your credit card to pay,
 we now accept VISA, MASTERCARD and
 AMERICAN EXPRESS.

Select from these categories for best ad positioning:

| | | |
|-------------------------|------------------------|-----------------------|
| Acoustics | Furniture | Stations |
| Amplifiers | Limiters | Stereo Generators |
| Antennas/Towers/Cables | Microphones | Tapes/Carts/Reels/CDs |
| Audio Production | Miscellaneous | Tax Deductable |
| Automation Equipment | Monitors | Equipment |
| Business Opportunities | Receivers/Transceivers | Test Equipment |
| Cart Machines | Recorders | Transmitter/Exciters |
| CD Players | Recording Services | Tubes |
| Computers | Remote & Microwave | Turntables |
| Consoles | Repair Services | Employment |
| Disco-Pro Sound Equip. | Satellite Equipment | |
| Financial/Leasing Svcs. | Software/Databases | |

Classified Advertising Rates Effective January 1, 2000

| | 1x | 6x | 13x | 26x |
|---------------------------|-----------------|-----|-----|-----|
| 1-9 col inch (per inch) | \$83 | 81 | 79 | 76 |
| 10-19 col inch (per inch) | \$78 | 76 | 74 | 70 |
| Distributor Directory | \$120 | 115 | 110 | 105 |
| Professional Card | \$90 | 85 | 80 | 75 |
| Classified Line Ad | \$2.00 per word | | | |
| Blind Box Ad | \$15 additional | | | |
| Station/Studio Services | \$175 | | | |

**ADVERTISE YOUR EMPLOYMENT
 AD ON OUR WEB SITE FOR
 ONLY \$2 PER WORD!**

**ADS GET POSTED THE NEXT BUSINESS DAY
 AND WILL RUN FOR A FULL TWO WEEKS!**

**COMBINE THIS WITH AN AD IN OUR
 RADIO WORLD NEWSPAPER
 EMPLOYMENT SECTION AND REALLY COVER THE
 BROADCAST INDUSTRY AND THEN SOME!**

www.RWOnline.com

Call Simone Mullins for all the details at
703-998-7600, Ext. 154
 between 9-5 EST



broadcastmarket.com

You can count on broadcastmarket.com as a great source for used professional audio and video equipment deals in a fast-paced, exciting on-line auction environment! Whatever you need - from mics to consoles, cameras to DAWs - get ready to place your bids.

Whether you're a buyer or a seller, get set for broadcastmarket.com to bring you the widest selection, the best prices and the fastest sales on the Net.

going **ONCE**

going **TWICE**

SOLD



A new Reader Service from IMAS PUBLISHING:
Radio World TV Technology Pro Audio Review 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 |
|--------|---------------------------------|--------------------------------|
| 20 | 360 Systems | www.360systems.com |
| 15 | AdAcoustics | www.adacoustics.com |
| 52 | AETA Audio Corp | www.aetausa.com |
| 62 | Air Corp | See ad for contact information |
| 56 | Altronic Research | www.altronic.com |
| 38 | Aphex Systems | www.aphex.com |
| 66 | Armstrong Transmitters | www.armstrongtx.com |
| 22 | Arrakis | www.arrakis-systems.com |
| 34 | Arrakis | www.arrakis-systems.com |
| 63 | Arrakis | www.arrakis-systems.com |
| 61 | ATI | www.atiguys.com |
| 2 | Auditronics/Wheatstone | sales@wheatstone.com |
| 12 | Aztec | www.aztec-radiomedia.com |
| 65 | Belar | www.belar.com |
| 10 | Bradley Broadcast | www.bradleybroadcast.com |
| 61 | Broadcast Devices, Inc. | www.broadcast-devices.com |
| 3 | Broadcast Electronics | www.bdcast.com |
| 75 | Broadcast Richmond | www.broadcast-richmond.com |
| 21 | Broadcast Software Int'l (BSI) | www.bsiusa.com |
| 61 | Broadcast Technology Company | www.broadcasttech.com |
| 62 | Broadcast Tools | www.broadcasttools.com |
| 42, 43 | BroadcastPort.com | www.broadcastport.com |
| 58 | BSW | www.bswusa.com |
| 4041 | BSW | www.bswusa.com |
| 4 | Burk Technology | www.burk.com |
| 61 | Circuit Werkes | www.circuitwerkes.com |
| 69 | Circuit Werkes | www.circuitwerkes.com |
| 69 | Coaxial Dynamics, Inc. | www.coaxial.com |
| 32, 33 | Commercial Communication Assoc. | www.cca.ws |
| 7 | Comrex | www.comrex.com |
| 1 | Continental Electronics | www.contelec.com |
| 69 | Cortana | cortana@cyberport.com |
| 70 | Crown Broadcast | www.crownbroadcast.com |
| 69 | Dayton Industrial | www.daytonindustrial.com |
| 27 | Denon America | www.del.denon.com |
| 6 | Digigram | www.digigram.com |
| 69 | Econco | www.econco.com |
| 11 | ENCO Systems | www.enco.com |
| 71 | Energy-Onix | www.energy-onix.com |
| 17 | ESE | www.es-web.com |
| 62 | Excalibur Electronics | See ad for contact information |
| 62 | Gorman-Redlich Mfg. Co. | www.gorman-redlich.com |
| 69 | Halland Broadcast Services | www.h-b-s.com |
| 37 | Harris | www.harris.com |
| 67 | Harris | www.harris.com |
| 26 | Henry Engineering | www.henryeng.com |
| 18 | Inovonics | www.inovon.com |
| 14 | ISDNAUDIO.COM | www.isdnaudio.com |
| 62 | J Squared Technical Service | jsquared@cadsnet.net |
| 50 | JK Audio | www.jkaudio.com |
| 6 | Litton Life Support | www.littonls.com |
| 53 | Live365.com | www.live365.com |
| 20 | Logitek | www.logitekaudio.com |
| 8 | LPB | www.lpbinc.com |
| 48 | MeasureCast | www.measurecast.com |
| 47 | MediaTouch | www.mediatouch.net |
| 35 | Modulation Sciences | www.modsci.com |
| 16 | Moseley Associates | www.moseleysb.com |
| 29 | Nautel | www.nautel.com |
| 36 | Netia | www.netia.net |
| 25 | Neutrik USA | www.neutrikusa.com |
| 62 | Nott Ltd. | www.tjantenna.com |
| 45 | NPR Satellite Services | www.nprss.org |
| 14 | NSN Net | www.nsn.net |
| 9 | Omnia, a Telos Company | www.omniaaudio.com |
| 54 | Omnia, a Telos Company | www.omniaaudio.com |
| 69 | Propagation Systems | psiba@surfshop.net |
| 51 | Prophet Systems Innovations | www.prophetsys.com |
| 60 | QEI | www.qei-broadcast.com |
| 12 | Radio Design Labs (RDL) | www.rdlnet.com |
| 23 | Radio Frequency System (RFS) | info@rfsbroadcast.com |
| 5 | Radio Systems | www.radiosystems.com |
| 64 | Radio Systems | www.radiosystems.com |
| 46 | Register Data Systems | www.registerdata.com |
| 69 | S.C.M.S., Inc. | www.scmsinc.com |
| 49 | Scott Studios | www.scottstudios.com |
| 62 | Shively Labs | www.shively.com |
| 57 | Sierra Automated Systems | www.sasaudio.com |
| 69 | Silicon Valley Power | www.svpa.com |
| 23 | Sine Systems | www.sinesystems.com |
| 59 | Sine Systems | www.sinesystems.com |
| 31 | Siteshell.com | www.siteshell.com |
| 19 | Sony Pro Audio | www.sony.com/proaudio |
| 72 | Superior Broadcast Products | www.sbpji.com |
| 30 | Superior Electric | www.superiorelectric.com |
| 55 | Symetrix (Lucid) Inc. | www.symetrixaudio.com |
| 59 | Syntrillium Software | www.cooledit.com |
| 13 | Telos Systems | www.telos-systems.com |
| 44 | WARP Radio | www.warpradio.com |
| 79 | Wheatstone | www.wheatstone.com |
| 80 | Wheatstone | www.wheatstone.com |
| 24 | Whirlwind | www.whirlwindusa.com |
| 28 | XM Satellite Radio | www.xmradio.com |

◆ READER'S FORUM ◆

Book review

Dear RW,

I enjoyed very much Paul McLane's review of the Berg shortwave book in the July 19 RW.

I was a ham and SWLer at 12 years old and that eventually led to a 23-year career in broadcasting that continues now at Tapscan/Arbitron.

Clearly, the subject matter was of tremendous interest, and I loved the illustration that was reproduced. What I wouldn't have given for a setup like that instead of the dusty corner of the barn where my shack was located!

The sound of Radio Moscow or the BBC World Service coming out of that old Hammarlund HQ-180 speaker was something magical for a kid in rural Alabama who had only limited local broadcast radio or TV to sample at that time.

Don Keith
Manager
Radio Sales, Tapscan Worldwide
Birmingham, Ala.

Reducing labor turnover

Dear RW,

Thanks for Mark Durenberger's July 5 article "Superpowers Crank It Up."

I wish you had published the reprinted article out of The Cincinnati Post a little larger and in its entirety. There is a very classic line in column four at the end of the first paragraph that every engineer should take to heart. It talks about killing the high voltage and grounding the equipment as a way of reducing labor turnover. How true! Proves they had a sense of humor, even back in 1934.

Bill Gellhaus
President
WMRG Studios Inc.
Cheltenham, Pa.

Hair-raising experiences

Dear RW,

I really enjoy Jim Withers' articles. I have several stories about high voltage and think it is always good to warn others — especially the admonition to discharge all of it personally and not to assume that someone else has done it properly, or that interlocks work properly.

I have had some hair-raising experiences along these lines. One of my stations was a directional AM that required me to reach into the hot loading coil to adjust the phase angle with a glass knob. If my arm moved just a couple inches to either side I would have been burned. It always raised my hair just to think about it. Or maybe it was the RF.

Most people don't have to deal with that kind of thing, I know, but it is fun to think about, from a distance.

Mr. Withers wrote that transformers passed DC. I certainly agree that they pass low-frequency AC, but I haven't ever seen one that could pass DC unless it was pulsed. Apologies for pointing this out.

Scott Dennis
Free-lance Broadcast Engineer
Anchorage, Ala.

Jim Withers replies:

Thanks, Scott. I don't know of an RF engineer who hasn't had some kind of surprise experience working around high voltage. Thanks for sharing one of yours.

With regard to the transformer passing DC, no need to apologize. The paragraph in which I mention DC passing through inductors was poorly written. What I meant is that inductors offer no reactance to DC (once the DC voltage stabilizes after circuit turn on). I mentioned it was to differentiate capacitive and inductive reactance, but in re-reading the section, it sure does look like I am suggesting that transformers pass DC.

Great idea

Dear RW,

I found the Feb. 16 RW worthwhile. Dave Hershberger's "A Call for Software-Based DAB" was the most captivating article I've read for a long time.

It seems to this silvery-haired broadcaster that Mr. Hershberger, or somebody at his company, has been doing the kind of thinking that should be characteristic of any industry in a free-market economy such as ours. The concepts expressed in

Dot-Com,
With Care

NTR, ad insertion, streaming and turnkey services.

The NAB counted 91 new exhibitors among 221 booths, and most of those first-timers were new-media firms, according to our own informal survey. Many of these new companies are staffed with radio veterans who know and love our business; others are totally new to the market.

Long-time showgoers like us find it exciting to see new companies and technologies sweep into our industry. It bodes well for radio that entrepreneurs find the broadcast and Webcast markets worthy of pursuit.

And after the disappointing Radio Show in August of 1999, the buzz in the air at this show was, well, fun.

So enjoy shopping for your dot-com needs in the coming year. But do so with care. This is a volatile time for the new-media guys. They come to the party with big ideas — and big expectations from their investors. They face funding questions and marketing challenges that could produce plenty of turnover in the coming year.

Indeed, there were dot-com companies in Orlando that have disappeared in the 12 months since. So it's possible you may not see some of the new suppliers when you get to New Orleans next fall.

Meantime, the trend toward the Internet affects familiar vendors, too.

Most of the companies that you have known and loved over the years and that came to San Francisco now offer products that use the Net or take advantage of IP or related technologies. It's comforting to have them there; but one also wonders if some of them might be attracted to the new media simply because it's the thing to do, not because it's a wise pursuit in their core business.

So radio buyers have some homework to do before they invest big dollars and their established brand names with suppliers in a volatile marketplace. Our advice: shop carefully; get competing bids for your services; include familiar vendors as well as newcomers in your shopping; ask the new-media companies about their radio industry knowledge, and the old-line companies for the names of satisfied users of their new-media products.

You deserve nothing less.

— RW



Photo copyright NAB

the article seem entirely appropriate, workable and cost-effective in this current technological age.

Having been a broadcaster for more than three decades, I have taken note of the good and bad that have come our way. Stereo AM was destroyed by multiple bad decisions on a variety of fronts, but mostly by a lack of foresight as to the technological possibilities relative to radio receivers.

Now, as an owner and engineer, I have been excitedly anticipating IBOC digital radio as something that would be a genuine improvement of our industry. I dread what may happen if one or more entities do something stupid to either kill the idea altogether or fail to assure that it will endure in this era of rapid technological advances.

Mr. Hershberger has hit on an idea that deserves the fullest consideration by all concerned. We've waited quite some time, now, but we can't afford not to wait awhile longer as full attention is given to the concepts put forth in the article, some of which are already being applied to the digital systems by which we receive our satellite broadcasts.

I happen to like the Standard Broadcast Band; it would be a shame if it eventually died because we missed what may be the last chance to get it right in this technologically competitive age.

Nelson M. "Nels" Wilson
Owner/Engineer
KBGN(AM)
Caldwell, Idaho

Write to Us

RADIO WORLD
READER'S FORUM

P.O. Box 1214
Falls Church, VA 22041

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 |
| Paul Cogan | ext. 146 | Associate Editor/Studio Sessions |
| Bernie Cox | ext. 183 | Associate Editor/Buyer's Guide |
| 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 Assistant Editor |
| Renata Beck | ext. 196 | Latin America Assistant Editor |
| Marie Cirillo | ext. 130 | 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, Bill Mann, Lynn Meadows, Naina Narayana, Tom Osenkowsky, Ken R., Rich Rarey, Bruce Rogow, Bob Rusk, Randy Stine, Steve Sullivan, Travis the VIO Guy, Barry Umansky, Tom Vernon.

Radio World

Vol. 24, No. 22 October 25, 2000

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

—ADVERTISING SALES REPRESENTATIVES—

| | | | |
|---|-------------------|-----------------------|-------------------------------|
| Sales Mgr., US Southeast & Mid-Atlantic: John Casey | 330-342-8361 | Fax: 330-342-8362 | email: jdcasey@compuserve.com |
| US Northeast & Central: Sandra Harvey | 765-966-0669 | Fax: 765-966-3289 | email: ads4sales@aol.com |
| US West: Dale Tucker | 916-721-3410 | Fax: 815-352-1698 | email: dtucker@ns.net |
| Classified Ads: Simone Mullins | 703-998-7600 x154 | Fax: 703-671-7409 | email: smullins@imaspub.com |
| Germany, Austria: Dagmar Hänle | +39-02-7030-0310 | Fax: +39-02-7030-0211 | email: dhanle@imaspub.com |
| France: Silvia Di Stefano | +39-02-7030-0310 | Fax: +39-02-7030-0211 | email: sdsimas@aol.com |
| European Sales Mgr., Africa, Middle East: Raffaella Calabrese | +39-02-7030-0310 | Fax: +39-02-7030-0211 | email: rcalabrese@imaspub.com |
| Japan: Eiji Yoshikawa | +81-3-3327-2688 | Fax: +81-3-3327-3010 | email: callem@msn.com |
| Asia/Pacific: Wengong Wang | +852-2787-4727 | Fax: +852-2787-4041 | email: imashk@ctimail.com |
| Latin America: J.O. Lima e Castro | +55-11-3873-1211 | Fax: +55-11-3673-1499 | email: limcas@uol.com.br |

NEXT ISSUE OF RADIO WORLD NOVEMBER 8, 2000

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 & PRODUCTION—

| | |
|-------------------|------------------------------------|
| Stevan B. Dana | President/CEO |
| Carmel King | VPI/Group Publisher/COO |
| Marlene Lane | Editorial Director/Assistant 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 2000 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 a.i 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.
- A.I. 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.

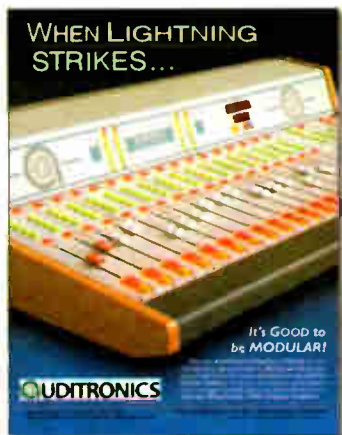


Wheatstone Corporation

600 Industrial Drive, New Bern, North Carolina, USA. 28562
tel 252-638-7000/fax 252-535-4837/sales@wheatstone.com

www.wheatstone.com
copyright © 2000 by Wheatstone Corporation
specifications and features subject to change without notice

Didn't get to NAB this year? Here's the NEW STUFF you MISSED:

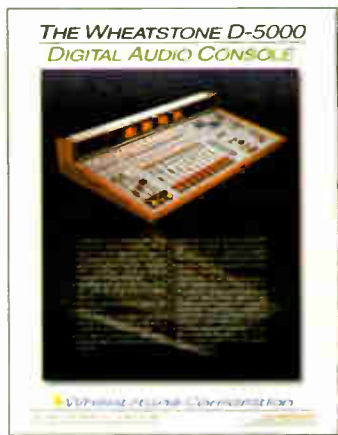


WHEN LIGHTNING STRIKES...
It's GOOD to be MODULAR!
AUDITRONICS 220
Modular, easy to install, serial control standard to work with most automation systems. Auditronics quality at a price to keep you under budget.

AUDITRONICS NuStar 4.0
A whole new generation NuStar can handle up to 128 input/output signals in its rackmount engine, letting you select any source directly to each channel. Eight character alpha displays above each fader keep your operator informed and in control.



WHEATSTONE'S VDI™ Virtual Dipswitch Software lets you configure our consoles with a laptop computer. There's no pulling cards, setting dipswitches or installing jumpers. Once configured the consoles run standalone.



THE WHEATSTONE D-5000 DIGITAL AUDIO CONSOLE
D-600 technology at a modest price; serial control for most automation systems, 8 character alpha source displays, hot-swap modules.



CONSOLE MOUNT X-Y
Controller can bring hundreds of shared resources to your station.



D-700 — THE LATEST SUPERSTAR FROM AUDIOARTS
Serial interface, digital domain metering (fullscale digital peak plus simultaneous dual ballistic VU), sample rate conversion on all digital inputs, plus selectable console clock rates. And you can get one for less than \$7900!



WHEATSTONE ATC-1
A digital AES router with all the routing capability you need today—plus the expansion you'll definitely need tomorrow. Handles up to 256 AES inputs and routes them to 256 outputs. All switching done in the digital domain, with sample rate converters on every digital input, plus a complete family of X-Y and input controllers for every need.



TEAM PLAYERS — Wheatstone D-600 and D-700 CONSOLES command the ATC-1 digital router; the ROUTER talks to the 8-character console channel displays. Station AUTOMATION can talk to BOTH.

WHEATSTONE'S D-700

Serial protocol is only part of the story! Each input channel can also have two stereo aux sends, four bands of EQ, compression, assignable ducking, and digital input gain control, panning and HPF—with all settings stored and recalled in up to ninety-nine security protected presets—so your talent can be up and running in just seconds. Presets can even recall bus assigns, source selection, mode, channel ON/OFF and fader settings—all through simple front panel control.

